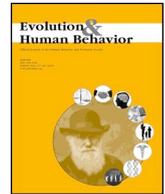




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Shared interests or sexual conflict? Spousal age gap, women's wellbeing and fertility in rural Tanzania

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ABSTRACT

The marriage of older men to younger women is common across cultures. On one hand, husband-older marriage may serve the interests of both sexes, a conclusion broadly consistent with reported gender differences in mate preferences. On the other hand, men alone may benefit from such marriages at a cost to women if seniority enables men to exert dominance in conflicts of interest. Indeed, in public health large spousal age gaps are generally deemed “pathological”, both as a cause and consequence of gender inequalities harmful to women. We investigate these alternative models of spousal age gap using data from a cross-sectional survey of women in Mwanza, northwestern Tanzania ($n = 993$). Consistent with the notion that spousal age gaps are a product of sexual conflict, women typically married with a larger age gap than stated ideals. However, adjusting for potential confounds, spousal age gap was not associated with fertility or the risk of divorce. Furthermore, women's mental health and autonomy in household decision-making was higher in husband-older marriages compared to rare cases of same-age or wife-older marriage. Beyond this comparison, the magnitude of spousal age gaps was unrelated to either measure of women's wellbeing among the overwhelming majority of marriages where the husband was older. Together these findings suggest husband-older marriage does not influence marital stability, relatively large spousal age gaps are neither especially costly nor beneficial to women, and that alternative sociodemographic factors are more important in driving variation in women's wellbeing and reproductive success in this context. Our results support neither a model of mutual benefits, nor a pathological conceptualization of spousal age gaps. We conclude by both encouraging evolutionary human scientists to engage more fully with models of sexual conflict in future studies of marriage and mating, and suggesting that public health scholars consider more neutral interpretations of spousal age differences.

1. Introduction

One of the most stable aspects of human marriage across cultures is the tendency of older men to marry younger women. The magnitude of spousal age gaps is variable, but it is normative everywhere for husbands to be older than their wives (Carmichael, 2011; Casterlinet, Williamst, & McDonald, 1986; Conroy-Beam & Buss, 2019). Within the evolutionary behavioral sciences, and to some extent economic perspectives on marriage more generally (Bergstrom & Bagnoli, 1993; Gustafson & Fransson, 2015), this pattern has long been interpreted as serving the interests of both sexes. Men prefer young women because female youth is closely associated with reproductive value, while women prefer older men because male wealth and social status tend to increase with age. Supporting evidence for this interpretation comes from numerous mate choice studies where men state a preference for

younger women, while women state preferences for older men (Buss, 1989; Conroy-Beam & Buss, 2019; Kenrick & Keefe, 1992). Although less commonly studied, there is also some evidence that the reproductive success of a marriage is higher when the husband is older than the wife (Fieder & Huber, 2007; Helle, Lummaa, & Jokela, 2007; Kuna, Galbarczyk, Magdalena, Nenko, & Jasienska, 2018; but see Stoeckel & Chowdhury, 1984, Rotering & Bras, 2019).

While cross-culturally common, mating preferences for relatively older males and younger females may be derived rather than ancestral traits for our species, evolving in tandem with our distinct tendency among apes for paternal care and the truncation of female fecundity by menopause. Wild chimpanzee males, for example, prefer older females as mates, most likely due to their higher social rank and experience as mothers (Muller, Thompson, & Wrangham, 2006). There is also evidence for context-dependency in human spousal age gaps and in age

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preferences. Among the richest and most gender equal societies the mean spousal age gap approaches zero (Carmichael, 2011). Furthermore, Eagly and Wood's (1999) reanalysis of Buss's (1989) landmark cross-cultural mate choice study demonstrates that women's preferences for older men are weaker among societies with greater gender equality. Within populations, there is also evidence that individual socioeconomic status influences women's age preferences, although the direction of reported effects is mixed (Moore, Cassidy, & Perrett, 2010; Moore, Cassidy, Smith, & Perrett, 2006). This demonstration of variability has sometimes been taken as a challenge to the idea of universal evolved sex differences in ideal partner age. However, evolutionary perspectives anticipate context-dependency in behavioral strategies and preferences (Nettle, Gibson, Lawson, & Sear, 2013; Smith, Borgerhoff Mulder, & Hill, 2001). Women with independent wealth, for example, may benefit relatively little from partnering with older men, and where local reproductive strategies prioritize offspring quality over quantity (Lawson & Mace, 2011; Mace, 1998), female youth as a proxy for reproductive value will logically be a lower priority for men.

A more relevant challenge to the view that observed spousal age gaps serve the mutual interests of men and women is raised by considering scope for sexual conflict over ideal partner characteristics (Borgerhoff Mulder & Rauch, 2009). Indeed, although rarely approached from an evolutionary perspective, a large public health and applied social science literature is premised on the view that husband-older age gaps reinforce power inequalities between the sexes, enabling men to dominate younger women and restrict women's autonomy (Barbieri, Hertrich, & Grieve, 2005; Carmichael, 2011; Clark, Bruce, & Dude, 2006; Girls Not Brides, 2019; UNFPA, 2012) with potentially harmful consequences. Here, women are viewed as effectively forced or manipulated into husband-older marriages by patriarchal systems that restrict their marital options, and it is assumed that if given free choice women would not opt to marry significantly older men (UNFPA, 2012). A link between large spousal age gaps and divorce could support such a view (e.g. Francis-Tan & Mialon, 2015), but evidence linking age gaps to wellbeing is inconsistent (Adebowale, 2018; Kim, Park, & Lee, 2015; Kishor & Johnson, 2005; Otieno, 2017), a point we return to below when discussing results of the present study (Section 4.3). Confusing matters further, many public health studies of spousal age gaps also rely on national datasets (such as the Demographic and Health Surveys) which prioritize the generation of representative statistics at aggregated levels (i.e. country, sub-region), rather than within-community comparisons. Consequently, national datasets are particularly vulnerable to confounding marriage patterns with alternative sociodemographic determinants of wellbeing at the individual and ecological level (for discussion see: Lawson et al., 2015, Lawson & Gibson, 2018). More studies comparing outcomes for women (and men) with different spousal age gaps from within the same local cultural context are needed.

In this study, we explore evidence for sexual conflict over spousal age gap using data from a cross-sectional survey of women's marital history and wellbeing in Mwanza Region, northwestern Tanzania. Our analyses are designed to test the hypothesis that relatively large husband-older age gaps are undesirable and costly to women. First, we predict that women will not realize their ideal age gap preferences and consequently frequently marry with a larger age gap than their stated ideals. Second, we predict that marriages where the husband is relatively older will be especially prone to marital conflict and thus greater husband-older age gaps will increase risk of separation or divorce. This prediction notably rests on the assumption that women are able to leave unhappy marriages, which may not be true in all contexts. Third, we predict that, all else equal, women with relatively older husbands will suffer from poorer wellbeing. Here, we focus on two outcomes: presence of depressive symptoms, as a measure of mental health, and household decision-making authority, a commonly used indicator of women's empowerment. Finally, we consider the relationship between spousal age gap and age-adjusted fertility as an indicator of female reproductive success. Here, our analysis is best considered exploratory

rather than predictive. Lower fertility might be disadvantageous for female fitness, but past research has also suggested that men can benefit more from higher fertility than women given that women pay the biggest physiological costs of reproduction (Borgerhoff Mulder & Rauch, 2009; but see Moya, Snopkowski, & Sear, 2016). Moreover, since the study population is urbanizing we anticipate that reproductive strategies are in flux for both sexes, with ideals of relatively lower fertility and higher parental investment increasingly adopted (Hedges, Sear, Todd, Urassa, & Lawson, 2018). Nevertheless, differences in women's fertility by spousal age gaps may inform our understanding of the scope for and consequences of sexual conflict.

We caution from the outset that marriage and gender norms demonstrate considerable cultural variation. Consequently, we explicitly do not claim that the results from this study will be generalizable to alternative settings, even within Tanzania which encapsulates considerable cultural, demographic and socioeconomic diversity. As described below, in this population divorce and remarriage are commonplace and women report autonomy in partner choice. As such, men's ability to dominate women may be limited compared to contexts where marriages are commonly arranged and divorce is not an option. On the other hand, bridewealth is practiced, suggesting that women's wellbeing may be traded for financial gain of wider kin. Finally, and perhaps of particular importance, the population is vulnerable to food insecurity and economic precarity which may, in contrast to wealthier settings, ultimately render marital relations a relatively trivial determinant of both perceived and objective wellbeing.

2. Materials and methods

2.1. Study population

Our data come from a larger project on marriage and wellbeing in northwestern Tanzania (Schaffnit, Hassan, Urassa, & Lawson, 2019; Schaffnit, Urassa, & Lawson, 2019). Data collection was carried out within the infrastructure of the ongoing Magu Health and Demographic Surveillance System (HDSS) managed by the Tanzanian National Institute for Medical Research (NIMR). The study area (Kisesa Ward) is predominantly rural, located approximately 20 km east of Mwanza city, and home to over 35,000 people (Kishamawe et al., 2015). The population are primarily Sukuma, combining agropastoralist livelihoods with varying degrees of wage labor, especially in more urban communities. Education levels are rising, and girls' education is increasingly prioritized among families (Hedges et al., 2018).

Marriage is an important social institution, widely viewed as instrumental in acquiring social status within one's local community and practiced near universally (Schaffnit, Urassa, & Lawson, 2019). Marriages are marked by cohabitation, but not necessarily a ceremony or clear marriage event. In formal marriages (those with a legal, religious and/or traditional ceremony), bridewealth is generally exchanged at marriage, while informal marriages (those with no ceremony) are often followed by a "compensation" transferred from a husband to his parents-in-law, effectively serving as a late bridewealth (see also Kudo, 2015). Although we did not collect data on the reasons behind differences in the formality of marriage, our general understanding is that informal marriages are more common when bridewealth cannot be afforded and/or the couple marry without parental approval. Both forms of relationship are fully accepted as marriage in the community. Divorce is commonplace, and usually followed quickly by remarriage, at least for relatively young women (Boerma et al., 2002). Polygyny is practiced with approximately 10–20% of adult men married to more than one woman (Hedges, Sear, Todd, Urassa, & Lawson, 2019). It is common for women to have children prior to and outside of marriage (Schaffnit, Urassa, & Lawson, 2019) and childcare arrangements often involve extended kin, with high rates of fostering, especially with grandparents (Hedges et al., 2019). Female autonomy in the marriage process appears high; almost all married women sampled reported

having chosen their own spouse, while unmarried women reported that they expected to choose who and when to marry (Schaffnit, Urassa, & Lawson, 2019). Young women however are rarely economically-independent and usually remain living with their kin prior to marriage and following divorce.

2.2. Survey design

Cross-sectional surveys were conducted in two communities within the HDSS from July through October of 2017. These communities were chosen to represent the extremes of the rural-urban gradient within Kisesa Ward, facilitating comparisons between the more agricultural and market-integrated ecologies within the study site. The more urban area is hereafter referred to as the town, and the more rural area as the village. As a mixed, urbanizing economy it is particularly challenging to identify singular dimensions of wealth or social status. Land or cattle ownership, for example, poorly captures wealth variation because many households rely primarily on wage-labor rather than farming. Conversely, material asset scores favor ‘urban’ wealth over wealth more common among farmers (i.e. livestock and land) (see Lawson et al., 2015). However, food security is a concern for all families, and is measured here using the Household Food Insecurity Access Scale which assesses food insecurity during the last month (Coates, Swindale, & Bilinsky, 2007).

Households containing at least one 15 through 35-year-old girl/women were selected for interview, by simple random sampling, using the 2016 HDSS census as a sampling frame. This age range was chosen based on our wider project aims of sampling both married and unmarried women/girls, with approximately 35% marrying before age 18 years in this population (Schaffnit et al. 2019). Note, for simplicity, throughout we use the collective term “women” to refer to participants between these ages while acknowledging that many may be considered girls or adolescents, and that boundaries between childhood and adulthood are culturally variable (Dixon-Mueller, 2008; Schaffnit, Urassa, & Lawson, 2019). Originally, we aimed to sample approximately 900 women, based on budget and time constraints, along with sample size calculations concerning our original variable of primary interest (age at marriage). Ultimately, we approached 1254 households, and successfully conducted surveys at 743 households and with 993 women. Due to high-levels of movement, many households drawn from the HDSS were ineligible, typically due to outmigration of the woman herself, or less commonly, full household migration. However, once contacted, participation was near universal, with less than 1% of women refusing to participate. Participation was voluntary and no payment was made. However, broader NIMR activities support local health care services in the study area, leading to a good relationship between NIMR and community members.

Parental/guardian consent and participant assent was obtained for minors, and participant consent was obtained from adult participants prior to interview. Participants were read a consent statement which outlined the study's goals and risks and benefits of participation. Following this, participants were allowed time to ask questions (or decline participation) and were given a hard copy of this statement along with contact information for representatives of NIMR should they have questions or concerns arising at a later time. Interviews were first conducted with household heads ($n = 743$; 78% male) to gather information on household membership, socioeconomic status and livelihoods; this interview lasted approximately 30 min. Interviews were then conducted privately with all appropriately-aged, resident women, lasting up to our hour. Women's surveys ($n = 993$) included questions on their marital and birth histories, and our measures of wellbeing (see below). We asked about marriages in chronological order, starting with their first. For ever-married women, information was collected for up to 3 current/past husbands – including both formal and informal marriages. This was sufficient to gather complete relationship histories in most cases; only 4 women had had 3 husbands, and of those only 2 had

since separated from their 3rd husband. Of the 502 ever married women, 69.7% ($n = 350$) were still married to that original partner, 11.1% ($n = 56$) were married to someone else and the remainder were currently unmarried. Ethical approval for this research was granted by the University of California, Santa Barbara (Human Subjects Committee #1-17-0405) and NIMR (Lake Zone IRB #MR/53/100/463).

2.3. Ideal and actual spousal age gap

Ideal spousal age gap was calculated from two variables. All women were asked “What is the ideal age for a man to marry for the first time (in years)?” and “What is the ideal age for a woman to marry for the first time (in years)?” We refer to the difference between these two responses as the “ideal spousal age gap”. This is different from previous studies which have asked more directly what the age differences of spouses should be, or about women's preferences for the age of a potential spouse for themselves. As such, we interpret this variable as representing women's ‘societal ideal’ for age gaps as opposed to an individual preference for their own potential mate. Three outlying responses were dropped due to unrealistically large age gaps, likely the result of recording errors during data collection, leaving 990 valid responses.

Actual spousal age gaps were calculated for each previous or current partner and can be sub-divided into first ($n = 502$ women had ever married), and current marriages ($n = 417$ women currently married). Spousal age gaps were calculated from two variables. Women were asked “How old were you when you married this man?” and “How old was your husband at the time of the marriage?” Women who did not know their own or their husband's actual age, were asked to make their best estimate. The difference between these two variables is used as their actual spousal age gap. Some women did not know their partner's age at marriage and were unable to confidently guess; this resulted in a sample of 495 ever married and 412 currently married women with information on their actual spousal age gaps. For both ideal and actual spousal age gaps, negative numbers represent wife-older marriages, while positive numbers represent husband-older marriages.

2.4. Women's wellbeing and fertility

Women's current wellbeing was captured by two composite measures assessing mental health and autonomy in household decision-making (see **Supplementary Materials** for individual questions making up each summary score). Mental health was evaluated using a modified version of the Hopkins Symptoms Checklist (Hadley & Patil, 2006), which specifically focuses on depressive symptoms. Women were asked to specify whether they had experienced various symptoms. They could respond “not at all”, “a little”, “some” or “a lot”; scores were reverse coded such that low values represent poorer mental health. Autonomy in household decision making was captured through a series of questions about who made decisions in various spheres within the household (CARE, 2008). Women could respond that the decisions were made by themselves, their husband, their parents, their parents-in-law, or together with their husband. Women with higher “empowerment scores” made more decisions on their own or with their husband and are considered to have high empowerment. Each of these outcomes are standardized for the full sample of women (i.e. including unmarried women) so that 0 is equal to the sample mean, and 1 unit is equal to 1 standard deviation. Finally, age-adjusted fertility was calculated from the residuals of a linear regression predicting number of living children with current age. The resultant value can then be interpreted as how many more (positive values) or fewer (negative values) living children each woman has, compared to what would be predicted for her age.

2.5. Analysis strategy

We first describe and compare the distributions of ideal and actual

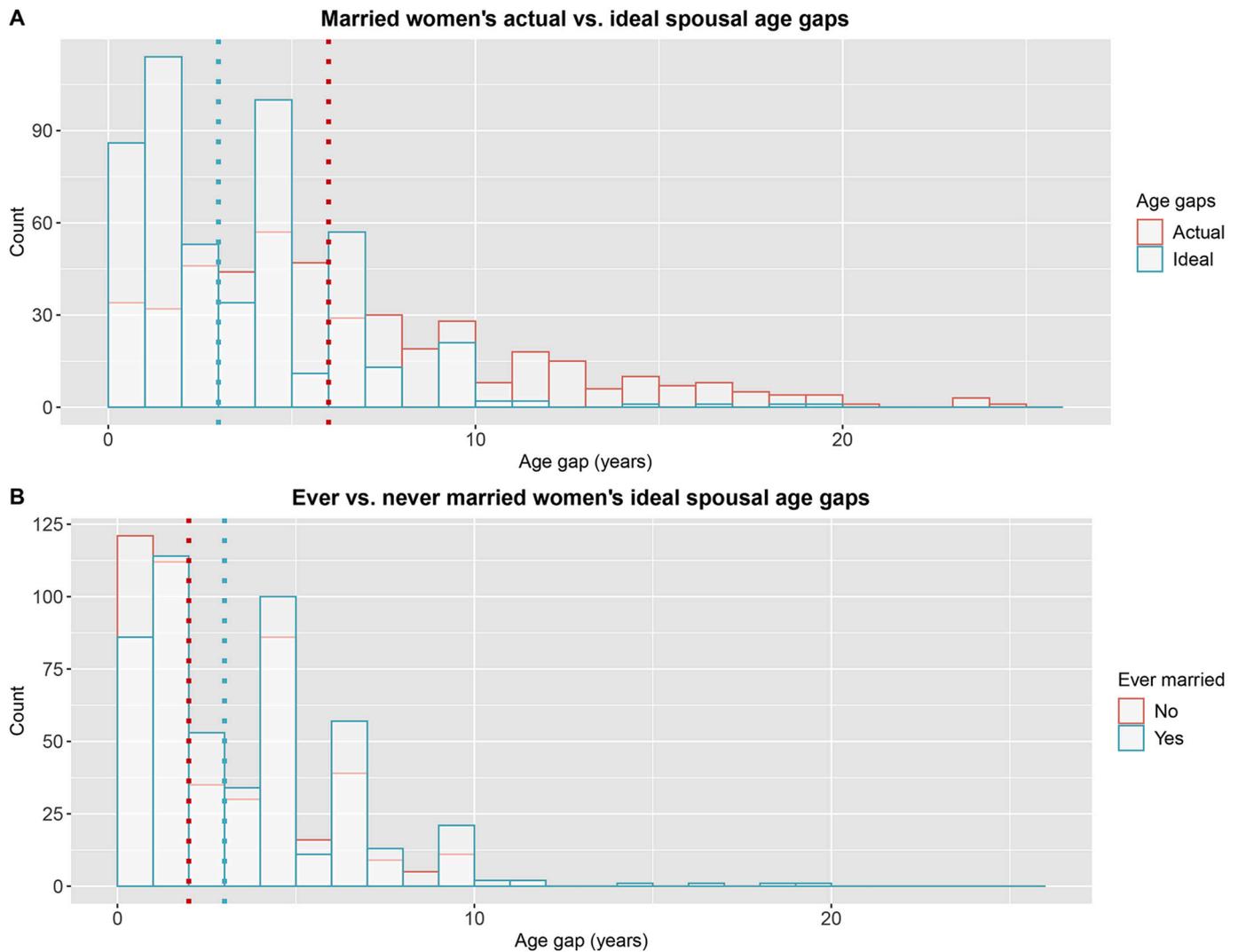


Fig. 1. Histograms showing (A) actual and ideal spousal age gaps among ever-married women, and (B) ideal spousal age gaps among ever and never-married women. Vertical, dotted lines indicate median ideal/actual spousal age gaps (see Supplementary Table S1 for more details).

spousal age gaps. We then contextualize our understanding of marriage patterns by testing for bivariate relationships between actual spousal age gap and a range of potential correlates, as measured by our surveys. Here we divide between two broad categories of variables. First, ‘*structural and demographic variables*’ include village or town residence, a household-level measure of socioeconomic status (household food insecurity, described above), women's current age and education (level completed), and household religion. Because structural and demographic data are relevant only to the time of interview (i.e. we do not have retrospective data on these measures) bivariate relationships were only considered for current marriages. Second, among ever-married women (i.e. currently and previously married women), we also consider relationships between spousal age gap and other ‘*union-level variables*’ for first and current relationships; note that 70% of ever-married women were still married to their first partner, so there is overlap between these two groups. Union-level variables include wife number (comparing monogamously married women, first wives of polygynous men, and later wives of polygynous men), age at marriage, who the woman reports chose her husband, whether or not the marriage included an exchange of bridewealth, and the husband's relative wealth and education at the time of their marriage. Relative wealth here is a woman's own subjective comparison of the wealth of the woman's household prior to marriage, compared to her husband. We highlight that both wife number and receipt of bridewealth variables are based

only on current status; currently monogamous marriages may later become polygynous (and vice versa), and bridewealth transfers can be delayed. Both variables were also recorded for formal marriages only. As such, informal marriages are excluded from bivariate analyses with these two variables, while multivariate models include a binary variable for formal vs informal marriage. For union-level variables, bivariate relationships between participant characteristics and spousal age gaps are presented for both first and current marriages. We use linear regression with spousal age gap as the outcome to test each bivariate relationship, running a likelihood ratio test based on model fit to obtain an overall p -value for each categorical predictor. We do not run hierarchical models with women clustered within households because the mean number of women surveyed per household was only 1.3 and Clarke (2008) has demonstrated that when clusters are unbalanced and sparsely populated both fixed and random effects may be over-estimated.

Next, we consider relationships between all union-level characteristics (including spousal age gaps) and marital stability for first marriages. Women who had been widowed ($n = 13$) were excluded from these analyses. Bivariate relationships are considered using a chi-squared test, followed by a multivariate logistic regression predicting staying married, with spousal age gap as the primary predictor controlling for potential confounders (i.e. union-level characteristics that are correlated with both spousal age gap and staying married to a first

husband). This is followed by an examination of relationships between spousal age gap, women's wellbeing measures and age-adjusted fertility. Here, information on only current partners was used because the wellbeing data are relevant to time of interview only. After considering bivariate relationships between wellbeing/fertility and structural, demographic and union-level variables, multiple linear regression models were run predicting each wellbeing/fertility outcome. Variables identified as possible confounders (i.e. correlated with the wellbeing/fertility outcome and current spousal age gap) were included in these models. A control for village was included in each model a priori, as was participants' current age in the two wellbeing models.

3. Results

3.1. Ideal versus actual spousal age gaps

The majority of respondents felt that the ideal age at first marriage for men was older than for women (76.6%), with 69.4% of women suggesting that a man should be 2–7 years older than a woman at first marriage (mean ideal age for women = 18.6 years, standard deviation (sd) = 2.5; mean ideal age for men = 22.0 years, sd = 4.1). About a fifth (21.8%) of women said that the ideal age of marriage was the same for men and women, while a small percentage (1.6%) of women suggested that either women should be older than men or men should be 8+ years older than women (7.2%) at the time of first marriage. Never-married women ($n = 488$) preferred smaller age gaps than women who had ever married ($n = 502$); with a mean ideal age gap of 3 years (sd = 3) versus 3.8 years (sd = 2.9) respectively ($t(985) = -3.7$, $p < 0.001$). Among women who had ever married, actual spousal age gaps with first husbands were larger (mean = 7.0, sd = 5.1) than their ideal age gaps (mean = 3.9, sd = 3.1; $t(462) = -11.6$, $p < 0.001$; Fig. 1; Supplementary Table S1). These data support our first prediction, that women frequently marry relatively older men than stated ideals, with ideal age gaps about half the size of actual age gaps.

3.2. Variation in spousal age gaps

For currently married women, we considered the relationship between age gaps and several structural and demographic variables: place of residence, household food insecurity (a measure of socioeconomic status), women's education, women's current age, and religion. These analyses were restricted to information using women's current relationships only ($n = 412$) because the structural and demographic variables were applicable only to the time of interview. None of these

variables were significantly related to women's current spousal age gap (Table 1).

Next, we considered bivariate relationships between spousal age gaps and union-level characteristics (Table 2). For first, but not current marriages, an earlier age at marriage was associated with larger spousal age gaps. For all marriages, age gaps were largest for later wives of polygynously married men, and smallest for first wives of polygynous men. For first marriages only, spousal age gaps are largest if the woman rated her husband as relatively poor compared to her family background. Otherwise husband's relative socioeconomic status was not associated with spousal age gaps. Spousal age gaps were significantly larger for women who received bridewealth for current, although not first marriages, and for women whose husbands were chosen by someone other than herself and/or her parent for all marriages. Whether a marriage was formal or informal was not associated with spousal age gap for either first or current marriages.

3.3. Marital stability

If large husband-older age gaps are costly for women, then we anticipate higher levels of marital discord and ultimately a greater chance of separation or divorce with increasingly large spousal age gaps. Bivariate relationships between separation/divorce and union-level characteristics for first marriages indicate no relationship between probability of remaining married and spousal age gaps (Table 3). However, other union-level characteristics were correlated to remaining married to a first husband. Women who were married monogamously had lower rates of separation than women married to polygynous men, as did women who had received bridewealth compared to those that had not, and those in formal compared to informal marriages. Finally, marriages were less stable when women were married to men who had higher education than themselves.

Based on these bivariate relationships, we built multivariate logistic regression models with staying married as the outcome (Supplementary Table S2). Once controlling for current age and probable confounders (i.e. union-level characteristics correlated with both staying married and spousal age gaps), spousal age gap remained uncorrelated with the odds of staying married (Fig. 2). Consistent with bivariate trends, women had lower odds of staying married when they were in polygynous marriages compared to monogamous marriages (first wives vs. only wives: odds ratio = 0.23, $p < 0.001$; later wives vs. only wives odds ratio = 0.46, $p = 0.03$), and when marriage was informal compared to formal (odds ratio = 0.30, $p < 0.01$). Overall, these results indicate that while some characteristics of a marriage are important

Table 1

Mean spousal age gap for current marriages, current wellbeing and age-adjusted fertility by structural and demographic variables for currently married women ($n = 412$).

| | | n (%) | Spousal age gap | | Empowerment score | | Mental health score | | Age-adjusted fertility | |
|-------------------------|-----------------------------|-------------|-----------------|----------|-------------------|----------|---------------------|----------|------------------------|----------|
| | | | Mean (sd) | p-value* | Mean (sd) | p-value* | Mean (sd) | p-value* | Mean (sd) | p-value* |
| Residence | Town | 223 (54.13) | 7.11 (4.99) | 0.58 | 0.68 (0.84) | < 0.001 | -0.13 (1.02) | 0.41 | 0.02 (1.45) | < 0.001 |
| | Village | 189 (45.87) | 6.81 (6.04) | | 0.20 (0.85) | | -0.04 (1.00) | | 0.93 (1.37) | |
| Food insecurity | Secure & mildly insecure | 89 (21.65) | 8.14 (6.12) | 0.08 | 0.97 (0.75) | < 0.001 | 0.33 (0.71) | < 0.001 | -0.04 (1.53) | < 0.001 |
| | Moderately insecure | 102 (24.82) | 6.62 (4.85) | | 0.58 (0.81) | | -0.10 (0.96) | | 0.30 (1.45) | |
| | Severely insecure | 220 (53.53) | 6.67 (5.47) | | 0.20 (0.85) | | -0.26 (1.09) | | 0.71 (1.42) | |
| Woman's Education level | None | 78 (18.93) | 7.33 (6.79) | 0.73 | 0.24 (0.84) | 0.003 | -0.30 (1.08) | 0.11 | 1.07 (1.54) | < 0.001 |
| | Primary school | 285 (69.17) | 6.96 (5.31) | | 0.46 (0.86) | | -0.04 (0.98) | | 0.43 (1.45) | |
| | Secondary school or higher | 49 (11.89) | 6.53 (4.33) | | 0.78 (0.92) | | -0.03 (1.04) | | -0.51 (1.05) | |
| Current age | 15–19 years | 35 (8.50) | 6.88 (4.54) | 0.73 | -0.43 (0.60) | < 0.001 | -0.18 (1.24) | 0.84 | - | - |
| | 20–24 years | 87 (21.12) | 7.26 (5.76) | | 0.29 (0.84) | | -0.02 (0.96) | | - | - |
| | 25–29 years | 126 (30.58) | 7.27 (5.21) | | 0.53 (0.88) | | -0.07 (0.93) | | - | - |
| | 30–35 years | 164 (39.81) | 6.60 (5.76) | | 0.68 (0.80) | | -0.12 (1.04) | | - | - |
| Religion | Roman Catholic | 139 (33.74) | 7.41 (6.30) | 0.47 | 0.63 (0.83) | 0.04 | -0.09 (1.03) | 0.24 | 0.09 (1.39) | < 0.001 |
| | Other established Christian | 150 (36.41) | 6.56 (4.61) | | 0.42 (0.90) | | -0.14 (0.97) | | 0.31 (1.60) | |
| | No religion | 115 (27.91) | 7.13 (5.62) | | 0.32 (0.87) | | -0.08 (1.05) | | 1.07 (1.24) | |
| | Other | 8 (1.94) | 5.25 (4.50) | | 0.36 (0.87) | | 0.61 (0.56) | | -0.17 (1.10) | |

Table 2
Mean spousal age gaps by union-level variables for first marriages ($n = 495$) and current marriages ($n = 412$).

| | | Spousal age gap | | | | | |
|---|--|-----------------|--------------|----------------------|------------------|--------------|----------------------|
| | | First marriage | | | Current Marriage | | |
| | | n (%) | Mean (sd) | p-value ^a | n (%) | Mean (sd) | p-value ^a |
| Spousal age gap | Woman older | 7 (1.41) | – | – | 7 (1.7) | – | – |
| | Same age | 37 (7.47) | – | – | 34 (8.25) | – | – |
| | Man 2–4 years older | 122 (24.65) | – | – | 105 (25.49) | – | – |
| | Man 5–7 years older | 154 (31.11) | – | – | 119 (28.88) | – | – |
| | Man 8–10 years older | 77 (15.56) | – | – | 61 (14.81) | – | – |
| | Man 11+ years older | 98 (19.80) | – | – | 86 (20.87) | – | – |
| Age at marriage | < 18 years | 156 (33.77) | 7.97 (5.42) | 0.01 | 110 (26.76) | 7.97 (5.32) | 0.06 |
| | 18–19 years | 164 (35.50) | 6.45 (4.54) | | 140 (34.06) | 6.36 (4.42) | |
| | 20+ years | 142 (30.74) | 6.38 (5.03) | | 161 (39.17) | 6.75 (6.27) | |
| Wife number ^a | Only wife | 237 (69.10) | 6.46 (4.25) | < 0.001 | 236 (74.21) | 6.69 (5.03) | < 0.001 |
| | First wife | 50 (14.58) | 4.96 (4.23) | | 30 (9.43) | 4.73 (4.43) | |
| | Later wife | 56 (16.33) | 11.41 (6.83) | | 52 (16.35) | 10.88 (7.32) | |
| Husband's relative wealth ^b | Husband less wealthy | 109 (23.70) | 8.06 (5.75) | 0.02 | 96 (23.41) | 7.86 (5.84) | 0.17 |
| | About the same | 199 (43.26) | 6.31 (4.74) | | 184 (44.88) | 6.54 (5.54) | |
| | Husband wealthier | 152 (33.04) | 7.02 (4.86) | | 130 (31.71) | 6.87 (5.11) | |
| Husband's relative education ^b | Husband has less education | 67 (14.86) | 6.57 (5.84) | 0.75 | 59 (14.60) | 6.15 (6.15) | 0.39 |
| | About the same | 230 (51.00) | 6.79 (4.66) | | 212 (52.48) | 6.88 (4.72) | |
| | Husband has more education | 154 (34.15) | 7.08 (5.13) | | 133 (32.92) | 7.32 (6.16) | |
| Received bridewealth ^a | Yes | 238 (69.19) | 7.35 (5.36) | 0.10 | 226 (70.85) | 7.62 (5.97) | 0.03 |
| | No | 106 (30.81) | 6.37 (4.58) | | 93 (29.15) | 6.07 (4.62) | |
| Informal marriage | No | 343 (74.24) | 7.05 (5.15) | 0.55 | 318 (77.37) | 7.17 (5.65) | 0.20 |
| | Yes | 119 (25.76) | 6.73 (4.86) | | 93 (22.63) | 6.33 (4.89) | |
| Who chose husband | Father and/or mother | 20 (4.32) | 8.20 (5.52) | 0.004 | 12 (2.91) | 6.50 (3.29) | 0.02 |
| | Woman only or woman and another person | 429 (92.66) | 6.77 (4.94) | | 390 (94.66) | 6.86 (5.50) | |
| | Someone else | 14 (3.02) | 11.07 (6.64) | | 10 (2.43) | 11.90 (5.17) | |

^a p-value from likelihood ratio test.

^a Formally married women only.

^b Excluding 'don't know' responses.

predictors of marital stability, spousal age gap itself is not.

3.4. Women's wellbeing and fertility

We consider two aspects of wellbeing - empowerment in household decision making, and a measure of depressive symptoms as an indicator of mental health - with a sexual conflict model predicting lower wellbeing in marriages with relatively older husbands. Bivariate relationships between wellbeing and structural/demographic variables are presented in Table 1, and union-level characteristics in Table 3; these statistics are limited to current marriages as wellbeing is measured only at time of survey. There is no bivariate relationship between spousal age gap and the wellbeing outcomes, but wellbeing is correlated to other union-level characteristics. Women who are married at younger ages have lower empowerment than women married later (but see Schaffnit, et al. 2019 for dedicated multivariate analysis of age at marriage and women's wellbeing). Women who reported marrying relatively wealthier men also had lower empowerment scores than women who reported marrying men from equal or poorer backgrounds. Mental health was better for women married to men with similar education levels and for women whose parents chose their husbands. Finally, formal marriage was associated with higher empowerment and better mental health than informal marriage.

Fig. 3 shows the raw relationships between spousal age gaps and both wellbeing measures, and adjusted coefficients for union-level variables from linear regressions controlling for age, village, and other potential confounders (i.e. union-level characteristics correlated with spousal age gap and outcome). Among the large majority of women married to older men, having an incrementally older husband did not predict empowerment (Fig. 3D; Supplementary Table S3) or mental health (Fig. 3E; Supplementary Table S4), but in the rare cases where a woman was older than her husband, she tended to have lower empowerment ($\beta = -0.7, p = 0.02$) and worse mental health ($\beta = -1.0,$

$p = 0.01$) compared to women married to men 5–7 years older. Women married to similarly aged men also had lower empowerment scores than women married to men 5–7 years older ($\beta = -0.3, p = 0.04$). Independently of spousal age gap, we also observe that, while the overwhelming majority of women chose their own husband, those who stated that their parents chose their husband tended to have better mental health compared to women who chose their own partners ($\beta = 0.7, p = 0.02$).

Finally, we tested for a relationship between spousal age gap and reproductive success, as measured by age-adjusted fertility, but found no relationship. Bivariate relationships are shown in Table 3. Age-adjusted fertility was higher for women who married at younger ages, were the first wife of a polygynous man, and were married to men chosen by their parents. Fig. 3 shows raw relationships between spousal age gaps and age-adjusted fertility, and adjusted coefficients for union-level variables from linear regressions controlling for village and other potential confounders (Supplementary Table 5). There is some suggestion that having a younger husband is linked to lower fertility, but this relationship is not significant to the 0.05 level. Mirroring bivariate findings, first wives in polygynous marriages tended to have higher fertility than monogamously married women ($\beta = 1.0, p = 0.001$), and women whose parents had chosen their husbands had higher fertility than women who chose their own husbands alone or with help ($\beta = 1.1, p = 0.006$).

4. Discussion

4.1. Are older husbands beneficial or costly to women?

We document a widespread preference among Sukuma women for husband-older marriages. This finding is in line with focus group data from our qualitative work in the same population wherein participants described ideal ages of marriage as younger for women than men

Table 3
Proportion of ever-married women still married to their first husband (n = 412) and mean empowerment score, mental health score, and age specific fertility for currently married women (n = 412) by union-level characteristics.

| | | Still married | | Empowerment score | | Mental health score | | Age-adjusted fertility | |
|---|--|---------------|----------|-------------------|-----------|---------------------|-----------|------------------------|-----------|
| | | % | p-value* | Mean (sd) | p-value** | Mean (sd) | p-value** | Mean (sd) | p-value** |
| Spousal age gap (current marriage) | Woman older | 57.14 | 0.73 | −0.19 (0.76) | 0.19 | −1.04 (2.02) | 0.12 | −0.19 (1.40) | 0.15 |
| | Same age | 72.22 | | 0.26 (0.92) | | 0.02 (0.97) | | 0.35 (1.57) | |
| | Man 2–4 years older | 72.50 | | 0.42 (0.91) | | −0.04 (1.01) | | 0.60 (1.43) | |
| | Man 5–7 years older | 68.42 | | 0.52 (0.91) | | −0.02 (0.87) | | 0.37 (1.36) | |
| | Man 8–10 years older | 77.33 | | 0.56 (0.87) | | −0.22 (1.22) | | 0.76 (1.67) | |
| Age at marriage | Man 11+ years older | 72.83 | | 0.48 (0.75) | | −0.11 (0.91) | | 0.20 (1.51) | |
| | < 18 years | 65.06 | 0.06 | 0.30 (0.82) | 0.01 | −0.01 (0.96) | 0.23 | 1.04 (1.45) | < 0.001 |
| | 18–19 years | 76.33 | | 0.43 (0.88) | | −0.02 (0.96) | | 0.64 (1.26) | |
| | 20+ years | 73.47 | | 0.61 (0.88) | | −0.19 (1.08) | | −0.14 (1.48) | |
| Wife number ^a | Only wife | 83.06 | < 0.001 | 0.55 (0.89) | 0.43 | −0.00 (0.98) | 0.32 | 0.43 (1.44) | 0.004 |
| | First wife | 53.70 | | 0.36 (0.94) | | 0.19 (0.75) | | 1.40 (1.40) | |
| | Later wife | 70.69 | | 0.44 (0.80) | | −0.14 (0.95) | | 0.49 (1.74) | |
| Husband's relative wealth ^b | Husband less wealthy | 69.49 | 0.80 | 0.65 (0.92) | 0.01 | −0.26 (0.95) | 0.15 | 0.43 (1.49) | 0.30 |
| | About the same | 72.64 | | 0.47 (0.85) | | −0.06 (1.07) | | 0.34 (1.45) | |
| | Husband wealthier | 72.73 | | 0.30 (0.85) | | −0.00 (0.96) | | 0.60 (1.49) | |
| Husband's relative education ^b | Husband has less education | 73.53 | 0.03 | 0.47 (0.97) | 0.22 | −0.28 (1.21) | 0.04 | 0.31 (1.29) | 0.26 |
| | About the same | 77.73 | | 0.53 (0.84) | | 0.02 (0.98) | | 0.35 (1.51) | |
| | Husband has more education | 65.85 | | 0.36 (0.89) | | −0.20 (0.95) | | 0.60 (1.54) | |
| Received bridewealth ^a | Yes | 82.93 | < 0.001 | 0.56 (0.86) | 0.12 | 0.01 (0.98) | 0.49 | 0.49 (1.52) | 0.46 |
| | No | 61.82 | | 0.40 (0.90) | | −0.07 (0.92) | | 0.63 (1.51) | |
| Informal marriage | No | 76.55 | < 0.001 | 0.51 (0.88) | 0.02 | −0.01 (0.96) | 0.002 | 0.53 (1.51) | 0.018 |
| | Yes | 59.09 | | 0.27 (0.85) | | −0.36 (1.13) | | 0.12 (1.34) | |
| Who chose husband | Father and/or mother | 60.00 | 0.34 | −0.11 (0.65) | 0.06 | 0.58 (0.45) | 0.05 | 1.78 (1.25) | 0.01 |
| | Woman only or woman and another person | 72.57 | | 0.48 (0.87) | | −0.10 (1.02) | | 0.40 (1.48) | |
| | Someone else | 62.50 | | 0.34 (1.00) | | −0.36 (0.90) | | 0.31 (1.32) | |

* p-value from chi-squared test.

** p-value from likelihood ratio test.

^a Formally married women only.

^b Excluding 'don't know' responses.

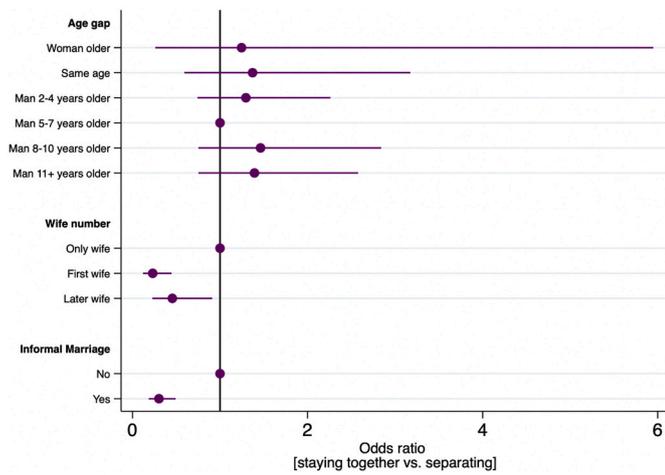


Fig. 2. Odds ratios from logistic regression predicting still being married to first husband ($n = 491$). Model controls for all variables plotted and current age (see Supplementary Material Table S2). 95% confidence intervals are illustrated.

(Schaffnit, Urassa, & Lawson, 2019; see also Nnko & Pool, 1997), along with age preferences recorded more generally across a diverse range of human populations (Conroy-Beam & Buss, 2019). However, actual age gaps are on average almost twice as large as ideal spousal age gaps, indicating that women frequently marry older men than stated ideals. It is unclear to what extent this finding is remarkable; despite a large literature on age preferences (Conroy-Beam & Buss, 2019), we are not aware of prior studies considering (a)synchrony between ideal and actualized spousal age gaps. Supporting the notion of conflicting age gap preferences, we find that particularly large spousal age gaps are most common when women's marriage partners were chosen by neither the woman or her parents. Such marriages are likely arranged by extended kin, who are likely to be relatively less concerned with the woman's wellbeing. Age gaps are also larger when bridewealth transfers are made, suggesting that financial compensation may be required to make marriage to much older men desirable or at least tolerable to women. However, a lack of clear relationships of spousal age gap with

food security, or husband's relative wealth and education, suggests socioeconomic patterns of mate choice are more nuanced than men simply trading wealth for female youth. This may be because, in this urbanizing context, higher socioeconomic status may also alter women's earning potential and educational attainment, rendering youth less fundamental to their perceived 'value' on the mating market. Male education may also shift gender norms away from traditional values that prioritize female youth in marriage partners.

A discrepancy between ideals and actual age differences is consistent with sexual conflict over spousal age gap, but is itself not diagnostic evidence. Further evidence of sexual conflict over spousal age gaps could come from a link between large gaps and divorce indicating acrimony between spouses, or a demonstration that women with relatively larger husband-older age gaps suffer from poor wellbeing and/or lower reproductive success. We find that spousal age gaps were unrelated to marital stability, suggesting it has no discernable negative or positive impact on happiness with a marriage. Arguably marital stability may present a weak test of sexual conflict if controlling men prevent women from leaving unhappy marriages. Yet prior studies of this population indicate lack of affection and undesirable male behaviors are common grounds for divorce, suggesting women are active agents in the termination of marriages. In a 1996/7 survey of 314 divorced women from Kisesa, Boerma et al. (2002) report that alcoholism of the husband (38%), lack of love (31%), unfaithfulness (27%), and violence (24%) were the most common reasons for divorce, followed by non-payment of bridewealth (7%) and infertility (3%). Our findings here also indicate that divorce is more common among informal marriages and where bridewealth is unpaid, consistent with the notion that such marriages are relatively weaker unions to begin with. Bridewealth payments may also act to increase economic incentives and social obligations to remain married.

We also observe husband-older relationships have no discernable costs to women's wellbeing and reproductive success. In fact, compared to women who are the same age or older than their husband, those married to older men had higher empowerment, and compared to women married to younger men, those with older husbands had better mental health. This finding could be taken as evidence of husband older marriages in general benefiting women, and is consistent with a study in South Africa, where women reported a preference for older males as

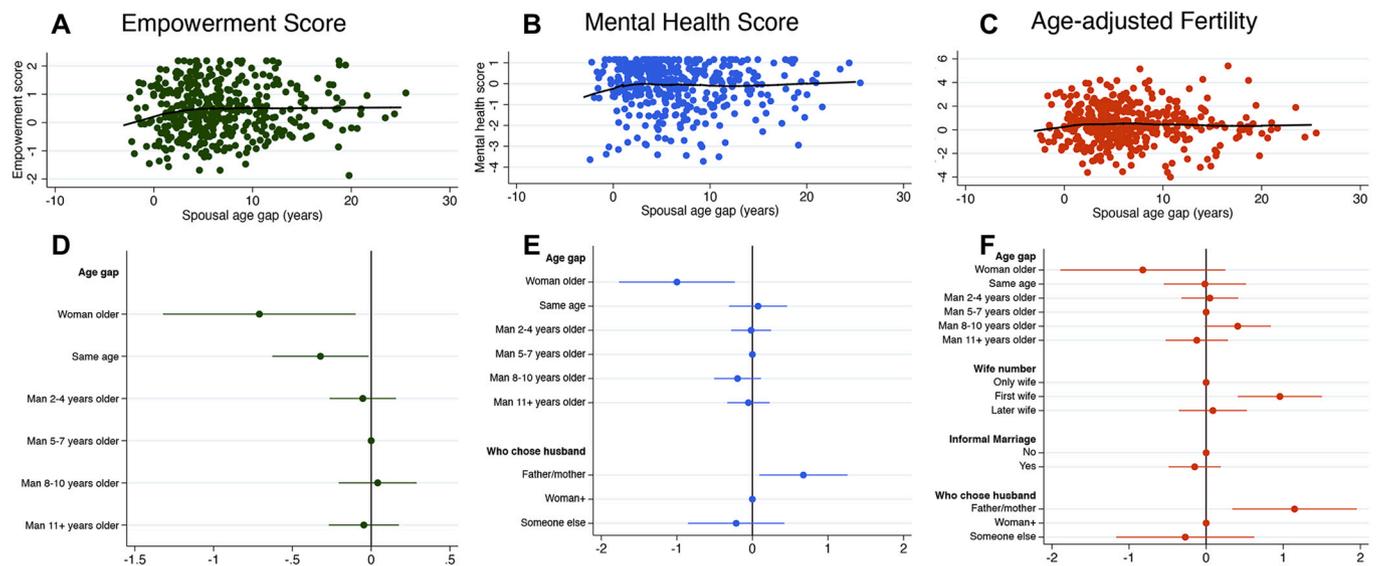


Fig. 3. Relationships between empowerment score (A, D), mental health score (B, E), and age-adjusted fertility (C, F) and spousal age gap for currently married women showing raw data (A-C) and coefficients for spousal age gap and other union level characteristics from regression models (D-F). Model output (D-F) controls for women's current age, place of residence, and shown union-level variables (see Supplementary Materials). 95% confidence intervals are illustrated. Note "Woman +" refers to women who choose their partner alone or with another person.

mates because they are perceived to be more respectful and less violent than men closer in age (Beauclair & Delva, 2013). However, among the overwhelming majority of women with an older husband, incremental increases in spousal age gap are not related to either measure of well-being or to fertility, suggesting that this reflects a qualitative distinction between women who do and do not follow strong social norms of husband-older marriage. There is no evidence that relatively larger husband-older age gaps benefit women among those that do marry older men. On the basis of our available data we therefore conclude that relatively large husband-older spousal age gaps are generally neither costly nor particularly beneficial in this population in terms of empowerment, mental health or fertility. Intriguingly, the minority of women whose parents choose their partner had relatively high mental health and fertility. We are hesitant to interpret this pattern without further supporting data, but future research should consider potentially differing expectations of married life, and consider how kin involvement in the marriage process relates to wider patterns of emotional and economic support from kin which may impact women's wellbeing.

The interpretation of our results comes with several important caveats. First, while we document differences in ideal spousal age gap, our analyses do not enable us to measure the strength of such preferences in comparison to other traits. Stated ideals may also reflect latent assumptions about ideal circumstances of marriage, rather than individual preferences per se. It is possible therefore that discrepancies between ideal and actual gaps are not especially meaningful. Second, our study can only tell us about the observed range of age gaps, and so we cannot make conclusions about more extreme husband-older marriages (e.g. of 15+ years), which are relatively unusual in this population. Third, our cross-sectional analysis cannot definitively establish causality in observed relationships. It would be ideal for future studies to revisit the relationships discussed here utilizing longitudinal analysis to investigate the possibility of selection bias. This could occur, for example, if a woman's pre-marital characteristics influence her choice of marriage partners, as has been demonstrated in studies of polygyny (Lawson & Gibson, 2018). Finally, our conclusions rest on a limited number of wellbeing indicators. For example, our measure of mental health is notably limited to depressive symptoms. Future research is thus required to fully assess evidence for potential wellbeing (or fitness) consequences of marriage to older men for women, and the hypothesized benefits of husband-older marriages for men. Sexually transmitted infections, including HIV, may be particularly relevant in this context, since sex with older men (who have had more pre-marital sexual partners) is a key transmission risk for young women (Boerma et al., 2002).

4.2. Why are women in same-age/wife-older marriages disadvantaged?

Women primarily reported ideals for husband-older marriages, a view reinforced in focus group discussions (Schaffnit, Urassa, & Lawson, 2019), indicating that husband-older marriage represents a strong social convention in this population. We found that women in wife-older marriages had relatively poorer mental health and lower empowerment than those in husband-older marriages. This result rests on a small sample of women who married similar aged or younger men in this population, yet is complimented by several studies from other cultural contexts which come to similar conclusions albeit considering different wellbeing outcomes. This includes studies wherein women in wife-older marriages have been found to be more likely to suffer from depression (Kim et al., 2015) and experience intimate partner violence (Adebawale, 2018; Hindin, Kishor, & Ansara, 2008; Jewkes, Levin, & Penn-Kekana, 2002; Kishor & Johnson, 2005; Otieno, 2017).

During data collection in 2017, we observed that female Tanzanian research assistants remarked on wife-older pairings as embarrassing or shameful, suggesting costs of norm violation may contribute to disadvantages for women in wife-older marriages. Men in wife-older marriages were seen as 'push-overs' and their wives stereotyped as

forceful or controlling. Our ongoing research on marriage in this population also reinforces this interpretation. In a focus group discussion with women aged 19–24 conducted in 2019, one participant reflected on the undesirability of having a younger husband: "Maybe you find a man is older than a woman and there would be respect present, but if a woman is older than a man then the marriage is difficult. For example, a woman who is 22 years old - she is supposed to be married to a man who is five years older, 28 or 30 years. They will settle. But if you say a woman is to be older than a man, respect will not be there. The woman will be seeing the man is very young and respect [of the husband] will decrease". Similarly, an unmarried 18-year old woman said during an in-depth interview: "Say maybe I am 25 years old. It doesn't mean I will get married to a man who is either 26 or 27 because it means we will always be fighting. So, looking at my age, I will take a man who is at least 30."

These observations suggest that women who marry younger men face judgement from their peers, and may experience more conflict within a marriage, which could in turn adversely impact mental health. Lower empowerment among women in wife-older marriages could come about, for example, if their husbands behave in more violent or controlling ways in order to counteract stereotypes of weakness or passivity. Alternatively, causal relationships between poor wellbeing and wife-older marriages may go in the opposite direction. For example, women with pre-existing mental health vulnerabilities may have low success on the marriage market, and consequently will be more likely to accept undesirable marriage arrangements, including marriage to a relatively young man who may himself also be relatively disadvantaged. These possibilities are not easy to disentangle without data on women and men's wellbeing both prior to and following marriage.

4.3. Making sense of wider trends

Our findings contrast with widespread assumptions in global health and applied social science where relatively large age discrepancies are frequently conceptualized as harmful for women (Girls Not Brides, 2019; Pyke & Adams, 2010; UNFPA, 2012). Here, male-older spousal age gaps are viewed as both a symptom and a cause of unequal power dynamics ultimately favoring men at a cost to women's wellbeing (Carmichael, 2011; Kishor & Johnson, 2004). Supporting this account, there is some evidence that women in relationships with large spousal age gaps experience higher mortality than women paired with a similarly aged spouse (Drefahl, 2010; Klinger-vartabedian & Wispe, 1989). However, in addition to our findings, a sizeable number of studies indicate that, despite common assumptions, husband-older marriages are not predictive of harm in other domains, most notably intimate partner violence (Adebawale, 2018; Hindin et al., 2008; Jewkes et al., 2002; Kishor & Johnson, 2005; Otieno, 2017).

An alternative possibility is that the "pathological view" (Pyke & Adams, 2010) of husband-older marriages may exaggerate or misidentify underlying trends. Supporting this conclusion, our own review of the literature indicates mixed findings. As mentioned, intimate partner violence, an outcome not assessed in this study, is often noted to be less common in relationships where men are older than women compared to in age-similar or wife-older relationships (Adebawale, 2018; Hindin et al., 2008; Jewkes et al., 2002; Kishor & Johnson, 2004; Otieno, 2017). Qualitative work on power dynamics in age disparate relationships also calls into question whether greater age gaps in male-older relationships are invariably indicative of a male-favored power balance (Pyke & Adams, 2010). False support for sexual conflict over spousal age gap may also occur as large spousal age gaps tend to be confounded by alternative risk factors for poor wellbeing. Indeed, isolating spousal age gap as a driver of women's wellbeing is complicated by the tendency for large husband-older spousal age gaps to covary with other relationship-level characteristics that may not always serve women's interests, including early and polygynous marriages (Barbieri et al., 2005), and simply by virtue of the exaggerated distribution of male-older marriages in relatively low-income and less gender

equalitarian contexts (Carmichael, 2011).

Nonetheless, while we do not find strong evidence for sexual conflict over size of spousal age gap in this population, we also do not find particularly strong evidence that larger husband-older marriages are beneficial for women. This is relevant to the evolutionary social sciences, as many evolutionary studies of mate choice have largely failed to look beyond the apparent mutual compatibility of older men and younger women, underestimating the possibility of sexual conflict. Rather, evolutionarily-grounded research on age gaps is dominated by documentation of preferences at the exclusion of considering how preferences are actualized, and/or measuring the proximate and ultimate consequences of age disparate relationships. Furthermore, while the topic of sexual conflict is well developed in animal studies, its application to human mating and marriage behavior has lagged (for review see Borgerhoff Mulder & Rauch, 2009). Illustrating this point, Conroy-Beam and Buss's (2019) recent and exhaustive review of age preferences in human mating pulls together an impressive compendium of findings demonstrating that women on average prefer older men, but does not raise the possibility that female fitness may nevertheless be better served by smaller age gaps than are optimal for men. Yet, even preference data alone points to potential for sexual conflict over partner age; it has long been recognized that while women generally state ideals for only modestly older men, men more typically desire considerably younger women, especially as they reach older ages themselves (Kenrick & Keefe, 1992). Such distinct preferences are logically incompatible and suggest sexual conflict is unavoidable.

4.4. Conclusions

Our study suggests that Sukuma women in northwestern Tanzania typically prefer to marry slightly older husbands, but frequently marry men older than their stated ideals. However, beyond this indicator of sexual conflict, there are neither obvious costs nor benefits associated with greater age gaps between a wife and her husband. In contrast, other aspects of the marriage – such as cowife status, the payment of bridewealth, the formality of marriage, and absolute age at marriage – are associated with, and are likely more important determinants of a woman's marital stability, mental health, empowerment and reproductive success. Thus, other than adhering to social conventions by avoiding younger husbands, we tentatively conclude that spousal age gap itself is largely of little consequence to the women we studied. While seemingly neutral to women, husband-older marriages may nevertheless serve male fitness interests, with prior research demonstrating that early female marriage is predictive of higher reproductive success (Schaffnit et al. 2019). Observed spousal age gaps may also be a partial byproduct of mating market availability. Globally, the largest spousal gaps are found where polygynous marriage is common (United Nations, 2000). Polygyny leads to a relative shortage of unmarried women, which may in turn motivate men to look for relatively younger women as marriage partners. Whatever the case, the findings of this study are unlikely to be universally generalizable and we caution that a wider global and public health literature routinely emphasizes potential for sexual conflict over spousal age gap across multiple cultural contexts. We conclude by recommending that, often implicit, assumptions about the mutual compatibility of male and female age preferences in the evolutionary human sciences on the one hand, and assumptions about the harms of husband-older marriage in public health on the other, are further examined at both the theoretical and empirical level. As highlighted by Borgerhoff Mulder and Rauch (2009) a decade ago, we still know surprisingly little about the extent of sexual conflict in human mating and marriage.

Author contributions

D.W.L. and S.B.S. conceptualized and designed the study. S.B.S., A.H., D.W.L. and M.U. collected the data. S.B.S. conducted the data

analysis. D.W.L. & S.B.S. wrote the manuscript. A.H. and M.U. contributed to editing the manuscript.

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Data availability

The data associated with this research are available upon request to the authors, provided the planned analysis is first approved by NIMR, Mwanza, satisfies their concerns regarding subject anonymity, and due credit is given to NIMR in the co-production of the data. The authors can facilitate this approval process on request or NIMR can be approached directly.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.evolhumbehav.2020.08.009>.

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