The Impact of Social Networks on Gender Norms

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Abstract

Inequitable gender norms have been identified as one of the major factors to negatively influence HIV-related behavior, domestic violence, and parenting. There is a need for a better understanding of the factors that contribute to the inequitable gender norms, and one potential method to change individual gender norms is through social networks. While there are numerous studies dealing with the social networks influence, there are not many that examine the social networks influence on personal norms. This paper attempts to examine two major channels of social networks influence on gender norms of young men and women, using the interviews conducted with members of 10 camps in in Dar es Salaam, Tanzania. Social network influence is examined using the network autoregressive model that takes into account interdependencies among network members. The results of the estimations provide evidence of the influence of the frequency of communication on personal norms, implying that gender norms of network actors tend to have an impact on gender norms of their alters, and vice versa.

Keywords
Social networks, Gender norms, Network autocorrelation, Structural cohesion, Structural equivalence

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1 Introduction

Gender norms can be defined as social construction and expectations about the appropriate behavior of men and women (Pulerwitz and Barker, 2008). Traditional gender norms and understanding of gender roles entails hierarchical difference, as the social construction of maleness is of higher status and privilege than that of femaleness. The importance of such norms lies in the fact that inequitable gender norms influence HIV-related behavior, contraceptive use, and intimate partner violence (Gomez and Marin, 1996; Go et al., 2003; Schaalma et al., 2009; Barker et al., 2010). In Tanzania, unequitable gender norms have been linked to gender-based violence (Jakobsen, 2014). In 2011, a third of Tanzanian women ages 15 to 49 are estimated to have experienced physical partner violence in the past year (NBS [Tanzania] and ICF Macro, 2011). And several studies demonstrated that women who experience gender-based violence are at higher risk for HIV in Tanzania and elsewhere in Sub-Saharan Africa (Maman et al., 2002; Jewkes et al., 2010). Therefore, gender norms are implicated in women's risk for both HIV and partner violence in Tanzania.

Research suggests that one of the strongest influences on young men′s behavior is peer social norms, or the extent to which men behave according to the behaviors or expectations of their peers (Agadjanian, 2002; Granovetter, 1973; Latkin and Kuamoto, 2010). A lack of attention to social norms was implicated in the failure of a recent adolescent HIV prevention trial in Tanzania to sustain HIV-related behavior change (Wight et al., 2012). A recent systematic review of HIV prevention interventions for youth in Sub-Saharan Africa suggested that few were effective in part because social norms were overlooked, and the researchers advised that future behavioral interventions should focus on changing social norms in order to generate lasting changes in behaviors (Michielsen et al., 2010).

This study contributes to the debate on mechanisms that can be used to influence change in gender norms. We do so by examining the effects of social network structure on gender norms, which is a neglected area of research. To examine processes of social influence in a social network setting, and the impact of social networks on gender norms,

we will use data from a survey conducted by Yamanis and Moody in Tandale district of Dar es Salaam, Tanzania (Yamanis et al., 2010; Yamanis et al., 2013). The youth in Tandale socialize in so-called "camps", and these camps are social networks of predominantly young men and some young women that range in size from 20-60 members. Based on information gathered from all camp members about their individual gender norms, we conduct an analysis of the impact of camps network structures on individual gender norms.

To analyze the influence processes, we look at two major factors of influence according to social network theory (Leenders, 1995): communication, where the influence is through a direct contact between an individual and alter; and comparison, where an individual observes the behavior of similar alters and assumes that the behavior of a similar alter may be "correct". According to social network theory, an individual changes his or her behavior to conform to the new behavior through one or both of these influence processes. Notions of communication and comparison are formalized in social network theory through concepts of structural cohesion and structural equivalence (Burt, 1978).

There are a few studies that attempt to estimate the relative importance of communication (cohesion) and comparison (equivalence) as channels of influence on a particular behavior. Galaskiewicz and Burt (1991) find evidence overwhelmingly in favor of behavioral influence by comparison (structural equivalence). By comparison, Harkola and Greve (1996) find evidence of both communication and comparison as influence mechanisms, while Mizruchi (1990, 1993) argued in favor of comparison as a mechanism of influence, in addition to communication. According to Leenders (1995, pp. 19-20), actors that are not tied may rely only on the behavior of others, since it is the only behavior that they can observe. There are no studies trying to estimate the importance of these influence mechanisms and their impact on individual social norms. This study attempts to fill that gap in research. Our hypothesis is that both processes, communication and comparison, have a significant impact on personal gender norms among members of camps in Tanzania. In particular, we would expect that individuals who are close to each other both in terms of cohesion and equivalence would tend to have similar gender norms.

2 Social networks influence: theory and empirics

2.1 Small groups and social influence

Empirical studies of social networks ideally include data from all network members as well as relationships among the members to constitute the "complete network". Complete networks are sometimes referred to as bounded networks because they are bounded or closed groups for which a researcher has surveyed all members. This does not mean that the members have no relations outside the group, only that all members of said group have been surveyed.

Clear and easy specification of boundaries is one reason why empirical studies have placed particular emphasis on the role that peers play in influencing adolescents. Classrooms, for example, are easy to use as networks since group boundaries are externally imposed. Also, during adolescence, time spent with peers increases as adolescents spend more time in school, engage in sports, start dating, etc. Several studies have found that perceived behaviors of alters had a strong influence on adolescent substance abuse (Sussman et al., 1988; MacKinnon et al., 1991; Cleveland and Wiebe, 2003; Crosnoe et al., 2004).

A major empirical issue in estimating social influence within small groups is determining whether influence happens via selection or homophily. Homophily is the tendency for people to associate with others who are most similar to themselves, and an individual′s social network tends to be a reflection of herself. The determinants of selection among people can be many: age, gender, race, ethnicity, religion, education or social class, attitudes, and behavior. Thus, both homophily and social influence are likely to lead to similarity among connected individuals. Empirical studies have shown that all of these factors have an impact on the establishment of relationships (Katz and Proctor, 1959, Shrum et al., 1988, Marsden, 1988).

2.2 Mechanisms of social network influence

In social networks analysis, "peers" refer both to close relationships with intense interactions, and to a larger group of acquaintances that belong to the same group and may or may

not have direct relationships. The reference group is an individual's frame of reference and source for ordering his or her experiences and ideas, and people compare themselves not only to groups with whom they are directly connected but also to whom they are not directly connected.

In social network theory, the notion of the frame of reference has crystallized around two processes (Leenders, 1995): communication, in which an individual uses others to whom he is connected as a frame of reference, and comparison, in which an individual uses others which she feels as similar as a frame of reference. Therefore, communication refers to influence through direct contact between an individual and a significant other like a friend. In social comparison, an individual perceives the behavior of another that he sees as similar and assumes that the behavior of a similar other may be "correct". Thus an individual changes his own behavior to conform to the behavior of a similar person .

Notions of communication and comparison are formalized in social network theory through concepts called structural cohesion and structural equivalence, respectively (Wasserman and Faust, 1994). Structural cohesion refers to communication and defines social proximity as the number and strength of paths that connect two individuals in a network. Structural equivalence refers to comparison and defines social proximity in terms of the similarity of individual positions within a network; so it can be defined as the similarity of connections of two individuals to all other actors in the network.

In a seminal study of the diffusion of technological innovation among physicians, Burt (1987) found that where diffusion did occur it was through structural equivalence, not cohesion. His explanation of the importance of structural equivalence in this case was the competition that exists between people in similar positions who compare themselves to others to evaluate their own relative adequacy. Apart from Burt (1987), the influence by structural equivalence had mostly been studied in organizational literature: Galaskiewicz and Burt (1991) find evidence overwhelmingly in favor of behavioral influence by structural equivalence, Harkola and Greve (1996) find evidence of both cohesion and equivalence as influence mechanisms, while Mizruchi (1990, 1993) argued in favor of structural equivalence

as a mechanism of influence, in addition to cohesion. There are also few studies that provide an analysis of cohesion and equivalence as channels for social influence in adolescents′ substance use and risk behavior (Berten and Van Rossem, 2011; Fujimoto and Valente, 2012). Fujimoto and Valente (2012) found that structural equivalence was a stronger influence than cohesion on alcohol drinking and cigarette smoking.

To the best knowledge of the authors, there are no studies of social network influence on individual gender norms or individual attitudes on gender roles. One of the contributions of this study will therefore be to provide a social network analysis of the social influence on personal gender norms and attempt to examine the relative importance of cohesion and structural equivalence as avenues of social influence on individual gender norms.

However, this study is not merely a methodological exercise, but may have practical importance. Despite the advances made in the past decades, gender norms still reflect the historically unequal power relations between men and women and reinforce the underlying social structures of gender inequality. Since norms reflect deeper social structures, and since they are held in place and reinforced by numerous social institutions, changing gender norms is a difficult task. By providing an analysis of social network influence, this study contributes to the policy debate on possible avenues of changing the existing gender norms, and whether it makes sense to try changing the norms through social and community networks.

3 Methodological framework

3.1 Gender norms

Social norms are rules of behavior that coordinate human interaction with others. Gender norms can be defined as social construction and expectations about the appropriate behavior of men and women (Pulerwitz and Barker, 2008). Gender construction starts with assigning a person to a sex category based on what the genitalia of a baby look like at birth. Traditional gender norms and understanding of gender roles entails hierarchical difference, as the social construction of maleness is of higher status and privilege than the

construction of femaleness. The importance of such norms lies in the fact that inequitable gender norms are now seen as a negative influence on sexual reproductive health related behaviors, as well as men′s use of violence against women. Empirical studies have shown how inequitable gender norms negatively influence male-female interaction, and the impact on HIV-related behavior, contraceptive use, domestic violence, and parenting (Gomez and Marin, 1996; Go et al., 2003; Barker et al., 2010). Hence, gender equity and a change in gender norms are goals that are considered to be worthy of pursuit. In the past decade, there have been a number of programs implemented at the national, community and household levels, which promote gender-equitable norms (see Keleher and Franklin, 2008, for an overview).

This study contributes to the debate on the different mechanisms that can be used to influence change in gender norms. We will do so by examining the effects of network structure on gender norms. In order to measure the gender norms for each actor, we will use the Gender-Equitable Men (GEM) scale, developed by Pulerwitz and Barker (2008). The GEM scale emerged from the social constructionist perspective of gender identity, which argues that cultural setting and social influence provide a version (or multiple versions) of appropriate behavior for men and women (p. 324). Since we are interested in social influence, personified by a social network setting, the GEM scale seems an appropriate choice to measure personal gender norms.

3.2 Network autoregressive model

As an individual changes her behavior and attitudes in response to the perceived behavior and attitudes of alters, such change also has a potential impact on alters. Hence, in a social network the attitudes of individuals are by definition interdependent, and thus estimation methods need to take into account such interdependence. Network autocorrelation models are based on the assumption of interdependence among individuals, and they are the extensions of the models used in spatial statistics. In this study, we use a variation of the network autocorrelation model known as the network autoregressive or network effects model (Marsden and Friedkin, 1993; Berten, 2008), which is based on

the spatial autoregressive/effects model (Leenders, 1995; Neville et al., 2004; LeSage and Pace, 2008; Berten and Van Rossem, 2011). The network autoregressive/effects model (we will use these two terms interchangeably) includes the direct effects of one's individual response on another's, which is consistent with the presence of an influence process.

Let y be a $n \times 1$ vector of values of a dependent variable for the individuals making up a social network, and let X denote a $n \times m$ matrix of m personal attributes of n individuals. To include the potential impact of alters on an individual, we need to account for the fact that closer individuals are likely to have a higher impact. In order to do so, we can construct a matrix W that would contain *proximity* (inverse of distance) of each individual to every other individual in the network.

In the matrix W, each entry w_{ij} is a proximity of individuals i and j, so larger w_{ij} indicates closer individuals. An impact of the complete network on an individual is captured by coefficient ρ, while the impact of personal characteristics is captured by incorporating covariates X :

$$y = \rho W y + X\beta + \varepsilon \tag{1}$$

When $\rho = 0$ the model reduces to a standard linear regression equation $y = \beta X + \varepsilon$, while for $\beta = 0$ the model reduces to the pure network model. Hence, the parameter ρ is a network effects coefficient that measures to what extent the attitude or behavior of an individual is dependent on the mean attitude or behavior of the individual's peers.

In order to examine the impact of structural cohesion, we use the W as a matrix of row-normalized reported alters proximities. On the other hand, in the case of influence by structural equivalence, W would be the row-normalized structural equivalence proximities.

3.3 Structural cohesion and structural equivalence

Structural cohesion is defined as a number, length, and strength of paths that connect two individuals, or their social proximity. The most restrictive definition of cohesion is simple adjacency in which two individuals are proximate if, and only if, they are directly tied in the network. Such cohesion could be called *strict cohesion* (Leenders, 1995, pp. 20-21). Generalization of the cohesion definition permits two individuals to be proximate,

while not directly tied, if they are connected by several connections via intermediaries. In a binary network in which ties do not carry a weight, but are simply given as 0 and 1 (tie-no tie), distance to a friend is equal to 1, and distance to a friend of a friend is equal to 2.

Structural equivalence is defined by the degree of similarity of network profiles of individuals in the network. Two individuals are structurally equivalent if they are embedded in a social structure in the same way, and they have the same pattern of relations with others in the network. This means that individuals i and j are equivalent if they have exactly the same ties to and from all others. The mechanism of influence is driven by comparison such as imitation and role-playing or by competition between equivalent individuals. In a small network, such as the one to be used in this study, it is reasonable to assume that structurally equivalent individuals do know each other, and have perceptions about each other's attitudes and behavior.

3.4 Disentangling cohesion and equivalence

Although cohesion and equivalence constitute different potential mechanisms of social influence, they are not easily separable in empirical studies. They are different but not disjoint. Two equivalent individuals are similarly related to all others in the network, and are thus subject to similar influence during their contact with others. If two equivalent individuals become similar by communicating with each other, then it may not be possible to separate cohesion and equivalence as influence mechanisms.

The problem of distinguishing between cohesion and equivalence in network analysis is still not resolved, since the distinction is not straightforward and the processes are strongly interrelated. Burt (1987) has described situations in which equivalence and cohesion can and cannot be disentangled by providing three examples (Burt, 1987; Fujimoto and Valente, 2012). In Figure 1a, actors i and j are directly tied, so that influence between them is predicted by cohesion. These actors are also structurally equivalent since they share the same relations to each other and to the other actors in the network. Hence, in this case structural cohesion and equivalence overlap and, if the actors are similar, it is

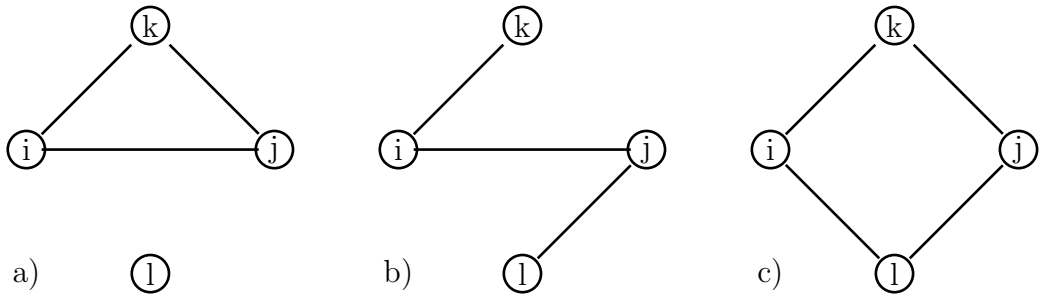

Figure 1: Examples of network structures in which cohesion and/or equivalence predict influence between actors. Source: Fig. 1 in Burt (1987, p. 1292).

hard to distinguish whether they are similar due to cohesion or due to equivalence. Figure 1b provides an example in which cohesion predicts network influence between actors i and j while equivalence does not. Actors i and j are directly tied so they are expected to influence each other, but they have different patterns of relations within the network and are not structurally equivalent. The last example given by Burt is Figure 1c, which illustrates the situation in which structural equivalence is the mechanism of influence, while cohesion is not. Actors i and j do not have a tie between them and do not socialize with each other, but they do have the same pattern of relations as they are tied to the same alters. In this case, influence is predicted by structural equivalence.

In this study we will use the method previously used by Fujimoto and Valente (2012) to separate the effects of cohesion and equivalence. Structural equivalence for adjacent actors will be assigned the value of zero. By using zero values for adjacent actors, structural equivalence will only measure the degree of exposure to alters that are not directly tied.

4 Data and methods

4.1 Tandale survey

We use data from a survey conducted by Yamanis and Moody in Tandale district of Dar es Salaam, Tanzania (Yamanis et al., 2010; Yamanis et al., 2013). The youth in Tandale socialize in locally named "camps". Camps are social networks of young men and women with a range of number of members between approximately 20 and 60. Each camp has a physical space where members gather. Camps also have democratically elected

leaders, including chairperson, secretary, and treasurer. These camps were chosen for research because men who socialize in the camps reported high levels of HIV risk behavior, including concurrent sexual partnerships and symptoms of sexually transmissible infections. The goal of the current survey was to collect information on the youth′s social and social network characteristics and to explore how structural features of the camp networks influenced young men′s engagement in concurrent sexual partnerships.

Ten camps were purposively selected for inclusion in the current study. In the prior PLACE study, a subsample of all male camp members who were ages 15-19 were interviewed at each of the 57 camps. The camps were first ordered from lowest to highest rates of concurrent partnerships, divided into ten groups, and then the researchers sequentially selected every 6th camp in each group to obtain a selection of ten camps. All members of the ten selected camps, regardless of age, were eligible and invited to complete the study.

As part of the survey, men and women in ten camps were interviewed about their relationships, socio-economic characteristics, and about their opinions on various subjects. A total of 659 people were interviewed, 495 men and 194 women. All members of the ten camps were asked four questions from the GEM scale questionnaire designed by Pulerwitz and Barker (2008). All individuals were asked whether they agreed, partially agreed, or disagreed with the following statements:

- It is the man who decides what type of sex to have;
- Men need sex more than women do;
- A man needs other women, even if things with his wife are fine;
- If a woman cheats on a man, it is okay for him to hit her.

The items are coded in such a way that higher scores indicate greater endorsement of gender inequality (agree=2, partially agree=1, disagree=0). The sum of all four answers was used as the dependent variable, where the value of 8 indicated full endorsement of gender inequality, and the value of 0 was a full endorsement of gender equality.

To obtain information on the structure of participants′ social networks, the survey

asked participants to name up to five people in a given social domain. Respondents were asked to name up to 15 alters: 5 people with whom they discussed problems and personal matters ("problems network"), 5 people with whom they socialized ("socialized network"), and 5 people with whom they had worked in the past 30 days ("work network"). For each alter, respondents specified alter′s name, age, and whether the alter was in the same camp as the respondent. Of the 9,885 possible alters (659 respondents 15 alters per respondent), 3,373 were labeled as sharing the same camp as the respondent. Alters were matched to the list of respondents using a computerized matching process, and after the removal of duplicates, 3,024 relationships were identified in ten camps. In this way, we have the relationships for all participants in all camps.

As a result, each of the ten camps is a bounded and complete network, and we have the information about network relationships for all camp members. Based on this information, we constructed the adjacency 659×659 matrix, where we included a values of one in each ij cell where the i camp member identified the same-camp j member as one of his or her 15 alters.

All variables used in the analysis were standardized as deviations from the mean. A set of control variables included personal information and characteristics that could have an impact on individual gender norms. First of all, there may be an effect of age and gender on personal norms, so age in years was used as a control, and a binary variable for gender had a value of one if the respondent is female. Education level was included as a set of binary variables for different levels of completed schooling. Also, a binary variable for current students was used with a value of one if the respondent was a student. Religious affiliation was included as a control variable, and indicated whether respondents were Christian, Muslim, or neither. Marital status and number of children was also included as controls.

4.2 Empirical setup

The empirical model followed equation (1) above, where y is the dependent variable, personal gender norms, W is a weights matrix of the network structure, X are personal

attributes of the respondents, and ε is a normally distributed error term with zero mean and equal variances.

Incorporating cohesion into the network structure matrix W required the calculation of geodesic or shortest network distance d_{ij} along relational ties between individuals. Immediate friends connected directly have a geodesic distance of $d_{ij} = 1$, while friends-of-friends, connected through two ties (via another individual) had a geodesic distance of $d_{ij} = 2$, up to the point at which for two unconnected individuals geodesic distance is infinity.

There are several measures of structural equivalence described in the literature, and in this study we used the Euclidean distance and the Jaccard distance as two separate measures. The difference between these two measures is that the former provides a measure of dissimilarity, while the latter is the measure of profile similarity.

For structural equivalence measured by Euclidean distance, let a_{ik} be the 1 or 0 value of a tie from actor i to actor k. Distance measure of structural equivalence for actors i and j is the distance between rows i and j and columns i and j of the adjacency matrix:

$$d_{ij} = \sqrt{\sum_{k=1}^{n} [(a_{ik} - a_{jk})^2 + (a_{ki} - a_{kj})^2]} \tag{2}$$

for $i \neq k$ and $j \neq k$, and n is the number of actors in the network. If two actors are structurally equivalent, the entries in their respective rows and columns are identical, so the Euclidean distance between them is equal to zero. However, using the Euclidean distance method, two actors who have no common alters could still be close to each other if the number of alters they identified is low, so there is low dissimilarity between them. Therefore, in order to also measure similarity of profiles, we used Jaccard distance, which measured the similarity of profiles of actors i and j by counting the same connections and computing the ratio of the same relationships with a sum of all relationships reported by these actors. Hence, we ignored cases where neither i or j were tied to k, and computed the percentage of reported ties that were common. For Euclidean equivalence, we used inverses of equivalence distances. For Jaccard equivalence, we used computed ratios.

Matrix cell w_{ij} measured proximity from actor i to actor j, and according to the

cohesion hypothesis, we expected that actors that are closer to each other (exhibit higher proximity) had more influence on each other. For cohesion, we used the inverse of geodesic distance as a proximity measure, so that the existence of a direct tie from actor i to the actor j was a proximity of 1, while the indirect ties were the inverse of the paths.

In an attempt to separate cohesion and equivalence, we followed the method suggested by Leenders (1995) and used by Fujimoto and Valente (2012). Structural equivalence for adjacent actors was assigned the value of zero, so that structural equivalence only measured the degree of exposure to the gender norms of alters that were not directly tied. Following such computations of proximities, for both cohesion and equivalence matrices we used row normalization to allocate social influence among different alters. By using row normalization, every actor was subject to the same amount of influence from all alters, with decreased influence per alter for actors who had a higher number of relations to others (Berten, 2008).

Unfortunately, there is no software for network effects regressions that can specify the existence of different networks or that handle multiple W matrices. Hence, we opted for the 2SLS empirical strategy suggested by Anselin (1988) and Land and Deane (1992). In this approach they suggested that for the network autoregressive model, the dependent variable y is first regressed on the set of personal characteristics X, and the predicted values of y from this first-stage regression are given as $\hat{y}$. These predicted values are then transformed by the proximities matrix W:

$$y^* = W\hat{y} \tag{3}$$

By multiplying the proximity w_{ij} of actors i and j with the predicted value $\hat{y_j}$, we obtained the estimate of the potential influence of j on i. And by summing over all alters, we obtained the measure of the influence of the whole network on actor i. Hence, for an actor i, network influence was predicted as: $y_i^* = w_{ij}\hat{y_j} + w_{ik}\hat{y_k} + w_{il}\hat{y_l} + ...$

In the second stage of 2SLS procedure for network autoregressive/effects model, we used the predicted network influence y^* instead of matrix W. Hence, the network effects

coefficient ρ is the one we were primarily interested in:

$$y = \rho y^* + X\beta + \varepsilon \tag{4}$$

We performed this analysis using the matrix W obtained by merging all relationships, which assumed a tie whenever there was a tie between an actor and alter. We also conducted an analysis separately for each network: problems, socialize, and work. As noted above, we would expect the network effects coefficient to be positive and significant, indicating that network actors which are close to each other also have similar gender norms. Since the survey in Tandale used systematic sampling to select the 10 camps, we could use either fixed or random effects regressions in the second stage. Preliminary analysis in which we compared fixed and random effects using the Hausman test, suggested that random effects estimators are consistent and efficient, implying that use of random effects is the appropriate method of analysis.

5 Results and discussion

5.1 Descriptive statistics

The results in Table 1 (all tables are given in the Appendix) provide the descriptive statistics for the entire sample, a total of 623 members of 10 camps. A total of 36 camp members did not respond to some of the questions, and those members are excluded from the analysis. On the gender norms scale with the values of zero to eight, the average gender norms value for all camps is 4.52. In the sample, 24.2% were women, which means a total of 151 women. There were more Muslims (56%) than Christians (14%). There were also few married persons, 14% in all camps, probably due to the average age of camp members being just above 22 years.

The descriptive statistics of Table 2 provide the overview of all camps, by gender of the camp members. As expected, the average unequal gender norms value for women was lower, indicating that women tend to be more in favor of gender equality. Although

this difference is not statistically significant.

5.2 Results

Regression results for all relationships are given in Table 3, and the results of the first-stage regression are in the column (1). Column (2) uses structural cohesion as the main variable of interest, while columns (3) and (4) provide the estimates for the impact of structural equivalence. The results showed no total network impact on gender norms, neither by cohesion or equivalence. As would be expected, the coefficient on Female was negative and significant, showing that women preferred gender equality. The coefficients on Christian and Muslim were positive and significant, indicating that the religious background had a negative impact on personal views about gender roles.

In subsequent analyses, we examined each social network separately. The problems network included alters for whom respondents said they discussed problems and personal matters. Table 4 provides the results of regressions that included all problems alters in each camp. The network effects coefficient for cohesion is significant. Moreover, network effects of cohesion are significant even when we include potential effects of equivalence in column (4).

The results we obtained for the socialize network in Table 5 showed that there was no network effect for cohesion or equivalence. The results for the work network are given in Table 6. In the work network, cohesion had a strong impact on gender norms. However, the significance of the network effects coefficient for cohesion decreased when we included equivalence measures. This is probably due to the high correlation of cohesion measure and Jaccard proximities (0.51) in the work network. Nevertheless, the inclusion of the equivalence measures provided a robustness check for the cohesion coefficient. The fact that cohesion was still significant when the equivalence measures were included, despite the high correlation with the equivalence measure, indicated robust results.

In order to further examine the network influence processes on gender norms, we conducted the analysis separately for men and women. The results we obtained for the problems network for men and women are shown in Tables 7 and 8. The network effects

on gender norms in the problems network were significant only for women. We conducted an additional analysis for the problems network among women to recode the value when the women's alter was named as a spouse. We recoded the adjacency to be zero instead of one when the respondent indicated that the alter was a spouse. The results of this analysis are given in Tables 9-11. When we recoded spouses to a zero tie, the significance of network effects (both cohesion and equivalence in column (4)) for women disappears (Table 11). The suggests that women who had similar gender norms as their spouses drove the results we obtained for the problems network in Table 4.

It is important to note that the socialize network was the most dense network, and thus the most important contributor to the structure of the all relationships network. We used the Multiple Regression Quadratic Assignment Procedure (MRQAP), with the all relationships matrix as a dependent variable, and problems, socialize, and work network matrices as independent variables, to estimate the relative importance of each network (Dekker et al., 2007). Standardized coefficients of MRQAP on problems, socialize, and work, are 0.38, 0.55, and 0.17, respectively, indicated that the socialize network had the largest impact on all relationships network structure.

5.3 Discussion

The mechanisms of social influence have been given rare attention in the empirical research. This is particularly the case for the influence social norms. Which is why the primary goal of this study was to test two potential mechanisms of influence on gender norms cohesion and equivalence. Previous studies were primarily dealing with the impact of these two mechanisms on behavior, while the influence on attitudes and norms is a neglected area of research.

In accordance with the theoretical expectations and previous research (Friedkin, 1984; Leenders, 1995; Harkola and Greve, 1996; Berten and Van Rossem, 2011), we find strong evidence that the main reference group are nearest alters and that communication is the main avenue of influence. As seen above, cohesion had a significant effect in two out of three network that we examined. This is consistent with the expectation that persons

of trust, with whom actors discuss personal matters and with whom there are frequent interactions, also have the strongest impact on personal attitudes. On the other hand, the insignificant impact of network structures for the socialize relationship could be due to the fact that the socialize network could imply less close and less intimate relationships that the problems network, and also less frequent interactions than the work network.

Consistent with theoretical expectations that equivalence would have no significant impact on attitudes, (Leenders, 1995), we do not find any evidence that this mechanism of social influence has an impact on gender norms. We used two different measures of equivalence, Euclidean and Jaccard. The former definition assumed that two actors with no ties are perfectly structurally equivalent as the value of structural equivalence is dependent on both having and not having the same relations to alters. The latter assumed that two actors are similar only if they have common ties to alters in the network. To the best knowledge of the authors, this is the first study to attempt to compare these two different definitions of structural equivalence.

One important limitation of this study is that the data are cross-sectional, which means that we cannot distinguish between influence and homophily. An individual selects his or her friends and such selection is in part driven by similarity of behaviors and attitudes, or homophily. Therefore, the effects we ascribe to structural cohesion may actually be due to homophily. This may be especially true for the problems network, since we could expect that similar individuals would likely be close and discuss problems because they have similar attitudes and social norms. Our finding that there were significant structural cohesion network effects for the problems network among women may be due to homophily. It is plausible that women in the camps tend to talk about problems and personal matters with alters who share similar views and gender norms. Moreover, when we recoded distances to spouses from one to zero, we saw these networks effects disappear. We might expect that women select spouses who have similar gender norms. Thus this finding provides further evidence of homophily.

In contrast, we would not expect that the selection or establishment of working relationships depends on common gender norms. Thus, we would expect that homophily

should be less pronounced in the work network than in the problems network. The results we obtained for men's work network likely provide evidence of social influence by cohesion. This is particularly evident when we conduct the analysis separately for men and women, given in Tables 12 and 13. In the work network we observed significant network effects on the gender norms of only men, not women. Because cohesion is theorized as a measure of communication, it is possible that the frequency of interactions in the mens work network are driving these results.

6 Conclusion

In this paper we aimed to assess how network structure influences personal gender norms among a sample of young men and women's networks in Tanzania. We explored whether the influence of network structure on gender norms was attributed to structural cohesion or structural equivalence. We conducted network autoregressions on all camps, using both cohesion and equivalence distances between actors as a basis for the distance matrix W.

The impact of social networks on gender norms is an important topic, among other things, because gender norms have an effect on gender-based violence and HIV. It has been shown that opinions on gender norms and gender roles have an impact on partner violence and HIV in Sub-Saharan Africa (Jewkes et al., 2010). There is a need for a better understanding of the social norms that drive sexual behaviors in order to develop HIV and violence prevention programs that will change these norms.

We demonstrated evidence of network influence on gender norms of men and women. Structural cohesion within the men's work network was significantly associated with men's gender norms. This implies that the frequency of interactions through the work network may have particular importance for men. Interventions could thus target men's work networks to promote greater gender equality. Finally, our results suggest that the design and implementation of any intervention aimed at changing gender norms should consider the influence of social networks.

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Appendix: All tables

Table 1: Summary statistics for all camps

.

	Mean	Standard Dev.	Min	Max
Gender norms	4.518	2.652	0	8
Female	0.242	0.429	0	1
Age	22.080	3.459	14	40
Married	0.143	0.350	0	1
Children	0.377	0.629	0	2
Christian	0.140	0.347	0	1
Muslim	0.559	0.497	0	1
One to three grades of high school	0.287	0.453	0	1
Completed high school	0.339	0.474	0	1
Student	0.343	0.475	0	1
Observations	623			

Note: Summary statistics excludes missing values

Table 2: Summary statistics for all camps, by gender

.

	Male camp members				Female camp members			
	Mean	StanDev	Min	Max	Mean	StanDev	Min	Max
Gender norms	5.186	2.485	0	8	2.430	1.998	0	8
Female	0.000	0.000	0	0	1.000	0.000	1	1
Age	22.358	3.315	14	33	21.212	3.755	16	40
Married	0.150	0.358	0	1	0.119	0.325	0	1
Children	0.360	0.613	0	2	0.430	0.678	0	2
Christian	0.119	0.324	0	1	0.205	0.405	0	1
Muslim	0.536	0.499	0	1	0.629	0.485	0	1
One to three grades of high school	0.278	0.448	0	1	0.318	0.467	0	1
Completed high school	0.339	0.474	0	1	0.338	0.475	0	1
Student	0.309	0.463	0	1	0.450	0.499	0	1
Observations	472				171			

Note: Summary statistics excludes missing values

Table 3: All networks impact on gender norms

	(1) Gender norms	(2) Gender norms	(3) Gender norms	(4) Gender norms	(5) Gender norms
Personal characteristics:					
Female	-0.480***	-0.444***	-0.464***	-0.483***	-0.426***
	(0.037)	(0.047)	(0.050)	(0.037)	(0.055)
Age	0.0565	-0.00591	-0.0121	-0.00474	-0.00896
	(0.057)	(0.052)	(0.052)	(0.052)	(0.053)
Married	-0.0263	-0.0152	-0.0123	-0.0125	-0.0122
	(0.047)	(0.046)	(0.046)	(0.046)	(0.046)
Children	-0.0467	-0.0364	-0.0354	-0.0416	-0.0373
	(0.051)	(0.050)	(0.050)	(0.050)	(0.050)
Christian	0.181***	0.182***	0.176***	0.186***	0.178***
	(0.040)	(0.040)	(0.041)	(0.040)	(0.041)
Muslim	0.263***	0.260***	0.250***	0.263***	0.255***
	(0.041)	(0.041)	(0.043)	(0.041)	(0.044)
One to three grades of high school	-0.00662	-0.00340	-0.00805	-0.00594	-0.00497
	(0.041)	(0.042)	(0.042)	(0.042)	(0.042)
Completed high school	-0.0629	-0.0586	-0.0583	-0.0621	-0.0611
	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)
Student	0.0289	0.00500	0.00331	0.00896	0.00614
	(0.048)	(0.047)	(0.047)	(0.047)	(0.047)
Network effects:					
Geodesic proximity		0.0664			0.0486
		(0.047)			(0.053)
Equivalence (Euclidean)			-0.0330		-0.0379
			(0.050)		(0.062)
Equivalence (Jaccard)				0.0327	0.0416
				(0.037)	(0.042)
Constant	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
Observations	623	623	623	623	623
R^2	0.2540	0.2586	0.2568	0.2572	0.2598

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Problems network impact on gender norms

	(1) Gender norms	(2) Gender norms	(3) Gender norms	(4) Gender norms
Personal characteristics:				
Female	-0.407***	-0.460***	-0.480***	-0.409***
	(0.049)	(0.049)	(0.039)	(0.054)
Age	-0.00625	-0.0125	-0.00788	-0.00554
	(0.052)	(0.052)	(0.052)	(0.052)
Married	-0.0138	-0.0106	-0.0126	-0.0145
	(0.046)	(0.046)	(0.046)	(0.046)
Children	-0.0369	-0.0357	-0.0378	-0.0375
	(0.050)	(0.050)	(0.050)	(0.050)
Christian	0.185***	0.176***	0.183***	0.185***
	(0.040)	(0.041)	(0.040)	(0.041)
Muslim	0.258***	0.250***	0.260***	0.258***
	(0.040)	(0.042)	(0.041)	(0.042)
One to three grades of high school	-0.00960	-0.00956	-0.00854	-0.00826
	(0.041)	(0.042)	(0.042)	(0.042)
Completed high school	-0.0632	-0.0606	-0.0620	-0.0613
	(0.046)	(0.047)	(0.047)	(0.047)
Student	0.00783	0.00526	0.00638	0.00756
	(0.047)	(0.047)	(0.047)	(0.047)
Network effects:				
Geodesic proximity	0.120**			0.125**
	(0.050)			(0.056)
Equivalence (Euclidean)		-0.0401		0.000407
		(0.049)		(0.052)
Equivalence (Jaccard)			0.0188	-0.0145
			(0.043)	(0.045)
Constant	0.0000	0.0000	0.0000	0.0000
	(0.035)	(0.035)	(0.035)	(0.035)
Observations	623	623	623	623
R^2	0.2632	0.2571	0.2565	0.2633

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Socialize network impact on gender norms

	(1) Gender norms	(2) Gender norms	(3) Gender norms	(4) Gender norms
Personal characteristics:				
Female	-0.487***	-0.480***	-0.489***	-0.483***
	(0.045)	(0.046)	(0.037)	(0.050)
Age	-0.00708	-0.00778	-0.00635	-0.00681
	(0.052)	(0.052)	(0.052)	(0.052)
Married	-0.0135	-0.0132	-0.0125	-0.0123
	(0.046)	(0.046)	(0.046)	(0.046)
Children	-0.0386	-0.0380	-0.0382	-0.0378
	(0.050)	(0.050)	(0.050)	(0.050)
Christian	0.183***	0.181***	0.180***	0.179***
	(0.040)	(0.041)	(0.040)	(0.042)
Muslim	0.259***	0.256***	0.255***	0.254***
	(0.041)	(0.043)	(0.041)	(0.043)
One to three grades of high school	-0.00668	-0.00740	-0.00803	-0.00843
	(0.042)	(0.042)	(0.042)	(0.042)
Completed high school	-0.0593	-0.0592	-0.0590	-0.0589
	(0.047)	(0.047)	(0.047)	(0.047)
Student	0.00596	0.00530	0.00571	0.00515
	(0.047)	(0.047)	(0.047)	(0.047)
Network effects:				
Geodesic proximity	-0.000995			0.00330
	(0.047)			(0.051)
Equivalence (Euclidean)		-0.0102		-0.00662
		(0.046)		(0.049)
Equivalence (Jaccard)			-0.0218	-0.0219
			(0.039)	(0.041)
Constant	0.0000	0.0000	0.0000	0.0000
	(0.035)	(0.035)	(0.035)	(0.035)
Observations	623	623	623	623
R^2	0.2562	0.2563	0.2566	0.2567

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 6: Work network impact on gender norms

	(1) Gender norms	(2) Gender norms	(3) Gender norms	(4) Gender norms
Personal characteristics:				
Female	-0.448***	-0.500***	-0.471***	-0.461***
	(0.041)	(0.039)	(0.038)	(0.042)
Age	-0.0130	-0.00609	-0.00839	-0.0121
	(0.052)	(0.052)	(0.052)	(0.052)
Married	-0.0198	-0.00809	-0.0194	-0.0148
	(0.046)	(0.046)	(0.046)	(0.046)
Children	-0.0246	-0.0418	-0.0361	-0.0283
	(0.051)	(0.050)	(0.050)	(0.051)
Christian	0.176***	0.187***	0.182***	0.182***
	(0.040)	(0.040)	(0.040)	(0.040)
Muslim	0.255***	0.266***	0.259***	0.266***
	(0.041)	(0.041)	(0.041)	(0.041)
One to three grades of high school	-0.00688	-0.00706	-0.00123	-0.00471
	(0.041)	(0.042)	(0.042)	(0.042)
Completed high school	-0.0577	-0.0584	-0.0579	-0.0555
	(0.046)	(0.047)	(0.047)	(0.046)
Student	0.00458	-0.00254	0.00455	-0.00880
	(0.047)	(0.048)	(0.047)	(0.048)
Network effects:				
Geodesic proximity	0.122**			0.121*
	(0.059)			(0.067)
Equivalence (Euclidean)		0.0414		0.0621
		(0.039)		(0.040)
Equivalence (Jaccard)			0.0899	0.0458
			(0.060)	(0.067)
Constant	0.0000	0.0000	0.0000	0.0000
	(0.035)	(0.035)	(0.035)	(0.035)
Observations	623	623	623	623
R^2	0.2614	0.2576	0.2590	0.2648

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 7: Problems network: Impact on men

	(1) Gender norms	(2) Gender norms	(3) Gender norms	(4) Gender norms
Personal characteristics:				
Age	-0.00193	-0.00593	0.0103	-0.00476
	(0.062)	(0.062)	(0.062)	(0.062)
Married	-0.0415	-0.0336	-0.0435	-0.0370
	(0.052)	(0.052)	(0.052)	(0.053)
Children	-0.00205	-0.00133	-0.00790	-0.00185
	(0.058)	(0.058)	(0.058)	(0.058)
Christian	0.245***	0.234***	0.246***	0.233***
	(0.047)	(0.048)	(0.047)	(0.048)
Muslim	0.355***	0.342***	0.357***	0.339***
	(0.045)	(0.047)	(0.045)	(0.047)
One to three grades of high school	-0.0772	-0.0809*	-0.0749	-0.0778
	(0.048)	(0.048)	(0.048)	(0.048)
Completed high school	-0.135**	-0.136**	-0.131**	-0.130**
	(0.053)	(0.053)	(0.054)	(0.054)
Student	0.0185	0.0162	0.0198	0.0158
	(0.055)	(0.055)	(0.055)	(0.055)
Network effects:				
Geodesic proximity	0.0789			0.0545
	(0.084)			(0.095)
Equivalence (Euclidean)		-0.0803		-0.0717
		(0.061)		(0.068)
Equivalence (Jaccard)			-0.0411	-0.0573
			(0.055)	(0.057)
Constant	0.254***	0.253***	0.291***	0.247***
	(0.051)	(0.047)	(0.042)	(0.053)
Observations	472	472	472	472
R^2	0.1426	0.1442	0.1420	0.1464

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 8: Problems network: Impact on women

	(1) Gender norms	(2) Gender norms	(3) Gender norms	(4) Gender norms
Personal characteristics:				
Age	0.0690	0.0476	0.0488	0.0855
	(0.086)	(0.086)	(0.085)	(0.087)
Married	0.0491	0.0457	0.0489	0.0581
	(0.087)	(0.088)	(0.088)	(0.087)
Children	-0.150*	-0.144	-0.138	-0.167*
	(0.088)	(0.089)	(0.088)	(0.089)
Christian	-0.109	-0.111	-0.119*	-0.0799
	(0.069)	(0.071)	(0.069)	(0.072)
Muslim	-0.183**	-0.188**	-0.193**	-0.152*
	(0.086)	(0.088)	(0.086)	(0.088)
One to three grades of high school	0.167**	0.180**	0.155**	0.175**
	(0.073)	(0.074)	(0.075)	(0.075)
Completed high school	0.0861	0.103	0.0772	0.0871
	(0.085)	(0.086)	(0.088)	(0.087)
Student	-0.0374	-0.0497	-0.0378	-0.0408
	(0.080)	(0.081)	(0.081)	(0.080)
Network effects:				
Geodesic proximity	0.0975*			0.114*
	(0.055)			(0.062)
Equivalence (Euclidean)		0.0531		0.105
		(0.070)		(0.073)
Equivalence (Jaccard)			0.0673	0.0292
			(0.061)	(0.066)
Constant	-0.596***	-0.774***	-0.670***	-0.681***
	(0.094)	(0.107)	(0.079)	(0.114)
Observations	151	151	151	151
R^2	0.1303	0.1143	0.1183	0.1441

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 9: Problems network impact, excluding spouses as alters

	(1) Gender norms	(2) Gender norms	(3) Gender norms	(4) Gender norms
Personal characteristics:				
Female	-0.406***	-0.484***	-0.478***	-0.430***
	(0.049)	(0.052)	(0.039)	(0.057)
Age	-0.00771	-0.00749	-0.00817	-0.00213
	(0.052)	(0.052)	(0.052)	(0.052)
Married	-0.0142	-0.0132	-0.0124	-0.0181
	(0.046)	(0.046)	(0.046)	(0.046)
Children	-0.0371	-0.0383	-0.0375	-0.0395
	(0.050)	(0.050)	(0.050)	(0.050)
Christian	0.185***	0.182***	0.184***	0.196***
	(0.040)	(0.042)	(0.040)	(0.042)
Muslim	0.258***	0.258***	0.260***	0.271***
	(0.040)	(0.044)	(0.041)	(0.044)
One to three grades of high school	-0.00904	-0.00669	-0.00926	-0.00757
	(0.041)	(0.042)	(0.042)	(0.042)
Completed high school	-0.0627	-0.0590	-0.0630	-0.0650
	(0.046)	(0.047)	(0.047)	(0.047)
Student	0.00706	0.00557	0.00657	0.0111
	(0.047)	(0.048)	(0.047)	(0.047)
Network effects:				
Geodesic proximity	0.121**			0.141**
	(0.050)			(0.057)
Equivalence (Euclidean)		-0.00366		0.0449
		(0.052)		(0.055)
Equivalence (Jaccard)			0.0250	-0.0145
			(0.044)	(0.046)
Constant	0.0000	0.0000	0.0000	0.0000
	(0.035)	(0.035)	(0.035)	(0.035)
Observations	623	623	623	623
R^2	0.2633	0.2562	0.2566	0.2641

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 10: Problems network, excluding spouses as alters: Impact on men

	(1) Gender norms	(2) Gender norms	(3) Gender norms	(4) Gender norms
Personal characteristics:				
Age	-0.00147	0.00597	0.00940	0.00319
	(0.062)	(0.062)	(0.062)	(0.062)
Married	-0.0418	-0.0413	-0.0430	-0.0475
	(0.052)	(0.052)	(0.052)	(0.053)
Children	-0.00218	-0.00574	-0.00778	-0.00543
	(0.058)	(0.058)	(0.058)	(0.058)
Christian	0.245***	0.246***	0.246***	0.252***
	(0.047)	(0.049)	(0.047)	(0.050)
Muslim	0.355***	0.358***	0.357***	0.363***
	(0.045)	(0.049)	(0.045)	(0.050)
One to three grades of high school	-0.0774	-0.0770	-0.0749	-0.0745
	(0.048)	(0.048)	(0.048)	(0.048)
Completed high school	-0.135**	-0.135**	-0.132**	-0.134**
	(0.053)	(0.054)	(0.054)	(0.054)
Student	0.0185	0.0195	0.0195	0.0202
	(0.055)	(0.055)	(0.055)	(0.055)
Network effects:				
Geodesic proximity	0.0754			0.116
	(0.084)			(0.097)
Equivalence (Euclidean)		-0.00379		0.0424
		(0.069)		(0.078)
Equivalence (Jaccard)			-0.0346	-0.0547
			(0.056)	(0.059)
Constant	0.255***	0.282***	0.290***	0.268***
	(0.051)	(0.049)	(0.042)	(0.054)
Observations	472	472	472	472
R^2	0.1425	0.1410	0.1417	0.1443

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 11: Problems network, excluding spouses as alters: Impact on women

	(1) Gender norms	(2) Gender norms	(3) Gender norms	(4) Gender norms
Personal characteristics:				
Age	0.0665	0.0382	0.0479	0.0661
	(0.085)	(0.086)	(0.085)	(0.087)
Married	0.0478	0.0425	0.0492	0.0501
	(0.087)	(0.088)	(0.088)	(0.088)
Children	-0.151*	-0.137	-0.139	-0.150*
	(0.088)	(0.089)	(0.088)	(0.089)
Christian	-0.106	-0.137*	-0.118*	-0.105
	(0.069)	(0.074)	(0.069)	(0.076)
Muslim	-0.183**	-0.216**	-0.192**	-0.181*
	(0.086)	(0.091)	(0.086)	(0.093)
One to three grades of high school	0.169**	0.169**	0.155**	0.161**
	(0.073)	(0.074)	(0.075)	(0.075)
Completed high school	0.0881	0.0982	0.0766	0.0798
	(0.085)	(0.086)	(0.087)	(0.087)
Student	-0.0396	-0.0516	-0.0385	-0.0369
	(0.080)	(0.081)	(0.080)	(0.081)
Network effects:				
Geodesic proximity	0.105*			0.0923
	(0.055)			(0.064)
Equivalence (Euclidean)		-0.0367		0.00104
		(0.068)		(0.071)
Equivalence (Jaccard)			0.0750	0.0340
			(0.060)	(0.066)
Constant	-0.588***	-0.663***	-0.664***	-0.583***
	(0.094)	(0.113)	(0.079)	(0.120)
Observations	151	151	151	151
R^2	0.1332	0.1124	0.1204	0.1349

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 12: Work network: Impact on men

	(1) Gender norms	(2) Gender norms	(3) Gender norms	(4) Gender norms
Personal characteristics:				
Age	-0.0110	0.00657	0.00370	-0.0137
	(0.062)	(0.061)	(0.061)	(0.062)
Married	-0.0402	-0.0390	-0.0425	-0.0369
	(0.052)	(0.052)	(0.052)	(0.052)
Children	-0.00159	-0.00689	-0.00745	-0.00325
	(0.058)	(0.058)	(0.058)	(0.058)
Christian	0.241***	0.250***	0.246***	0.245***
	(0.047)	(0.047)	(0.047)	(0.047)
Muslim	0.351***	0.369***	0.357***	0.363***
	(0.045)	(0.046)	(0.045)	(0.046)
One to three grades of high school	-0.0761	-0.0754	-0.0706	-0.0706
	(0.048)	(0.048)	(0.048)	(0.048)
Completed high school	-0.137**	-0.131**	-0.134**	-0.131**
	(0.053)	(0.053)	(0.053)	(0.053)
Student	0.0345	0.00239	0.0248	0.0139
	(0.056)	(0.057)	(0.055)	(0.057)
Network effects:				
Geodesic proximity	0.170*			0.187*
	(0.095)			(0.103)
Equivalence (Euclidean)		0.0521		0.0741
		(0.048)		(0.050)
Equivalence (Jaccard)			0.0924	0.0464
			(0.081)	(0.085)
Constant	0.255***	0.293***	0.275***	0.261***
	(0.044)	(0.042)	(0.042)	(0.044)
Observations	472	472	472	472
R^2	0.1468	0.1431	0.1434	0.1517

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 13: Work network: Impact on women

	(1) Gender norms	(2) Gender norms	(3) Gender norms	(4) Gender norms
Personal characteristics:				
Age	0.0462	0.0457	0.0433	0.0495
	(0.085)	(0.086)	(0.085)	(0.086)
Married	0.0315	0.0587	0.0360	0.0475
	(0.089)	(0.092)	(0.091)	(0.094)
Children	-0.120	-0.147	-0.134	-0.129
	(0.092)	(0.090)	(0.089)	(0.094)
Christian	-0.130*	-0.117*	-0.124*	-0.123*
	(0.070)	(0.070)	(0.070)	(0.072)
Muslim	-0.202**	-0.195**	-0.200**	-0.197**
	(0.086)	(0.087)	(0.086)	(0.087)
One to three grades of high school	0.176**	0.165**	0.174**	0.168**
	(0.074)	(0.075)	(0.074)	(0.075)
Completed high school	0.103	0.0905	0.0985	0.0962
	(0.086)	(0.087)	(0.086)	(0.088)
Student	-0.0619	-0.0390	-0.0512	-0.0556
	(0.083)	(0.081)	(0.082)	(0.085)
Network effects:				
Geodesic proximity	0.0574			0.0585
	(0.076)			(0.091)
Equivalence (Euclidean)		0.0375		0.0399
		(0.064)		(0.065)
Equivalence (Jaccard)			0.0269	0.00196
			(0.082)	(0.100)
Constant	-0.676***	-0.734***	-0.703***	-0.699***
	(0.084)	(0.080)	(0.075)	(0.092)
Observations	151	151	151	151
R^2	0.1142	0.1128	0.1113	0.1166

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$