Gender and the Structure of Social Networks in Ghana: Implications for Fertility Processes

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Abstract

Enthusiasm for the analysis of social networks in demography has increased over the last decades. However, most of the studies focus on the content of informal communication within social networks. This is contrary to social network literature that provides for the study of both content and structure of social networks. This paper makes a contribution to filling this gap by using personal network data on men and women from six communities in Southern Ghana to build the gendered context within which the structure of social networks influence fertility processes. Results show that gender differences in personal networks are strong even if structural factors are accounted for. Similarly, support is found for the association between the content of what is exchanged within networks and fertility processes of men and women. Direct effects of the structure of social networks were not found. Implications of the findings are explored.

Introduction

Enthusiasm for the analysis of social networks in demography and the social sciences in general has increased rapidly over the last several decades. While many reasons account for this widespread interest, an important factor has been the distinctive appeal of network approaches to theories within the social and behavioral sciences. According to Wasserman and Faust (1994:4), the underlining principle of social networks analysis is the “assumption of the importance of relationships among interacting units”. This implies that individuals are influenced by people they interact with and the patterns of these interactions can be examined as units that determine social behavior. This principle is in line with many theories in the social sciences. In sociology, for example, network approaches are akin to the study of social structure. Network analysts describe social network patterns and use these descriptions to learn how network structure constrains or fosters social change and behavior (Cook and Whitmeyer 1992; Valente, Gallaher, and Mouttapa 2004; Wellman 1983). Social capital is another prominent concept that utilizes network approaches and is conceived in terms of information and resources that individuals embedded in social networks have access to and also in the context of control

advantages that allows individuals to broker relations between people who might be disconnected in the social structure (Burt 1992, 1997; Lin 2001). Other concepts such as social support (Kadushin 1982; Wellman, Carrington, and Hall 1988; Wellman and Wortley 1990), peer delinquency (Best 1983; Haynie 2001) and the structure of community networks (Swarbrick and Contractor 2002; Wellman and Leighton 1979) are among the many sociological concepts that use social network perspectives.

Demographers have also been interested in social network analysis. Studies on diffusion and adoption of innovations, especially on modern methods of family planning, illustrate these interests (Bongaarts and Watkins 1996; Montgomery and Casterline 1996). Studies on social interaction and fertility change have typically assumed that the fertility attitudes and behavior of women are closely influenced by the fertility attitudes and behavior of their informal network partners. Such studies typically conclude that women depend on their informal network partners for information on fertility control and that the personal characteristics of their network partners are important for their contraceptive use (Behrman, Kohler and Watkins 2002; Rutenberg and Watkins 1997; Valente *et al.* 1997). However, most of these studies only focus on the content of informal communication within social networks (such as discussion of matters of childbearing). (Kohler *et al.* 2001; Kohler 2000a; Kohler 2000b are notable exceptions). This stands contrary to social network literature that provides for the study of both content and structure of social networks (Wasserman and Faust 1994; Kohler *et al.* 2001; Marsden 1990; Valente 1994; Granovetter 1973). Thus, few studies currently exist that incorporate analysis of network structure and characteristics into the study of fertility behavior. Yet, with the increasing use of network perspectives to explain individual behavior in the social sciences and in demography in particular, there is the need for the description of the structure of informal networks which could serve as a reference point for estimating the effects of social networks on individual fertility behavior.

Similarly, in developing countries in general and sub-Saharan Africa in particular, few studies analyze the structure of men's and women's informal networks regardless of fertility implications (Bastani 2007; Peattie 1968; Peil 1981). Hence, generalizing findings from research on men's and women's personal social networks in developed settings with diverse socio-economic characteristics to less stratified rural networks in developing countries might be, as White and Watkins (2000:338) put it, "hazardous".

In addition, research on the dominance of men in fertility decision making in sub-Saharan Africa has not stimulated empirical work on the structure of men's and women's social networks with the explicit aim of explaining gender inequalities that are embedded in reproductive behavior in sub-Saharan Africa (Dodoo and Frost 2008). This paper is thus an attempt to describe the structure of men's and women's social networks and to incorporate both network structure and the content of informal communication in social networks in the analysis of fertility processes. This paper thus aims to fulfill three main goals:

1. First, to provide a descriptive overview of the form and characteristics of informal networks of men and women in Southern Ghana.
2. Second, to examine the socio-economic determinants of personal networks of men and women in order to identify factors responsible for gender differences in social networks.
3. Third, to examine how both network structure and the content of informal communication influence fertility processes.

Conceptual and Theoretical Framework

The conceptual approach of this paper is guided by the presumption that the social and cultural context within which gender relations are constructed will define the form and characteristics of men's and women's personal networks. First, social networks in sub-Saharan Africa, like in other settings, will reflect a variety of social and personal constraints that men and women encounter in their lives (Fischer 1982). Thus structural factors such as labor-force participation,

education, income, family and community norms are expected to play a role in influencing the characteristics of men's and women's personal networks. Based on this presumption, it is expected that activities and opportunities outside the household will play a role in determining the form and characteristics of personal networks of men and women. At the same time, impediments imposed through the performance of household responsibilities such as child care and maintenance of the household will be negatively associated with the form and characteristics of personal networks especially that of women's networks.

Thus, in the analysis of this paper, education and employment are expected to be associated with higher network size, higher proportions of nonkin ties (relative to kin ties), dense networks (the extent of ties joining network partners) and heterogeneity in social network characteristics such as, age and education. In addition, marriage and the number of living children are other structural factors that are expected to be associated with the formation of personal network ties. Married people are expected to have fewer network partners, more ties to kin and neighbors and less diverse networks than unmarried persons (Fischer 1982; Hurlbert and Acock 1990; Moore 1990; Wellman 1985). The number of living children also creates constraints on the building of network ties and is expected to reduce network size and prevent the formation of non-kin ties among others. Similarly, age is expected to play a role in network characteristics. Younger men and women are expected to have more heterogeneous networks than older persons. Other factors such as kinship, clan and lineage type are included in the analyses since different types of networks could be formed depending on these factors. For instance, in communities with predominantly matrilineal inheritance systems, where gender roles are complementary, the size of a woman's network and its characteristics will differ from patrilineal kinships, where gender roles are solely male dominated. Thus, interaction effects are perceived between gender and kinships and are explored in the analyses.

However, having conceptualized and outlined the expected direction of relationships of structural factors in personal networks, it is also plausible to assume that deeply rooted, cultural

orientations and expectations of the traditional dominance of men over women in sub-Saharan Africa will define and sustain gender differences in the composition of personal networks. Thus, it is expected that gender differences in personal networks of men and women will remain, even if structural relationships as outlined above are accounted for.

To address the third goal of this paper, the association between both the structure of social networks and the content of informal communication on fertility processes are examined. Drawing from Kohler *et al.* (2001), network structure (as measured using density: the extent of ties joining network partners) and the content of informal communication within social networks (measured here using the proportion of respondents who discussed childbearing matters with their social network partners) are conceptualized in terms of two fundamental mechanisms of social interaction; social learning and social influence (Bongaarts and Watkins 1996; Kohler 2001; Montgomery and Casterline 1993, 1996). The first mechanism, social learning, refers to the acquisition of information from others and promotes the idea that the adoption of contraception is subject to information women receive from others which enables them to overcome uncertainty about modern methods of family planning or to discern the benefits of having fewer children (Montgomery and Casterline 1996). The second mechanism, social influence, refers to the power individuals exercise over each other through authority, deference and social conformity pressures that prevail in the individual's social environment (Montgomery and Casterline 1996).

These two mechanisms are helpful in explaining the determinants of fertility change. For instance, in societies where individuals are not sufficiently informed about fertility choices, information flow from formal sources such as the media or from individuals knowledgeable on family planning will help clarify uncertainties about fertility behavior. Similarly, risk aversion through the experiences and behavior of others can offer some demonstrative evidence about the cost and benefits of fertility behavior (Casterline 2001). Lastly, these mechanisms could lead to changes in the normative context by modifying societal norms through the adoption of

innovative behavior by some influential individuals in society. It must however, be noted that whereas these mechanisms may be theoretically distinguishable, it is much more difficult to subject them individually to empirical test, as they are very closely related and dependent on various circumstances as explained above. Thus, in the analysis of the importance of network structure and the content of informal communication on fertility processes, not much emphasis is placed on the distinction among these mechanisms but on their interrelatedness.

It is conceptualized that network density (used here as the extent of ties joining network partners) may be associated with each mechanism in two interrelated forms. On one hand, sparse or less dense networks typically contain diverse others with access to independent sources of information (Burt 1992; Granovetter 1973). Social learning is thus maximized when network members have access to new and effective information from outside the immediate network, especially in situations where such information is necessary to clarify an innovation or an uncertain situation (Burt 1992; Granovetter 1973; Kohler 2001; Marsden 1987). On the other hand, a 'closed' or dense interpersonal environment exerts stronger normative pressure for conformity through the amplification of fertility information than in an isolated network (Kohler *et al.* 2001; Marsden 1987). Thus, dense networks are deemed to transmit information more effectively than less dense ones. In addition, the argument for density could be rationalized in terms of frequent communication between alters (a set of network members) and ego (a focal actor to whom network members are linked) on reproductive attitudes, thereby, allowing these networks to be influential. It is, however, conceded that without further knowledge of the content of fertility attitudes of these dense networks, it may not be feasible to adequately test the independent effect of network density on fertility processes, except to explore this relationship in conjunction with the content of informal communication within social networks. Thus, no direct hypothesis is tested regarding network density and it is included as a covariate in the analysis.

On the other hand, the content of informal communication on fertility provides information flow within social networks that is immediately relevant for social learning but has

some importance for social influence as well. Thus, in incorporating network structure and content in understanding fertility processes, it is posited that in geographically and socially close personal networks, like those in southern Ghana, the proportion of network partners who discuss childbearing matters with respondents will be associated with fertility processes such as discussing family planning with spouses, approval of modern contraception and the desire to stop childbearing. Since both social learning and social influence, as explained above, are closely related and could be occurring simultaneously, it is expected that some interaction effects will prevail between density and the proportion of network partners who discuss childbearing. An interaction term is thus, included to capture this effect on fertility processes.

The group of fertility processes (communicating with one's spouse about family planning, approval of family planning and the desire to stop childbearing) that are chosen to explore the impact of network structure and the content of informal communication, are measures of reproductive decision making that are frequently used in demographic literature to compare the attitudes of men and women towards fertility limitation in sub-Saharan Africa (Mason and Taj 1987; Nyblade and Menken 1993). Taken together, they constitute measures of so called "fertility innovation" (Green 1997:14), since these processes are deemed new in a setting where pronantalist traditions are persistent. For instance, acceptability of family planning in this setting is considered an important step towards using a modern contraceptive method (Nyblade and Menken 1993). The desire to stop childbearing is also indicative of the relative demand for contraceptive methods for stopping or limiting fertility, rather than for spacing births. Lastly, communicating with spouse about family planning is linked to the likelihood of use of modern contraceptive methods (Bawah 2002). Thus, an examination of mechanisms of social learning and social influence through network content and structure will help clarify the effects of social interaction on these fertility processes. It is expected that in sub-Saharan Africa, where social and modernization forces often clash with traditional and cultural norms, thereby, creating situations of flux and ambivalence, informal communication in social networks through

mechanisms of social learning could be prime channels through which social interaction affects fertility processes.

Data and Methods

Data

The data for this paper are taken from the baseline survey of the 'Social Learning, Social Influence and Fertility Control' longitudinal household surveys of Sothern Ghana. The surveys were designed and implemented by the University of Cape Coast in Ghana, with technical assistance from the Population Council and with financial support provided by the National Institute of Child Health and Human Development (NICHD) and the Rockefeller Foundation. Data collection was conducted in intervals of roughly six months, for a total of eight panel surveys that lasted from October 1998 until February 2004. The baseline survey was chosen for this analysis because the social interaction module was based on persons with whom respondents discussed important matters or persons whose opinions are important to respondents. This serves not only as a general confidant network not specific to fertility but is similar in many ways to the General Social Survey (GSS) network module used in 1985 and 2004 in the United States. Thus, with some caution, it is possible to compare the findings of this study to other studies using similar modules (Fischer and Oliker 1983; Marsden 1987; McPherson *et al.* 2006; Moore 1990).

Methodologically, general confidant networks that are not necessarily based on fertility or social interaction regarding family planning allow for the avoidance of a possible source of bias associated with modeling fertility behavior from social network data that is affected by the fertility attitudes and behavior of respondents (Casterline *et al.* 2002). Furthermore, a close examination of the baseline survey showed that more network partners were named than in

subsequent rounds[1]. This is important for the measurement of network density and other measures of network composition, which are not very meaningful if defined by a very small number of network partners. In addition, bias due to the selection network members might result from a truncated or a smaller number of network partners, especially, if those network partners are systematically excluded from the dataset on the basis of the dependent outcome (Marsden and Hurlbert. 1987). Thus, to reduce these multiple sources of bias, the baseline social network survey is best suited to this analysis. To account for the size of the network, network characteristics are expressed as a proportion of the number of network partners that a respondent provides information on.

In the social interaction module that is analyzed, respondents were asked to first name all those persons whose opinions matter to them and with whom they discussed important matters[2]. Additional series of questions were asked on a maximum of four personal network members. These questions solicited detailed information on the sex, relationship, residence, education, economic status and frequency of interaction between respondents and the network members, among other questions. It is from these questions that the size and composition of social networks are measured. Similarly, respondents were asked about the relationship between network members and how well the set of network members knew each other (confidants, just friends, acquaintances, relatives, etc). This last piece of information makes it possible to construct measures of network density.

In addition, a series of fertility related questions were asked of the network members. These include: whether the respondent discussed matters of childbearing with each network member, whether the network member has ever used modern family planning and whether the

[1] The reduction in network size was not due to changes in questions or names generators which were identical in all rounds but perhaps likely due to changes in interviewer's activism in probing and the possible reluctance of respondents to name more network partners to avoid the barrage of follow up questions on each network member named.

[2] There was no reference period for these discussions. However, another question was asked to inquire how recently these interactions occurred.

network member approves of modern family planning. Since these are proxy reports of network member's behavior, these variables might be biased towards the respondents' own opinion or behavior. It is from one of these questions (whether respondent discussed matters of childbearing with each network member) that the measure of the content of informal communication on fertility is constructed.

Measures

Outcome measures used to test gender differences in social network characteristics are (1) the overall size of a social network, which is coded as a continuous distribution. (2) the proportion of nonkin ties: coded as the number of network members who are reported as nonkin divided by the total number of network members on whom detailed information was gathered. (3) network density: coded in this analysis as the number of all possible social ties that exist in a social network, divided by the total number of social network partners reported by the respondent (Kohler 2001; Marsden 1987). Thus in this analysis, a social network is very dense (i.e. all network members are connected to each other as friends, acquaintances and confidants) if the value of density equals 1 and very sparse (none is connected to the other) if the value is 0. Values between 0 and 1 are neither dense nor sparse. This measure of density is at best loosely defined, as it does not consider the different strengths of relationships between alters. Underlying this measure also, is the assumption that alters are in frequent communication with another and with ego which allows them to be influential. In the context of the study communities, where residential patterns and contact networks are close and often homogenous, this measure describes, with some degree of accuracy, dense networks.

Other network characteristics analyzed are measures of similarity between alters and ego (homophily/heterophily) and these are coded as proportions. They include (1) age heterophily which equals 1 if respondents reported all the ages of their personal network partners as different from theirs (either older or younger than them) and 0 if they are all of similar age (2) educational heterophily was coded somehow differently; it was coded 1 if the

respondents named all network partners who had at least secondary education and 0 if none has secondary or higher education. Thus, educational heterophily reflects the social position of alters and may not in a strict sense be considered a measure of homophily/heterophily.

Fertility processes (discuss family planning with spouse, approve of family planning and desire to stop childbearing) are the outcome measures for the test of association of both structure and content of informal communication in social networks. These outcomes are all defined as dichotomous. Thus respondents are coded 1 if they discuss family planning with their spouses and 0 if otherwise. Similarly, respondents are coded 1 if they approve of family planning and 0 if they do not. Lastly, respondent were coded 1 if they desire to stop childbearing and 0 if otherwise.

The main predictor in the statistical analysis of social networks characteristics is gender. That of the analysis of fertility processes is the proportion of network members who discuss matters of childbearing with the respondent. Lastly, standard socio-economic measures (age, number of living children, education, religion, employment, ethnicity and type of marriage) which are normally thought to be associated with fertility are controlled for in both sets of analysis and are coded in consistence with most previous studies.

Analytical Strategy

The paper first uses univariate and bivariate analysis to account for gender differences in network characteristics by using a two-tailed test of independence of means. Then in multivariate analysis, ordinary least square (OLS) regression is used to analyze the determinants of gender differences in overall network size. Since network characteristics are coded as proportions and are not normally distributed, OLS regression might not be appropriate in analyzing them. Thus, the generalized linear model (GLM), with a logit distribution from the binomial family, is used to fit all dependent outcomes that are coded as proportions (proportion nonkin, proportion of density and age and educational homophilly). The robust option in STATA

is included to obtain robust standard errors, which might be useful if the distribution were to be wrongly specified (UCLA Academic Technology Services 2004). Lastly, simple logistic regression analysis is used to assess the influence of network structure and network content on fertility attitudes and experiences.

Results

Network Characteristics

Summary statistics of all socio-economic variables for men and women in the sample are presented on Table 1. Table 2 displays univariate distributions of the characteristics of general discussion networks and how these networks differ by gender. The composition of at least four network partners on whom detailed information was collected shows a mean proportion of 0.6 of nonkin ties (friends, workmate etc) (implying a mean of almost 0.4 kin ties). A sizable proportion of both sexes report nonkin ties in their networks (32.3% for women and 42.1% for men). Network partners of respondents tend to be highly dense with a 0.9 mean proportion of density. About 85% of the total sample had network partners who all had some form of ties (friends, acquaintances and friends) to each other. The average proportion of dense ties differed by gender. Men reported slightly higher proportions of network partners who had ties to each other than women (86.46% and 83.92% respectively).

On measures of similarity between respondents and their social network members (homophily/hetrophily), the age of network partners appeared to be diverse. About 77.2% of named network partners were not of a similar age as the respondent (were older or younger than the respondent). Only about 18.6% of respondents had network partners with secondary or higher education. An even smaller percentage, 1.3%, had network partners who were of a different gender than the respondent. Not much gender differences were reflected in diversity measures. Slightly more women (19.1%) than men (17.8%) have network partners who all had secondary or higher education. Also, 2.5% of men had all their network partners with a different

gender from theirs (i.e. they had female as network partners). In contrast, only 0.6% of women report a network made up of all men. Most gender differences described on Table 8 are not statistically significant (at the 0.05 level or greater) except the proportion of nonkin ties and network size.

Overall, the descriptive evidence on this sample shows a high number of core discussion partners for both men and women. These networks are fairly made up of nonkin relationships, with very dense ties and are mostly homogeneous when compared to the respondents' own characteristics. Significant gender differences could be seen in network size and nonkin compositions.

Gender Differences in Social Network Characteristics

Table 3 presents results explaining gender differences in social networks (full models only). Generally, it is observed that gender differences in network characteristics are strong and substantial in magnitude, even when standard socio-economic factors (structural characteristics) are accounted for. For instance, females' social network sizes are smaller relative to that of males, net of structural characteristics. Similarly, when structural variables are accounted for nonkin ties of women are smaller compared to that of men. Also, women's social networks become less dense relative to men's networks, net of structural factors. All the multivariate relationships described above are statistically significant at $p<.05$, thereby, supporting gender differences in personal networks characteristics. Age heterophily of social networks did not differ significantly by gender. However, educational heterophily of women's social networks is only marginally significant and is negative when compared to the educational heterophily of men's social networks. This is interpreted to mean that females have fewer network partners with secondary or higher education than males. Thus, apart from age heterophily, all other gender differences as outlined in the conceptual model were statistically significant even when structural factors that are predicted to reduce gender differences are

controlled. In sum, gender clearly has important effects on network characteristics, even when standard socio-economic characteristics are accounted for.

Table 4 shows simple logistic regression unstandardized co-efficients testing the effect of both network structure and content of informal communication on fertility proceses. The results on discussing family planning with one's spouse (column 1) show a positive and significant coefficient of the proportion of network partners who discuss childbearing matters, controlling for network density and other factors. This finding indicates that information exchange on childbearing with network partners is associated with discussing family planning with a spouse. This supports the relationship posited in the conceptual framework. Notably, on this table, the coefficient for gender is negative and significant, implying a negative relationship between women who discuss family planning with a spouse compared to men who discuss family planning with a spouse.

In the second column of Table 4, results of approval of family planning show a similar pattern of association. The proportion of network members who discussed childbearing matters within their social network is positive and significantly associated with approval of modern family planning, controlling for network density and other socio-economic characteristics. Again, this supports the expected relationship as outlined in the conceptual model. Notably, matrilineal kinship (indicated by the co-efficient for Akan) is positively associated with approval of family planning, while polygamous marriage is negatively associated with approval of family planning. Perhaps complementary gender relations in matrilineal kinships might be the underlying reason for the likelihood of approval of family planning in this lineage compared to a patriarchal lineage, where gender relations are mainly pronatalistic and male dominated. In this model, gender is not a significant predictor of approval of family planning.

In the third column of Table 4, the results of the desire to stop childbearing show a similar pattern of relationship as in the previous models. The coefficient for the proportion of network partners who discussed childbearing matters within their networks remains positive and

statistically significant, controlling for network density and other factors. This supports the proposition contained in the conceptual framework. In this model, gender differences are only marginally significant. Women are more likely to express the desire to stop childbearing than men. However, the analysis presented on this table did not find any significant interaction effects between density and the proportion of network partners who discussed matters of childbearing (results not shown).

In sum, the results, that incorporate network content and structure into research on fertility attitudes and experiences, tends to suggest that the content of what is being exchanged within social networks is important. Linking these results to the two mechanisms of social interaction, it is concluded, albeit cautiously, those social learning processes are associated with fertility processes. Perhaps when fertility information is exchanged within a social network, it may act to increase communication on family planning, stimulate acceptability of modern family planning and impact on the desire to stop childbearing. It is, however, noted that network density and network content may be closely interrelated. The inadequacy of the measurement of network density may be at play for the non-significant findings on network density. Thus, the analysis in this paper may only serve as a preliminary step in investigating network structure and fertility processes. The results are however, consistent with most other studies on diffusion (Kohler *et al.* 2001; Montgomery and Casterline 1996).

Conclusion

This paper set out to explore the form and characteristics of men's and women's social networks using ego-centered social network data from southern Ghana. Then, it analyzed the determinants of gender differences in social networks by accounting for the impact of structural factors in the formation and composition of social networks of men and women. Lastly, exploiting the dearth of knowledge on the role of both structure and content of social networks in fertility attitudes and experiences, the paper explored the association between the content of

informal communication and structure of networks as key mechanisms through which social interaction impacts on fertility processes. Thus, by exploring gender determinants of social networks and by incorporating the form and structure of social networks into studies of social interaction and fertility, this paper not only contributes to research and theory in both social network analysis and fertility studies, but fills a gap in research on both gender and social networks in sub-Saharan Africa.

Descriptive results of network characteristics show that social networks are generally made up of nonkin relationships, very dense ties and homogeneous network characteristics when compared with the respondents' own characteristics.

Results are also consistent with the expectation that structural factors will not cancel gender differences in network characteristics, gender differences in network characteristics remained substantial and statistically significant, net of structural factors. Women's network size was still smaller than those of males; they comprised more kin than nonkin relations and were less dense than male networks. It is thus suspected that in sub-Saharan Africa, dispositional factors could help explain gender differences much more completely than structural factors. Contrasting dispositions of men and women in social relations given by various inclinations, perhaps rooted in culture or early and adult socialization (Fischer and Oliker 1983), could be more relevant factors in explaining gender differences in social networks in sub-Saharan Africa.

Also, partly consistent with the argument and findings of previous studies, evidence is found in this analysis to support the hypothesis that social learning plays an important role in fertility processes. The consistent associations between the proportion of network partners who discussed childbearing matters within social networks and fertility processes, net of the structure of the network, supplies ample evidence, even if inconclusive, that there may be the need for more information to clarify uncertain situations, such as whether to initiate dialogue on modern family planning with one's spouse, whether to change attitudes towards family planning and whether to express the desire to stop childbearing. However, these findings must be interpreted

cautiously as mechanisms of social learning and social influence, as noted, are not exclusive of each other. Nonetheless, the consideration of these mechanisms for fertility processes makes a relevant contribution to the literature, given the fact that most prior research is focused mainly on contraceptive use.

The limitations of this paper lie in the fact that the societal contexts within which men's and women's networks are different are not adequately explored. Needed are ethnographies that describe the day-to-day differences in the lives of women and men that produce different personal networks. Another weakness of this study is associated with the measure of social network characteristics in general and density and heterophilly in particular. These measures need to reflect adequately the nature of social networking in this context. Lastly, to adequately test social structure and thus social influence, information on the fertility attitudes of alters themselves is needed in order to strengthen the argument that egos adopt the fertility attitudes of alters.

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Table 1: Summary statistics for all women, married women and men in the sample, 1998 Cape Coast Diffusion Panel Survey Data (percentages unless noted otherwise)

Variable	All Women	Married Women	Men	All
Age (Mean)	30.85	31.68	39.2	33.87
	(8.77)	(8.36)	(11.2)	(10.5)
Number of living children	3.4	3.5	3.88	3.23
	(1.99)	(1.98)	(3.5)	(2.81)
Education				
None	36.92	39.21	23.63	32.17
Primary	24.04	25.46	19.65	22.47
Secondary	38.97	35.23	54.51	44.51
Religion				
Christianity	69.07	70.37	65.44	67.77
Muslim	22.56	20.67	22.6	22.57
Traditional/no religion		8.97		1.27
Employment				
Agricultural	25.51	26.58	58.79	37.39
Non Agricultural	62.76	65.07	38.26	54.01
No work	11.73	8.35	2.95	8.6
Ethnicity				
Ga/Adangbe	22.15	19.55	19.65	21.26
Akan	68.25	70.37	71.05	69.25
Ewe/other	9.6	10.08	9.31	9.49
Type of marriage				
Monogamous	21.33	26.48	19.65	20.73
Polygamous	78.67	73.52	80.35	79.27
Communicate with spouse on family planning	65.61	33.6	80.35	71.64
Approve of family planning	92.15	92.33	92.73	92.36
Wants to stop childbearing	30.11	65.68	37.52	32.75
Average proportion of network partners who discuss family planning	0.458	0.484	0.55	0.488
	(0.41)	(0.41)	(0.41)	(0.41)
N	1219	982	677	1896

Note: Numbers in parentheses are standard deviations

Table 2: Univariate distributions of differences in the size and composition of discussion networks of men and women in 1998

	Men	Women	all
Network characteristic	**%**	**%**	**%**
Proportion Kin*			
0	42.09	32.28	35.78
0.01-0.33	13.88	17.30	16.08
0.34-0.66	21.05	22.60	22.05
0.67-0.99	7.01	8.36	7.88
1	15.97	19.45	18.21
Mean	0.36	0.43	0.41
Mode	0.00	0.00	0.00
SD	0.37	0.37	0.37
Density (proportion)			
0	2.00	2.58	2.37
0.01-0.33	3.08	3.87	3.58
0.34-0.66	4.62	5.59	5.24
0.67-0.99	3.85	4.04	7.94
1	86.46	83.92	84.83
Mean	0.93	0.92	0.92
Mode	1.00	1.00	1.00
SD	0.20	0.22	0.21
Age heterophilly			
0	0.60	0.75	0.69
0.01-0.33	0.60	1.16	0.96
0.34-0.66	10.30	12.09	11.45
0.67-0.99	9.85	9.69	9.74
1	78.66	76.32	77.16
Mean	0.92	0.90	0.91
Mode	1.00	1.00	1.00
SD	2.00	1.83	0.18
Education heterophilly			
0	25.37	28.06	27.00
0.01-0.33	16.57	18.55	17.84
0.34-0.66	29.40	25.16	26.68
0.67-0.99	10.90	9.11	9.74
1	17.76	19.12	18.64
Mean	0.47	0.45	0.46
Mode	0.00	0.00	0.00
SD	0.35	0.36	0.36
Gender heterophilly			
0	73.88	77.07	75.93
0.01-0.33	13.58	14.23	14.01
0.34-0.66	8.81	7.37	7.89
0.67-0.99	1.19	0.75	0.91
1	2.54	0.58	1.28
Mean	0.11	0.09	0.10
Mode	0.00	0.00	0.00
SD	0.22	0.19	0.20

Note: N (Male) = 676; N (Women) =1219; N (total) 1895

[a]Data on network characteristics were collected on the first four alters cited. Therefore, the sum of kin and nonkin alters for example is not equal to overall network size

[b] Density measure is meaningful only for respondents who mentioned more than one alter

* The difference between men and women is significant at p<.05 (two-tailed test for equal means).

Table 3: Unstandardised regression co-efficients of network size and composition on gender and respondent background variables (structural factors)

	Dependent Variables				
Independent variable	**Network Size**	**Proportion Non-Kin**	**Proportion Density**	**Age Heterophilly**	**Education Heterophilly**
Gender					
(Male)					
Female	-0.818 **	-0.324 **	-0.377 *	-0.132	-0.147 +
	(0.10)	(0.09)	(0.17)	(0.13)	(0.08)
Age					
Age (in years)	-0.048 *	0.025	-0.059 +	0.009	-0.062 **
	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)
age^2	0.001 **	-0.004 *	0.004	-0.001	0.006 **
	(0.00)	(0.02)	(0.03)	(0.00)	(0.01)
Education					
(No education)					
Primary	0.084	0.113	-0.327	-0.030	0.477 **
	(0.10)	(0.01)	(0.22)	(0.14)	(0.09)
Secondary plus	0.094	0.430 **	-0.400 *	0.116	0.937 **
	(0.01)	(0.09)	(0.19)	(0.13)	(0.08)
Employment					
(Not working)					
Agricultural	0.151	-0.039	0.407	0.160	-0.032
	(0.16)	(0.15)	(0.29)	(0.21)	(0.14)
Nonagricultural	0.100	0.008	-0.189	0.123	-0.038
	(0.15)	(0.14)	(0.27)	(0.11)	(0.13)
Ethnicity					
(Ewe/others)					
Ga/Adangbe	0.367 *	-1.065 **	0.094	0.439	0.120
	(0.16)	(0.15)	(0.25)	(0.20) *	(0.14)
Akan	0.124	-0.271 +	0.423 *	0.335 *	-0.395 **
	(0.14)	(0.14)	(0.21)	(0.16)	(0.12)
Religion					
(Muslim/Traditional/other)					
Christianity	-0.471 **	0.077	-0.433 *	0.148	0.299 **
	(0.14)	(0.09)	(0.20)	(0.13)	(0.09)
Marriage					
Not Married					
Married	-0.290 *	0.126	-0.378	-0.093	-0.410 **
	(0.13)	(0.11)	(0.25)	(0.16)	(0.11)
Number of living children	-0.008	-0.033 *	0.019	0.005	-0.031 *
	(0.02)	(0.02)	(0.04)	(0.02)	(0.014)
Intercept	5.665	0.440	4.663	1.771	1.204
	(0.40)	(0.37)	(0.71) **	(0.52) *	(0.34) **
R^2/Log pseudolikelihood*	0.080	-1018.94	-422.91	-458.01	-984.38
N	1867	1850	1787	1850	1850

Note: OLS is used to estimate sub-group differences in overall network size. GLM is used to estimate all dependent outcomes that are coded as proportions, since these data have values that fall between 0 and 1

** p<.01, *p<.05, + p<.10

(Ref.) - reference category

standard erros in parentheses

R^2 of network size and Log pseudolikelihood of the GLM models are used to assess model fit

Table 4: Logistic regression of fertility processes on network and individual characteristics, married women and men

	Discuss family planning with spouse		Approve of family planning		Want to stop childbearing	
Variables	**Log Odds**		**Log Odds**		**Log Odds**	
Proportion of network partners who discuss childbearing	1.280	**	1.049	**	0.441	**
	(0.16)		(0.26)		(0.16)	
Density	-0.004		0.400		0.020	
	(0.29)		(0.40)		(0.29)	
Gender						
(Male)						
Female	-1.030	**	0.160		0.239	+
	(0.15)		(0.22)		(0.14)	
Age						
Age	-0.032		-0.065		0.178	**
	(0.04)		(0.05)		(0.04)	
Age^2	-0.001		0.001		-0.002	**
	(0.00)		(0.01)		(0.01)	
Number of living children	0.241	**	0.087	*	0.447	**
	(0.03)		(0.04)		(0.04)	
Education						
(No education)						
Primary education	0.087		-0.023		-0.022	
	(0.17)		(0.25)		(0.17)	
Secondary plus	0.413	*	0.410	+	0.352	*
	(0.15)		(0.24)		(0.15)	
Ethnicity						
(Ga-Adangbe/others)						
Akan	-0.129		0.387	+	0.594	**
	(0.15)		(0.22)		(0.15)	
Type of marriage						
(Monogamous)						
Polygamous	-0.346	*	-0.404	+	0.078	
	(0.16)		(0.23)		(0.15)	
Intercept	1.764		2.452		-6.693	
	(0.76)		(1.14)		(0.86)	
-2 Log L	1601.70		771.60		1554.40	
N	1559		1558		1564	

** p<.01, *p<.05, + p<.10
(Ref.) - reference category
standard erros in parentheses