



Measuring social networks cross-culturally

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Abstract

This paper explores the reliability and validity of a cross-cultural survey approach to network measurement using data from two ethnic groups in rural West Africa. Over a 2-week test-retest period, no significant differences in network size were detected. Network composition was less stable over the same period, particularly among peripheral versus core network members. Comparisons with support networks identified through lifecycle interviews and 24 h recall support the construct validity of the survey approach in both ethnic groups.

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1. Introduction

The notion that “social networks” have an important influence on individual health and behavior has many disciplinary origins. It is central to Durkheim’s sociological theory of anomic suicide, and is apparent in the psychoanalytic theories of attachment and self-esteem articulated by Bowlby (1969). In the field of anthropology, Barnes (1954) and Bott (1957) recognized the potent influence of the network on individual behavior and attitudes, and its value as a means of analyzing social relationships that overcomes the confines of kinship, class and geography. Empirical studies have followed which demonstrate the impact of social ties or networks on individual health outcomes (Cohen, 1988; House et

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al., 1988; Berkman, 1995), and more recently, on the health and survival of ego's children (Adams et al., 2002). In the field of demography, interest in networks is also evident in a growing literature on the theories of social learning and social influence as they affect fertility behavior (Montgomery and Casterline, 1996; Kincaid, 2000; Kohler et al., 2001; Madhavan et al., 2003; Adams et al., 2004).

One consequence of this multi-disciplinary interest in social networks and their influence, is a diversity of approaches to measurement. While much initial attention was focused on the more structural attributes of networks such as size, proximity and homogeneity, increasing attention has been given to assessing the more qualitative aspects of social relations including their supportive functions (House, 1981; Lin et al., 1986; Sarason et al., 1990). More recently, interest has turned to the issue of measurement validity, as seen in the growing number of methodological studies that consider the accuracy and stability of network measures elicited through respondent reporting (Freeman et al., 1987; O'Reilly, 1988; Morgan et al., 1996; Ferligoj and Hlebec, 1999; Brewer, 2000; Kogov et al., 2002; Feld and Carter, 2002). While the issue of cultural specificity in network measurement has received some attention, experience in collecting network measures across cultures remains quite limited (O'Reilly, 1988; Mizruchi, 1994; Adams and Castle, 1995; White and Watkins, 2000).

In this paper we address the issue of rigor in network measurement, and the challenge of locating a network across different cultural settings (O'Reilly, 1988; Schwarzer and Leppin, 1991; Winemiller et al., 1993). Using data collected from two ethnic groups in rural West Africa, we examine the reliability and validity of a cross-sectional survey approach to measuring network structure and function. By reliability we mean whether the method reproduces the same results given similar conditions, while validity refers to whether the method adequately captures the construct of interest – in this case the social support networks of Bamanan and Fulbe women in rural Mali. We begin the paper with a brief overview of the study on which the analysis is based, including a description of the development of the cross-sectional survey, and the methods used to explore its reliability and validity. To assess reliability, we first present and discuss findings from a test-retest method that measured the stability of the survey method over a 2-week interval. This is followed by an examination of validity using lifecycle interviews and 24 h recall data of networks utilized on a daily basis. Two case studies are also presented that combine survey, 24 h recall and lifecycle data, to provide an assessment of the construct validity of the survey method. In the final section we suggest a methodology for designing a survey questionnaire on social networks that is feasible, culturally specific and grounded in the local and historical contexts of the population under study.

2. Data and methods

2.1. Study sample and description

Responding to evidence that the supportive functions of networks may be important to health outcomes, the comparative study on which this analysis is based sought to measure the impact of social networks on the health of women and their children in two distinct cultural settings in Mali, West Africa. One of the poorest of developing countries according

to standard indicators of macro-economic performance and human development, Mali possesses limited health care infrastructure and provision (WDR, 2004). As such, one might hypothesize that networks play a crucial role in mobilizing support for health, as well as provide opportunities for social learning and engagement that benefit health by enhancing self-efficacy and encouraging positive behavioral change (Berkman et al., 2000; Adams et al., 2002). Our specific interest in women's networks relates to their central role in household nutrition and the care and well-being of children.

Conducted in 1997, the study employed a mixed study design involving qualitative and quantitative components. Informed by initial qualitative research conducted over a 6-week period, the quantitative component consisted of a survey questionnaire administered to 1000 ever-married women (aged 15–49) sampled from two sites representing agricultural Bamanan and agro-pastoral Fulbe populations, respectively. Chosen for their cultural and demographic differences, the Bamanan comprise 35% of Mali's national population, while the Fulbe constitute 10%. Unlike the Fulbe, the Bamanan favor large extended families due in part to the substantial labor requirements of millet cultivation and the relative abundance of land. Further characterizing Bamanan society is the emphasis on the values of egalitarianism and cooperation, whereby both household and community are expected to work with one another for the greater corporate good (Lewis, 1979). Primarily engaged in cattle husbandry, the Fulbe tend to live in smaller nuclear style family units. In stark contrast to the cooperative ideology of the Bamanan, the concept of *pulaaku* guides Fulbe conduct, a code of moral behavior that regulates social interaction, with an emphasis on stoicism, prudence, shame, and self-isolation (Riesman, 1984).

Data collection during the quantitative phase of the study occurred over an 8-month period in 17 villages sampled equally from two sites – the cercle of Douenza, in the eastern part of Mali which is home to large numbers of Fulbe pastoralists, and Kolondieba, a Bamanan agricultural area in the south of the country. Approximately 2 weeks was spent in each village allowing sufficient time to build rapport with community residents, and encourage participation in the study.

The qualitative component of the study took place over a 4-month period in two communities – one Bamanan and one Fulani. The objective of this second phase of research was to gain a more textured understanding of the cultural norms underlying the provision of support, and the utilization and continuity of this support over the lifespan and in the immediate and routine context of women's daily lives. A variety of methods were employed including lifecycle interviews, observations of networks in action, and the twice-weekly recall of exchange and social interaction over a 24 h period. Over time, growing trust and comfort between research participants and the small team of investigators was expressed in shared stories and confidences and served to heighten understanding of the role and meaning of networks especially as regards the health and well-being of children.

2.2. Survey development

Our interest in exploring the health impact of women's networks was based on the obvious assumption that networks exist and are amenable to measurement. As we commenced the study, however, little information was available about the nature of social support in either Bamanan or Fulbe socio-cultural contexts, or the size, or composition of the networks

relied upon to avail this support. It was clearly inappropriate to assume that the meaning, structure and function of support networks in Mali would be similar to those found in Western settings, or synonymous between Bamanan and Fulbe cultural groups. A period of formative qualitative research was therefore undertaken over a 6-week period to clarify the types and sources of social support valued by women in each cultural setting. A variety of strategies were employed such as asking women to recall who helped “the last time” with particular needs, such as household chores, illness care, food supplies, etc. Unfortunately, this strategy yielded only general responses which failed to capture the full spectrum of support received. Another method tested involved asking women to identify the five most important persons in her network. While the results were interesting, it proved difficult for many respondents to articulate why these particular persons were selected, and what forms of support they provided.

Based on these findings, it was decided that a more effective way to capture functional networks would be to identify the domains of support most important to women and then to elicit networks within each domain. This approach was developed by asking individual women from each ethnic group to free-list all people in her network, and then to sort them into “like” piles by type of support provided. These support categories were then discussed in terms of the type of helping activities they comprised. Emerging categories were further refined by asking women which kinds of support they valued most. Interestingly, a remarkable degree of consensus emerged from each ethnic group as regards salient domains of support which were organized into four main types: (1) material help with milk, money and cereal; (2) practical support with domestic chores, child care and other instances “when your hands are full”; (3) advice or cognitive assistance from those whom you respect and who provide wise counsel/ information, and (4) emotional support from persons you can trust and confide in. The logical and conceptual sense of these categories were member-checked through focus groups in each ethnic group. Focus group discussion also revealed inter cultural differences in the manner in which these domains were described, emphasizing the need to define each domain using idioms and examples appropriate to Bamanan and Fulbe populations, respectively. Once these definitions were developed, back translation from the local language to French/English was performed to ensure they remained true to their initial conceptualization.

Our next task was to construct a survey instrument to elicit networks within each of these domains and facilitate cross-cultural comparison. Probing for the presence or absence of a pre-specified list of individuals was quickly abandoned due to cultural differences in norms surrounding the provision of support that were revealed through initial ethnographic inquiry. Instead, a free-list approach was adopted that required the respondent to list in whatever order they desired, those persons who provide support in the four domains identified above: material, practical, cognitive and emotional. After having elicited the free-list, however, a judicious series of probes were applied if individuals known to figure in the networks of both ethnic groups (husband, mother-in-law, co-wife), were conspicuously absent. While “forgetting” is an acknowledged problem in recall-based elicitation of networks (Brewer, 2000), it remains unknown whether these probes obliged respondents to include otherwise unsupportive persons in their network.

The final multi-part questionnaire included a section on network membership that utilized the free-list approach described above. Details on the age, gender and location of each

network member and the frequency and perceived reciprocity of support received were also elicited. Demographic and health-related sections of the survey questionnaire furnished data on household composition and socioeconomic status, and data specific to the sampled women and their children, including women's household position, birth history, income sources, and health and nutrition.

2.3. *Lifecycle interviews*

In the two communities chosen for qualitative study, life histories were collected on a purposive sample of 24 women stratified equally between four age groups: 15–20, 21–35, 36–49 and 50+. With the exception of the oldest age group, all women were included in the broader networks sample. In particular, we were interested in how major life changes such as marriage, children, entrance of a co-wife, and old age determine the make-up of a woman's social network. It was also thought that understanding a woman's social experience over time would provide insight into why certain people may or may not be perceived as important. For example, the conspicuous absence of a brother or a sister in a woman's network might be the result of conflict or separation occurring in childhood.

Informal observations of networks in action were conducted over a 2-week period with women of different age groups to help formulate a series of questions to evoke reflection about the role and importance of network members over the life course. A systematic set of probes was also developed to elicit information about networks utilized during crisis periods, and other notable events, and to identify the specific relationship of each network member to the respondent. Questions were organized to assist recall, commencing with information about the women's current position, and then working back to early marriage, adolescence, and finally childhood. Use of a local events calendar or a personal timeline of life events also facilitated recall particularly among older women.

Each semi-structured interview was conducted over several days, using the survey questionnaire to cross-check network members, and to investigate why certain people were included or excluded as the case may be. Written records of each interview were then coded for themes related to life-stage circumstances, the size and composition of social networks and the types of support they provide.

2.4. *24 h recall of networks in action*

Data on network interaction and exchange occurring within the previous 24 h was collected from a sample of 20 women in the Bamanan and Fulbe communities selected for indepth qualitative study. Four interviewers, two in each community, were assigned 10 women whom they visited every 3 days. At each visit, women were asked to recall network interactions during the previous 24 h such as: help obtaining food, loans or gifts of money, help with domestic chores, visits with or from others, topics of conversations, and illness prevention actions.

Over a 4-month period, interviewers visited each woman in the sub-sample 28 times. To ensure consistent reporting, interviewers employed a checklist to probe for instances of gift-giving, social interaction (chatting and advice) and help with domestic tasks, household purchases and food supply. Respondents also identified the people with whom each of

these events or exchanges took place. In addition, interviewers recorded descriptions of the women's character and disposition, the state of the household (including general preventive health actions) and information regarding periods of illness and crisis. Using a qualitative data analysis package (AnSWR), responses were coded according to type of support and support provider.

3. Reliability of the survey method

The decision to apply a survey method to elicit networks raised concerns about the degree to which a 'snapshot' accurately captures and represents the range of people with whom our sample interacts and more fundamentally, whether it is reasonable to assume that these networks are stable over time. To justify the use of survey generated networks as fixed variables in data analysis, we assessed the stability of support network size and composition over a 2-week period by using a test-retest method (Marsden, 1993). Network questionnaires were administered to a sub-sample of Bamanan ($n = 35$) and Fulbe ($n = 43$) women at Time 1 and Time 2, one fortnight later. This interval was assumed to be sufficiently long to ensure that network members elicited at Time 2 would be independent of Time 1, and not merely a verbatim list of members mentioned previously.

As shown in Table 1, paired sample *t*-tests failed to detect significant differences in the structural properties of networks at Time 1 and Time 2: the size of material, practical, cognitive and emotional appearing constant in both ethnic groups.

Table 1
Paired sample *t*-tests of differences between network size at Time 1 and Time 2 comparing Bamanan and Fulbe, Mali 1997

Site	Type of network	Mean size	Time 1 vs. Time 2 (significantly two-tailed)
Bamanan	Material	Time 1	13.6
		Time 2	15.2
	Practical	Time 1	6.6
		Time 2	7.2
	Cognitive	Time 1	5.4
		Time 2	5.8
	Emotional	Time 1	3.4
		Time 2	3.1
Fulbe	Material	Time 1	10.7
		Time 2	11.2
	Practical	Time 1	3.4
		Time 2	3.6
	Cognitive	Time 1	1.7
		Time 2	2.2
	Emotional	Time 1	1.3
		Time 2	1.3

Table 2

Reliability in network composition comparing Time 1 and Time 2 among Bamanan and Fulbe women, Mali 1997

	Bamanan (<i>n</i> = 35)	Fulbe (<i>n</i> = 43)
Mean size of network	28	15
Percent network members mentioned in both Time 1 and Time 2	51	57
Percent network members mentioned in Time 1 only	23	19
Percent network members mentioned in Time 2 only	26	24

A more stringent test of reliability, however, is whether the composition of network members is replicated across interviews. This was accomplished by comparing the names, ages and relationships of network members at Time 1 and Time 2, and flagging those that were mentioned both times. For the average Bamanan woman in the sample, 51% of all network members elicited using the survey approach appeared in both Time 1 and Time 2. For the Fulbe a slightly higher matching or overlap rate of 57% was achieved (Table 2).

To what degree instability in network membership reflects error in measurement, low reliability or true variation in network composition is difficult to ascertain. Nevertheless, a number of possible explanations warrant mention. More generic explanations concern discrepancies in questionnaire administration (i.e. degree to which probing occurred or questions were clearly articulated), cultural differences between researchers, interviewers, and respondents, and issues of respondent literacy, all of which are commonly encountered in cross-cultural research. Because literacy rates among rural women in Mali are very low, the interviewer was left with the challenging task of determining how to record network names in a manner that distinguishes between numerous names that are very similar. Exacerbating the challenge of spelling, is the surfeit of surnames in both ethnic groups, and the common use of nicknames. Are Madou Konate and Mamadou Konate the same or different individuals? Is Amadou Hamadou the same as Hama Amadou due to the reversal of first and surname? While information on the age, relationship and residence of each network member assisted in the process of identifying network members, it was virtually unavoidable that certain individuals with two names were sometimes counted as two different people, while two individuals with shared or similar names were counted as one.

Other explanations are more particular to the populations studied. For the Bamanan, a greater probability of inaccuracy in network elicitation might be expected due to large network size. Given the importance attached to cooperation, kinship, and mutual support in Bamanan culture, there may also be a tendency to recall a larger slate of network members than may actually provide support, and a related likelihood that these “symbolic” members may not be perfectly recalled between Time 1 and Time 2. Some support for this argument is evident in the lower matching rate reported by the Bamanan compared to the Fulbe whose average network size is substantially smaller.

The practice of ascribing kinship to unrelated individuals among the Bamanan also complicated the matching process, whereby people tend to be described based on their utility or closeness to ego. For example, at Time 1 a generous yet unrelated male friend, is called an uncle, however, at Time 2 he is identified as a male friend. Similarly, a distantly related cousin with whom ego has close relations at Time 1, is termed a “sister” at Time 2. While there appeared to be fewer instances of fictive kin with the Fulbe, rela-

tionships are no less complicated due to the common practice of marriage between cross cousins such that a brother-in-law may also be a cousin. However, further investigations of differences in network composition comparing Time 1 and Time 2 suggests that some of the observed variation may be due to actual variability in network membership. Hammer's distinction between core and extended networks is relevant here (Hammer, 1983). Core networks include highly salient relationships that are consistently identified in a survey, whereas extended networks consist of a much larger number of ties that are more peripheral in nature, and may or may not be identified at any one contact. Supporting this argument, we find that close friends or kin (i.e. husband, mother, mother-in-law, cowives, or children) who generally fall into the "core" or more "salient" category of relationships, account for the majority of Time 1–Time 2 matched cases (Bamanan 66%; Fulbe 63%). Neighbours, and/or more distantly related relatives (i.e. father's cousin or mother's aunt) are recalled less consistently. Furthering this line of argument, Morgan et al. (1996) state that compared to core members, one might expect constant growth in peripheral network members at subsequent interviews given that the probability of contact with these individuals will increase over time. Assuming that the "core" network is (approximately) represented by individuals mentioned at both Time 1 and Time 2 (matched network members), we note the identification of a greater percentage of unmatched "peripheral" network members at Time 2 versus Time 1 in both ethnic groups that is suggestive of this argument (see Table 2).

Finally, despite best efforts, it is also possible that this tendency to recall additional "peripheral" members at Time 2 may be a consequence of respondent misunderstanding. Instead of stating all those who provide support in their lives as requested in the first interview, respondents may have understood the second interview as an opportunity to elicit *additional* support givers whom they did not mention at Time 1.

4. Validity of the survey method

To what extent are networks measured cross-sectionally a valid representation of a woman's daily network? To answer this question we compared the size and composition of support networks elicited by survey with networks captured using a 24 h recall method whereby individuals were asked to recollect network interactions occurring the previous 24 h every 3 days for a duration of 4 months. The purpose of this comparison was to establish whether a similar spectrum of network members was detected.

Table 3 expresses the mean degree of overlap in network membership comparing survey and 24 h recall for Bamanan and Fulbe women, respectively. Pooling all network members

Table 3
Validity in network composition elicited by survey as compared to 24 h recall method among Bamanan and Fulbe women, Mali 1997

	Bamanan (<i>n</i> = 19)	Fulbe (<i>n</i> = 19)
Percent network members mentioned in both survey and 24 h recall	53	59
Percent network members mentioned only in survey	40	29
Percent network members mentioned only in 24 h recall	7	12

elicited by both methods, we note a 53% overlap rate for the average Bamanan woman in the sample, and a 59% match for her Fulbe counterpart. The Table also reveals that on average, the survey approach yields a larger mean proportion of unique network members (Bamanan 40%; Fulbe 29%) than the 24 h recall method (Bamana 7%; Fulbe 12%). This is not entirely unexpected given differences in the way networks were elicited. The survey's broader focus on perceived networks, without specifying timeframe, or requiring evidence that they were active, most likely accounts for the longer list of network members obtained. The 24 h survey method focused exclusively on networks in action, recording the identity of network members only if there was evidence of actual interaction with ego. The 24 h method also tended to elicit those people with whom routine interactions occur, in other words, a small number of network members were identified repeatedly over 28 visits.

As regards type of support provided, comparisons between the survey and 24 h recall method proved more difficult to accomplish given fundamental differences in their ability to elicit certain kinds of networks. For example, attempts to probe for instances of emotional or cognitive support received in the previous 24 h yielded very little. This may have been due to the fact that less tangible types of support are more challenging for the interviewer to define and solicit on a daily basis, and more difficult for the respondent to remember and enumerate. It might also be that instances in which this kind of support is requested are relatively rare and occurred infrequently in the 4-month period of observation.

The following case studies present the broader social and historical context of two women (one from each ethnic group) based on lifecycle and 24 h recall approaches, with the aim of assessing the construct validity of networks elicited using the survey method.

4.1. Case study #1

Coumbare (aged 33) is a Fulbe woman who is the second wife of the village chief's younger brother. In addition to official village duties, her husband manages the household's substantial cattle herds and the herder he pays to tend them. According to her life history, Coumbare has always enjoyed relative affluence and takes great pride in her personal wealth and the power and respect it confers. She receives a great deal of practical help in the household including support from her co-wife whom she considers a close friend.

She was "given" to her grandmother in another village as a child because she was the first born. Her early years were spent in the company of many cousins, however, regular visits from her siblings meant that she never lost contact with them. She was very close to her grandmother and never made to work very hard. The daughters-in-law in the household were responsible for most domestic chores. With the exception of minor health issues, Coumbare enjoyed a happy and healthy childhood in the company of many children. Like many Fulbe women, Coumbare was promised in marriage at a very early age to a man who already had a wife. Her older brother brought her back to her natal village at the age of 8 to prepare for her marriage. She had no fears about getting married or being a second wife to a much older man, partly due to the kinship link that she shares with her husband and co-wife. On joining her husband's household, she was assisted in adapting to her new surroundings by her co-wife, her mother-in-law, and the wives of her three brothers-in-law. She spoke with particular fondness of her co-wife who helped her through pregnancy and childbirth, and has provided valued marital advice. When needed, the co-wife also offered

the domestic assistance of her daughter-in-law. While Coumbare can increasingly rely on her own children for practical support, this does not diminish the imperative to bear more to ensure that she is well-provided for in the future.

Twenty-four hour recall also indicate the generous support of her marital family. A large volume of gift-giving, borrowing and material help was received from her husband and brothers-in-law, as well as natal kin (siblings, nephews and nieces) located in the village. Coumbare is similarly well-supported in terms of childcare and domestic duties. Over the 4-month period of observation, practical help was provided on a regular basis by her niece, her 13-year-old daughter, her co-wife, the wives of her brothers'-in-law, and her mother-in-law.

Consistent with Coumbare's comfortable status within her marital family, survey data reveal an exceptionally large network of 26 unique individuals. Most of this network is natal-kin (75%) and located within the household (80%) given that she is related to her husband and the members of his family. Her material support network is particularly large (20 members), followed in size by her practical network of 10 individuals all of whom are found within the household. Her cognitive network is also quite large (seven members) and predominantly located within the household (70%). Sources of perceived emotional support are her co-wife, younger sister and mother-in-law.

4.2. Case study #2

Safiatou age 30 is a Bamanan woman who is the third of four wives. This is her second marriage as her first husband died eight years ago. She had three children in her first marriage, only one of whom survived and lives with her deceased husband's family. With her current husband, who is head of household, she has had two daughters aged 4 and 6.

In her life history, Safiatou describes how she is assisted on her fields by her younger co-wife Fatoumata, her brother-in-law's wife Konimba, and the daughter-in-law of the eldest co-wife, Gnele. Proceeds from her field (rice, corn and sisal) are sold to pay for condiments, clothing, and medical care for herself. Safiatou's husband is responsible for the children's food and medical care. While neither she nor her children go hungry, she is unable to afford farm labor or to purchase soap and other luxury items.

Given the large size of the extended household (31 members), responsibility for food preparation is assumed by nuclear units, although once prepared, meals are eaten collectively. Unlike older women in the household whose sons have married, Safiatou has no daughters-in-law on whom she can rely. She would like to have two more children, preferably boys, such that future support from daughters-in-law would be assured. In the meantime, she relies on the daughter-in-law of her eldest co-wife if needed. Among her co-wives, she is closest to Fatoumata, the recently arrived fourth wife. She is also on very good terms with her husband's brother's wife, Konimba and an older woman in the village named Hawa. She can discuss even the most sensitive topics with these two women.

Unlike her siblings, after her father's death Safiatou remained with her mother when she remarried. Her own sisters stayed in their father's village and were raised by a paternal uncle. As a result, she did not get to know them until her adult years. Because her mother was frequently sick, she was responsible for most of the household work. At the age of 13, she started working as a domestic servant, however, when it was suggested that she move away from the village with her employers, her mother refused.

Her first marriage was reasonably content thanks to good relations with her elder co-wife who treated her like her own daughter. Her husband's family was large but she was compatible with most everyone. Unfortunately, he died shortly after the birth of their son. She returned to her natal home but her in-laws insisted on keeping her son whom she has not seen until this day. Soon after, both her mother and uncle passed away leaving her in the care of a maternal aunt who subsequently arranged her second marriage. She was frightened about joining her current household as there were no existing familial ties or contact prior to marriage. Fortunately, she has adapted well, and extended family members appear to appreciate her loyalties to the family.

The 24 h recall data confirm many of the networks above. In particular, these data demonstrate that Safiatou is largely self-provisioning, with only minor material support provided by her husband over the 4-month period of study. Practical support in the form of childcare and domestic help is available from her co-wife, and friend, Hawa. A visit from her brother and sister was recorded during the period of study during which gifts were exchanged.

Survey results reveal that, Safiatou's network is comprised of 15 members average for Bamanan women in the region, which is largely conjugal (61%), and located within the household (67%). Emotional support, is provided exclusively by her older friend Hawa, and cognitive support by her foster mother-in-law. Supported by 24 h recall data, survey results indicate that material support is limited to Safiatou's husband, with periodic assistance from her maternal aunt, and elder siblings.

As exemplified in the case studies above, the current size and composition of social networks as elicited by survey, seem to reflect the experience of individuals in contexts and relationships of the past (Feld, 1997). We see in Coumbare's case study a history of relative affluence and privilege that continues into the present. Once the spoiled grandchild reared far from the competition of siblings, in her marital household she is catered to by many, partly due to her social status as the favored wife of a prominent husband, and partly due to her expectations that support be provided. The survey method picks up the extensive network that Coumbare commands, rich in material and practical support.

In contrast to the apparent control that Coumbare wields over her network, a theme of dependence and separation perpetuated by a history of bad luck permeates Safiatou's life history, and her relationship with network members. Removed from her siblings with her father's death, separated from her child with the death of her first husband, and suffering the loss of her mother, her fate was ultimately decided by a maternal aunt who arranged her marriage to a man with whom neither she nor her family had prior contact. Survey results indicate the existence of a substantial network of practical and material support givers on whom she relies. Interestingly, however, emotional support is provided exclusively by a friend, suggesting that the theme of isolation from family continues into the present.

5. Conclusions about the reliability and validity of the survey method

Results from this analysis suggest that a cross-sectional survey approach to measuring social support networks provides reliable quantitative measures of network size. Network composition, on the other hand, appears less stable over the 2-week test-retest period. Given that some of this variation is due to the natural variability of networks, it is reasonable to

question the feasibility and validity of measuring networks at a single point in time for certain purposes (White and Watkins, 2000). If precision about the identity of network members is a priority, clearly the survey approach has its limitations. Accounting for part of test-retest variation, however, are errors in member identification and subsequent problems in linking same individuals that can be minimized. In this respect, clarifying the identity of network members via the inclusion of additional identifier variables, and emphasizing the importance of accurate and consistent member recording, is critical. Results also suggest the need to explore the issue of core and extended network members and how they might be reliably identified, as well as other cultural influences that affect network reporting.

Some differences are apparent in the spectrum of individuals that are captured, however. For example, we found that the survey method is particularly adept at eliciting those who provide emotional and cognitive support, while the 24 h recall method is effective in capturing the full range of individuals in a network who provide daily domestic assistance. Remarkable in these comparisons, is the degree to which these tests of survey validity yield similar results despite enormous cultural differences in network size and composition.

Enhancing the validity of the survey method was a basic understanding of the cultural norms regarding who ought to be supportive, facilitating the process of intelligent probing to elicit those unintentionally overlooked as opposed to those who are overlooked intentionally. It should be noted, however, that distinguishing between members elicited by free-list and those obtained via probes will be important in subsequent efforts to establish the reliability and validity of this approach.

6. A cross-cultural methodology for collecting network data

While the survey approach may be the most pragmatic choice for field-based research, the results are only as good as the formative research on which the survey is based. In this respect, it is important to consider how the methods we have presented might be articulated to develop an optimal survey instrument that is both culturally informed and feasible to undertake. Applying our methods across two cultures reveal how qualitative and quantitative approaches may be used and sequenced. First and foremost is the importance of careful qualitative work that explores social context and cultural norms surrounding networks and the provision of social support. These explorations are best conducted within focus groups where normative beliefs are easily elicited (who should help). Local definitions of core and peripheral networks can be explored at this time (who should you rely on the most). This might be followed by a period of longitudinal data collection (24 h recall) on a sub-sample of individuals during which network dynamics are studied and consideration given to how network members might most effectively be elicited. The collection of life histories on this sample may also help identify survey questions that capture select elements of life context useful to interpretation. While the life history approach is clearly not feasible to undertake on a large scale, a well-conducted set of life histories do provide a greater understanding of how networks are embedded within a particular socio-cultural organization. They lend a sense of how support networks develop and evolve over the life course, and in so doing, permit greater confidence in attributing certain outcomes to network features. It may also be possible to incorporate some life course questions into survey methods to capture how

a woman's circumstances currently and historically have shaped her needs and the support available to her. Finally, we recommend that a test-retest exercise be incorporated into survey piloting to expose and address unanticipated problems associated with network identification, interviewer training, and respondent misunderstanding.

The value of a social networks perspective is undisputed, allowing us to identify and address key aspects of an individual's social relationships that influence health behavior and outcomes. While the measurement challenges are great, we argue that the judicious combination of qualitative and quantitative approaches is critical to enhancing the relevance, validity and utility of network studies in diverse cultural settings.

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