# Clustered risk: An ecological understanding of sexual activity among adolescent boys and girls in two urban slums in Monrovia, Liberia

# ***Clustered risk: An ecological understanding of sexual activity among adolescent boys and girls in two urban slums in Monrovia, Liberia.***

*Running Head: Clustered Risk: Adolescent sexual activity in Liberia*

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**Abstract**

**Background**

Many young people experience sexual debut before they are able to cope with its consequences. Normative sex roles, social position, and power can undermine an adolescent's ability to exercise agency in their first sexual encounters and negotiate safer sexual behavior, all of which may be patterned by gender. In Liberia, violent conflict, the Ebola outbreak, and widespread poverty influence adolescent sexual behavior.

**Objective**

This study examines the intersection of psychosocial and interpersonal factors with the social and physical environment to form an ecological understanding of how the determinants that shape sexual activity differ between boys and girls in two urban slums in Monrovia, Liberia. This study focuses on three different levels: 1) intrapersonal and psychosocial factors, 2) the role of the family and other interpersonal relationships, and 3) the overall community structure.

**Methods**

Fifty-three adolescents aged 15-17 years (27 males and 26 females) were recruited to participate in a concept mapping exercise. Concept mapping is a participatory research method that uses both qualitative and quantitative approaches through 1) group discussion, 2) brainstorming, 3) sorting factors into meaningful clusters, and 4) interpretation of the results to create a visual map.

**Results**

Cluster maps include both positive and negative factors that participants believe to influence early

sexual debut in their communities, including parental pressure, transactional sex, family status, goals and aspirations, and poverty. The influence of these factors diverge according to participant gender. Participants described how psychosocial, interpersonal, family, and community factors interact with economic, political, and social forces to normalize sexual violence.

**Conclusion**

The results highlight the importance of interventions designed to harness the social, political, and economic determinants to shape adolescent sexual and reproductive health in positive, rather than harmful, ways.

**Keywords** sexual and reproductive health; adolescents; adolescent; low and middle-income countries; global health; social disparities; Liberia; concept mapping; urban slums; qualitative research

**Main Text**

**BACKGROUND**

Adolescence is a time in which the complicated nature of sexuality emerges, yet most countries in sub-Saharan Africa have limited capacity to provide adequate sexual and reproductive health services to youth. The services that do exist tend to focus primarily on the immediate goals of preventing unwanted pregnancy and disease, and rarely address the adolescent's evolving sexuality alongside the complex structure of social and economic pressures that youth must balance as they make decisions about their sexual behavior. Normative sex roles, social position, and power can undermine an adolescent's ability to exercise agency in sexual encounters and negotiate safer sexual behavior, all of which may be patterned by gender. Decisions surrounding sexual behavior often reflect a desire to strike a balance between individual identity and social expectations (1, 2).

The age of one's first sexual encounter represents a marked point of transition in a young person's life. With the age of sexual debut decreasing globally, many young people face this transition before they have the ability to cope with the consequences. In many low and middle income countries, adolescents are unable to access resources that would enable them to protect themselves against health risks such as pregnancy or sexually transmitted infections (3). Concerns over the consensual nature of an adolescent's first sexual experience become magnified as age decreases (4). For many young people in the developing world, the decision to have sex is not always their own decision to make; rather, they may be coerced into sexual activity by another individual or by the structural violence of poverty.

Syndemics theory emphasizes how oppressive social, political, and economic forces become entangled with health problems to produce a multiplicative interaction that exposes a community to concentrated clusters of disease (5). In turn, the collective experience of disease compounds and changes the social environment. In the case of adolescent sexual behavior, factors at all levels, including biological, social, economic, and geographical intertwine to create a web of influence that reinforces existing behaviors and normalizes new ones. For example, during adolescence, the process of biological maturation is often incongruent with social maturation (6). Puberty represents a time when biological change diverges between young men and women and when hegemonic gender norms are reinforced by powerful social and economic forces (7). Young women may be encouraged to partner with older men who are more sexually experienced, while young men are encouraged to prove their masculinity through early sexual contact (8). A large body of literature suggests that such age differences put young women at increased risk of pregnancy, STIs and violent sexual encounters (9-12). Additionally, the lack of lack adequate facilities, supplies, and gender sensitivity often found in schools in LMICs creates a difficult environment for young girls who are transitioning through puberty (13). Many girls drop out of school once they begin menstruating and as a result, become even more vulnerable to negative sexual exposure (14). The processes highlighted above are only some of the ways in which gender-related differences in sexual and reproductive health become engrained in society, and as such reproduce discriminatory access to resources, power, and education (15).

While the majority of existing research on the determinants of sexual debut and sexual behavior among adolescents focuses on individual-level factors, such as one's own socioeconomic position or psychosocial attributes, a body of literature is emerging that highlights the association between

the multiple levels of context in which youth are embedded and their reproductive health outcomes. A few recent studies have examined the influence of macro-level structural factors that operate within the community environment on the sexual and reproductive health of both young boys and girls. Poverty in the community may limit the availability of positive recreational opportunities for all youth, especially young girls, thereby increasing the likelihood of risky sexual experiences (16). A qualitative cross-country comparison of youth in Baltimore, Johannesburg, Shanghai and Ibadan found that adolescents identified a complex interaction between their social and physical environments and their reproductive health status. Vacant homes and the lack of recreation facilities were cited as being influential among young girls, while boys focused on the role of drugs and violence (17). Other studies in LMICs have identified the importance of community-level factors on adolescent sexual behavior, notably poverty. A multilevel study in South Africa found that community-level poverty is a predictor of risky sexual behavior, including age at first sex (18). Burns and Snow also identified structural poverty and its impact on the built environment, as manifest by the inequitable and exclusionary distribution of basic services, is significant in its contribution to risky sexual behavior among adolescents, such as condom use and the number of partners (19).

In Liberia, a devastating history of war, the recent Ebola outbreak, and widespread poverty are likely some of the root causes of the poor reproductive health status of youth. Traditional family and community support structures eroded during decades of violence. Many of today's youth were orphaned or have only one surviving parent, thus making the transition through adolescence even more difficult (20). More girls tend to experience first sex during early adolescence than boys. The 2013 Demographic and Health Survey reports that 23% of adolescent girls in Liberia experienced

sexual debut before the age of 15 compared to 9% of adolescent boys (21). Other studies report similar findings (22-25). Compared to other West African countries, the percentage of girls who experience sexual debut before the age of 15 is relatively high, as compared to 13% in Benin, 8% in Ghana, 20% in Guinea, 15% in Nigeria, 9% in Senegal, and 22% in Sierra Leone (26). In Liberia, adolescent girls with no education and those in the poorest wealth quintiles experience their first sexual encounter nearly one year before their better educated and wealthier counterparts (21). Few studies, however, examine the determinants of sexual debut among Liberian youth, especially those in urban slums.

The purpose of this study is to examine how psychosocial and interpersonal factors at the individual level converge with the broader social and physical environment to form an ecological understanding of the determinants that influence how Liberian girls and boys experience their first sexual encounters. This study focuses on three different levels: 1) intrapersonal and psychosocial factors, 2) the role of the family and other interpersonal relationships, and 3) the overall community structure.

## METHODS

This study uses a research methodology known as concept mapping. Concept mapping is a structured qualitative data collection and analytical process that results in the development of a conceptual framework for how a group views a particular topic (27, 28). The process consists of a series of interactive activities, including brainstorming, pile sorting, and group discussion that occur over the course of several group sessions. The resulting data are analyzed using hierarchical cluster analysis which produces illustrative cluster maps depicting relationships between ideas (28). Concept mapping has previously been used to engage adolescents effectively in discussion of abstract and sensitive topics, including those related to physical activity (29-31), substance abuse (32), community social services (33), violence (34), and reproductive health (35-37) in order to identify the role of higher level determinants and opportunities for intervention. Concept mapping's interactive and longitudinal nature make it particularly appropriate for youth in that participants tend to become more comfortable with the research setting, the other participants, and the topic over time.

### *Data Collection*

This study was conducted in two urban slums in Monrovia, Liberia (referred to as Slum A and Slum B). Slum A is a one of Monrovia's largest slums and has an estimated population size of 75,000. Slum B has population of approximately 25,000-35,000.

Participants aged between 15 and 17 years were recruited by convenience to participate in a series of three sequential, 1.5 hour, focus group sessions. Ethical review of this study was provided by the Institutional Review Board at the Harvard T.H. Chan School of Public Health's Office of

Human Research Administration and the University of Liberia Institutional Review Board. Verbal assent and parental consent was obtained for all study participants prior to participation. Each participant was given 5 USD to compensate them for their time. The concept mapping exercise consisted of 1) generating initial questions in order to encourage group discussion, 2) brainstorming factors that contribute to sexual debut, 3) sorting factors into meaningful clusters, and 4) interpreting results to confirm cluster groupings and labels using a visual display. Each session was separated by gender, comprised of 5-8 participants, and led by a trained local facilitator of the same gender familiar with reproductive health issues. All sessions were recorded and transcribed.

In the first session, participants were asked to brainstorm a set of factors relevant to sexual activity among adolescents in their community. These factors were put onto notecards for a pile sorting activity (38) in which participants were instructed to place the note cards into piles based on the item's similarity to other items and to generate labels corresponding to each pile.

***Map Generation***

Using the data from the pile-sorting exercise, maps were generated according to the process outlined by Kane and Trochim (39). First, participant responses were encoded into binary similarity matrices which were summed to create a combined matrix of all participants' data. A distance matrix (using Euclidian distances) was calculated from the combined matrix. Multidimensional scaling (MDS) was then used to determine the degree of similarity between the clusters of items, and to place the items into a spatial configuration (40). Scree plots and Shepard plots were used to determine the number of spatial dimensions that best represented the data (41).

Stress is the key diagnostic criteria used to determine the number of dimensions, as it represents the degree to which the distances on the final map are discrepant to the values in the distance matrix. A stress value of 0.10 or lower is considered desirable (42). The analysis was performed using the R package *Vegan* (43).

Separate cluster maps were generated for boys and girls within each community. Individual items on each map are grouped into clusters that represent high-level conceptual spheres, and the distance between any two points or clusters on a map represents the degree of similarity between the two items. The name given to each cluster was determined through group consensus during the final group session, and represents how the participants understand the items to be related to each other.

## RESULTS

### *Description of Participants*

Table 1 presents the participants' background characteristics by gender. On average, most participants were around 15 years of age. The vast majority were enrolled in school (more than 95%) and lived with both biological parents. Fifty-three adolescents aged 15-17 years (27 males and 26 females); In Slum A, 12 boys and 14 girls participated in the study and in Slum B, 15 boys and 12 girls participated in the study. The sample size of 53 participants is considered sufficient (39), and is consistent with other published studies using the concept mapping methodology (30, 31, 36).

**[Insert Table 1 Near Here]**

### *Cluster Maps*

The final cluster maps are presented in Figures 1-4. Maps are presented individually for boys and girls from each slum community. The final cluster map for Boys in Slum A contains 23 items in seven clusters and was generated using a three-dimensional solution (stress = 0.07). For boys in Slum B, the final map contains 36 items in seven clusters and was generated using a three-dimensional solution (stress=0.04). The map for girls in Slum A includes 40 items in six clusters, and was generated according to two dimensions (stress=0.07). Finally, for girls in Slum B, the map contains 42 items in six clusters, and was generated along two dimensions (stress=0.05).

**[Insert Figures 1-4 Near Here]**

### *Intrapersonal and Psychosocial Factors*

Intrapersonal and psychosocial factors were found to be influential across all four groups. The clusters representing "future goals and aspirations" (boys in Slum A), "individual determination" (boys in Slum B), "respect for one's self" (girls in Slum A), and "individual motivation" (girls in Slum B) focus on the influence of one's personal attributes. For example, the desire to obtain an education and pursue future career goals, coupled with having a strong, personal character, were thought to discourage young people from participating in sexual activity. Additionally, fears over the potential negative consequences of engaging in sexual activity emerged as part of the intrapersonal context, such those surrounding pregnancy complications, HIV/AIDS, and continued poverty. One boy in Slum A described how the need to take individual responsibility combined with the anticipated economic repercussions of having a child influences his participation in sexual activity:

> *It have to do with my age, not having sex, because I am determined, let's say focus[ed] on education, my fear [of being] poor in the future. So I prefer keeping myself than to put myself into calamity…in the sense that my daddy still buying me shoes, then you tell me that if I go out and pregnant somebody daughter, you think my daddy will be able to buy me shoes? The money he using to buy me shoes, he will end all taking it to buy pampers for my children. – Boy, Slum A*

Girls also expressed similar sentiments. As one girl in Slum B explained:

> *When you small and get pregnant, your parents will give you to that man to get marry to you and then the man do not have [money], you will suffer, so I will stay from sex and achieve my goals.—Girl, Slum B*

***Interpersonal and Family Factors***

Concepts identified at the interpersonal level seemed to operate in divergent directions – especially those relating to families and peers. Parental support emerged as a prominent factor among both boys and girls in both slums prevented them from engaging in sexual activity. Most participants described parental discipline as the primary deterrent. Parental support emerged as part of "positive encouragement" among girls in Slum A, and "good advice from role models" and "individual motivation" among girls in Slum B. "Parental control" was a discrete concept among boys in Slum B; however, no similar discussion of parental control emerged among boys in Slum A.

Parental pressure to participate in sexual activity was pervasive across all groups. Girls described pressure to participate in transactional sex while boys described pressure to begin having their own families or to assert their masculinity. Under the concepts of "sex pressure" (girls, Slum A) and "little positive encouragement" (girls, Slum B), girls described pressure to participate in transactional sex from their parents and siblings in order to satisfy demands on them for money, food, and other household items. As a girl in Slum A explains:

> *Parents will see their friend[s'] children bringing money in their house and doing thing[s] for her parent, so she will tell her children say, "every day you in this house doing nothing, go and follow your friend and bring things," then her mother will pressure her. – Girl, Slum A*

The concept of "family pressure" on both boys' maps contains items that relate to parental and sibling pressure. The nature of the pressure that boys face was different from that faced by girls. Boys in both communities described feeling pressure to provide their parents with grandchildren, and finding a girlfriend who can help out with household chores:

> *Parents are forcing their children saying, "I am getting old. I need a grandchild to help me," and the child, still fifteen [years of age]. Boy, Slum B*

> *When [your mother] send you to wash [clothes] they will say, "my man you hurry up and bring your girlfriend, so they can be washing our clothes and be cooking for us," ...* Boy, Slum B.

For boys, family pressure to have sex is heightened by the presence of sexual activity in the house. Boys in Slum A identified "exposure to sex" as a separate construct, while boys in Slum B thought of it as an aspect intrinsic to the family pressure they experience. In both groups, participants described one-room houses with regular exposure to their parents' and siblings' sexual activity.

Boys also described being tasked to fetch their fathers' girlfriends. These experiences served to pique young boys' curiosity in sex, while also increasing their desire to conform to gender norms and expectations.

***Community Influences***

Boys and girls in both slums identified persistent poverty and a dangerous community environment as being factors conducive of sexual activity. In Slum A, the items that girls identified as relating to poverty include being exposed to sexual activity at home, the presence of older men at home, pressure from teachers, desire for material things, and the need to get food. Sexual exploitation by teachers was seen as a product of poverty, in that girls would not be able to provide for their family in the future if they received poor grades in school. Thus, they described pressure to engage in sexual activity with teachers for grades and school fees as commonplace. Poverty was also thought to be central to the pressure they received from their family to engage in transactional sex. Participants described a common scenario in which parents tell their young daughters to get fish to feed the family, but they are not given any money. As stated by one girl from Slum A, "when you go buy fish, [the fisherman] will ask you for your number because every day he giving you free fish," thus, the girl will be expected to have sex with the fisherman for payment for the fish. Girls in Slum B identified many of the same items in the concepts of "dangerous community influences" and "poverty," however, the concept of "sex pressure" also includes many elements that relate to both community influence and poverty.

Many girls discussed leveraging their sexuality as a means to obtain desired material goods that are otherwise unattainable because of poverty. A girl in Slum A described peer pressure as *"*seeing your friends with new things, and you want it at all costs*."* Another girl in slum B explains:

> *I have so many friends who wear new thing[s] every day, and I complain to my parents to buy the same cloth[es] my friends are wearing, they will tell you that they don't have money, you should manage with what you get, [but] I will find all means to get it…--Girl, Slum B*

In Slum B, the concepts of family status and family pressure were intertwined with community poverty and economic standing. Participants indicated that boys from relatively wealthy families were more attractive to girls because of their ability to provide material and financial support, while boys from poor families were thought to be less appealing. In Slum B, one boy described how being in poverty reduced his confidence in approaching girls:

> *It can discourage me to have sex because if I see a girl passing and I say in my heart that this girl is beautiful, but when I look at myself I will say, I do not even have food to eat in my house and my parent do not have any money. You will be a secret admirer because of poverty …. –Boy, Slum B*

## DISCUSSION

The findings of this study are pertinent to research and programs intended to address the sexual and reproductive health needs of Liberian adolescents in urban slums according to three salient dimensions. First, the results of this study suggest that individual-level traits conflict with attributes of the environment in which youth are embedded. Second, prominent gender-related differences emerge with regard to how the ecological forces within the environment shape the sexual and reproductive health of young boys and girls. Third, the results highlight an interaction between the economic, political, and social forces that operate to normalize a culture of sexual violence.

Youth identified the importance of individual-level attributes in all four of the concept maps. Individual traits were generally protective in nature, such as wanting to finish school or having ambitious future goals. While individual motivation has been found to be an important protective attribute against early sexual debut elsewhere (44), the results of this study indicate that protective individual-level factors were often at odds with constructs in the broader environment. The spatial divergence illustrated on the concept maps between clusters that relate to individual motivation and community-level factors emphasize this discord. For example, a strong desire to stay in school or obey one's parents may cause some adolescents to be more vulnerable to sexual exploitation through pressure to use sex as a means to pay school fees, obtain good grades, or generate income for the family.

Gender may also influence the way in which higher-level determinants shape adolescent sexual behavior, with girls being put at an increased disadvantage (15). While both the boys and girls in the study described being pressured by their families to engage in sexual behavior, boys described

the pressure as being centered on improving their family's long term economic stability by starting a family. The pressure that young women received from their family was also economically driven, but instead it was focused on using sex to generate income to meet their families' immediate needs. Girls and boys also described differences in how the physical environment influenced their sexual behavior. While both indicate that the physical environment was permissive to adolescent sexual behavior, boys described it as being a mechanism reinforcing of common constructs of masculinity through the presence of pornography and alcohol, while girls described it as predatory.

The concept maps produced by the participants highlight the duality in the roles that social institutions play in the sexual and reproductive lives of adolescents. The positive effect that protective institutions, such as families and schools are often thought to have on adolescent sexual behavior (44-47) seems to be eroded by the overwhelming level of poverty. For example, throughout all four concept maps, several clusters that contain items describing family influence appear opposite from each other, thereby visually representing the divergence in how families influence participants' sexual behavior.

One of this study's most troubling findings is that sexual exploitation appears to be widespread and deeply embedded across multiple layers of context within the study communities. These results support those of other studies in Liberia, which have found forced and transactional sex among youth to be both highly prevalent (23, 24) and often promoted by families, teachers, and community members (48, 49) in order to overcome the pressures of poverty. A recent vulnerability assessment conducted in Monrovia indicated that transactional sex was considered to be socially acceptable for young girls (48).

411

412 Invoking syndemics theory to interpret this study's results, Liberia's history may be one factor that
413 has contributed to the reproduction, reinforcement, and normalization of sexual violence across
414 generations. During the Liberian Civil War, the collapse of social order and governing institutions
415 led to the widespread use of violence across social and political domains (50). The use of rape as
416 a weapon during the war has been well-documented; more than 90% of Liberian women are
417 believed to have experienced sexual violence during the conflict (51). The normalization of sexual
418 violence during the war is reflected in Liberia's legal response to sexual assault. Studies have
419 found that many Liberians tend to believe that women either invite rape through their behavior, or
420 that they use accusations of rape as means to enact revenge or to gain political or economic
421 leverage (52, 53). While there is a predominant perception that the political and legal environment
422 that fails to adequately address acts of sexual violence, many Liberians also believe that only most
423 extreme rape cases should be prosecuted (53).

424

425 The strain placed on Liberian society after the recent Ebola crisis may add another layer to the
426 cross-generational cycle of violence and poverty experienced by the children of Liberians who
427 survived the war. The Ebola outbreak likely led to increased levels of sexual violence in the study
428 communities. A similar phenomenon was observed in neighboring Sierra Leone, where a spike in
429 adolescent pregnancy during the Ebola outbreak is thought to be attributable to widespread sexual
430 assault and transactional sex by adolescent girls in order to account for lost income due to the death
431 of family members (54).

432

The results of this study should be interpreted with caution, as the findings are not meant to be generalizable. The majority of participants in this study were still in school and lived with their biological parents. Orphaned and out-of-school youth represent large populations within these communities and the factors that contribute to their engagement in sexual behavior may be different, and potentially more devastating, than the factors described here. Additionally, the results of this study could disproportionately represent the most confident and outspoken youth. Even though all data were collected by trained, Liberian facilitators, it is possible that the sensitive nature of these topics may have caused embarrassment due to the presence of the adult facilitator. However, given that many participants shared deeply personal anecdotes about their lives throughout the discussion, social desirability bias is likely limited.

## CONCLUSION

Taken together, the findings of this study suggest that interventions focused on changing the ways in which community institutions support adolescents in their sexual and reproductive health may be more effective than interventions that focus solely on individual-level behavior change, as macro-level forces appear to coerce youth into making decisions that undermine their individual desires. While intervention strategies aimed at fostering stronger relationships between youth and their parents and improving school attendance are often thought of as ways to promote improved sexual and reproductive health outcomes among youth (55), the results of this study suggest that the effect of such interventions may not be universal, especially among the most vulnerable youth living in urban slums. Additionally, interventions should incorporate a gender-sensitive approach that considers how the influence of higher-level determinants bring about differences in the pressures boys and girls face with regard to their sexual activity. Additional research is needed to better inform interventions that aim to more positively engage families, caregivers, and teachers in creating a safer environment for youth. Designing interventions from an ecological perspective, including those that strengthen individual motivation, target relationships within the family, improve the accountability and safety within public institutions, and support livelihoods to improve economic empowerment, may help to empower both young boys and girls to enter into sexual activity on their own terms, and ultimately to improve their sexual and reproductive health outcomes.

**END MATERIAL**

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Author Contributions

JG, DL, TK, SVS, AL, and SBA conceptualized and designed the study. JG conducted the analysis and wrote the first draft. TK supported data collection. All authors provided critical revisions and approved the final submitted version.

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Ethics and Consent:

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Paper Context:

Prior to conducting this study, the authors found limited research on the factors that contribute to of sexual debut during early adolescence among Liberian youth. This study offers an in-depth examination of the factors that adolescent males and females identify as important. The implications of this study are that adolescents in Liberia often leverage their sexuality to respond to the pressures of poverty—something that has become normalized and promoted within the community environment.

Data Sharing Policy:

Data for this study cannot be made public as per ethical protections given the sensitive subject matter and age of participants.

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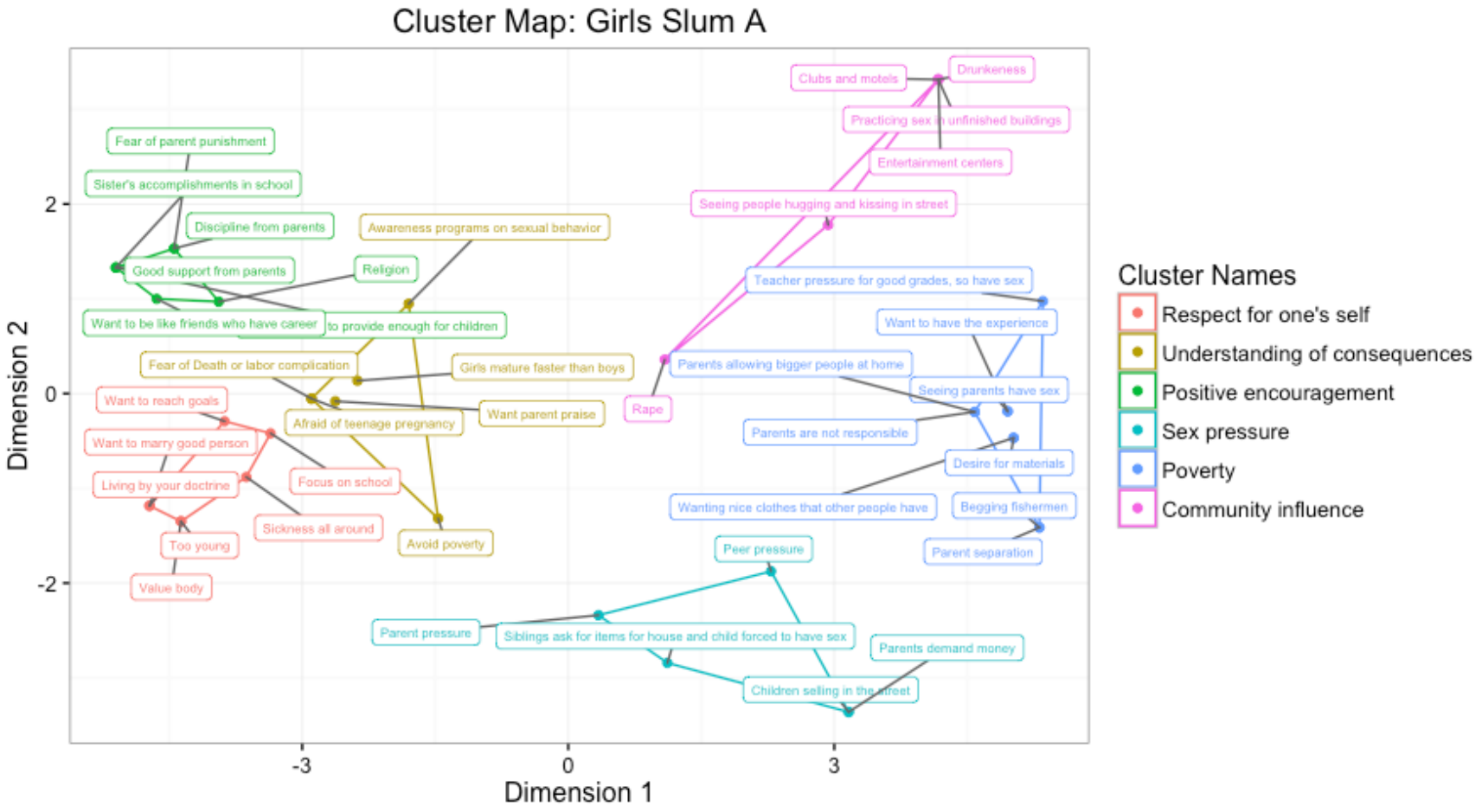
639 **Table 1: Key Background and Demographic Characteristics of Study Participants**
640 **Disaggregated by Sex**
641

642

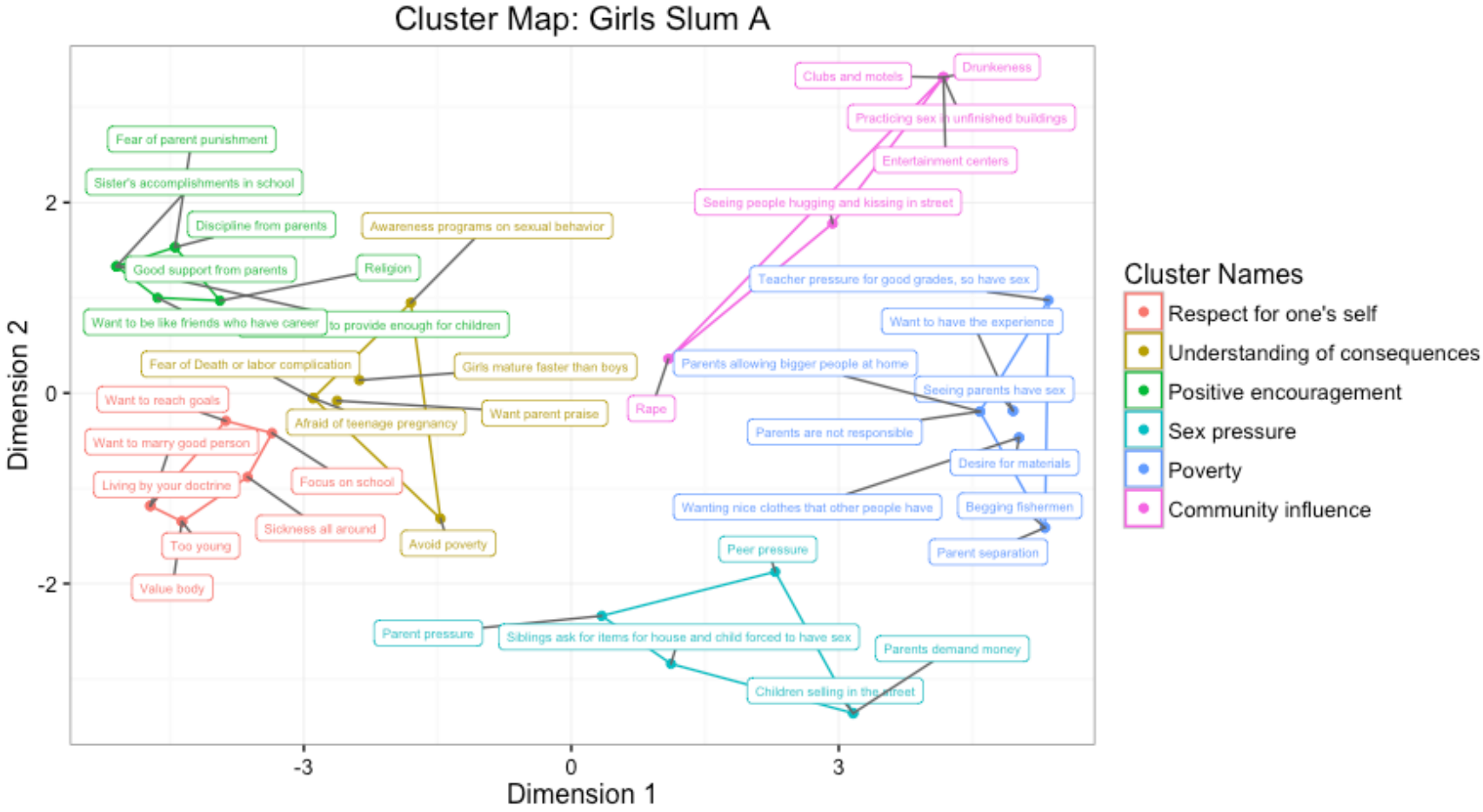
| **Characteristics** | **Male** (n=27) | **Female** (n=26) |
|---|---|---|
| Age in years (mean) | 15.7 | 15.4 |
| Currently enrolled in school (%) | 96.3% | 95.5% |
| Currently lives with: (%) | | |
| Both biological parents | 50.0% | 59.1% |
| Mother Only | 25.0% | 22.7% |
| Father Only | 0.0% | 4.6% |
| Guardian | 25.0% | 13.6% |

643 Figure 1: Girls Cluster Map, Slum A
644



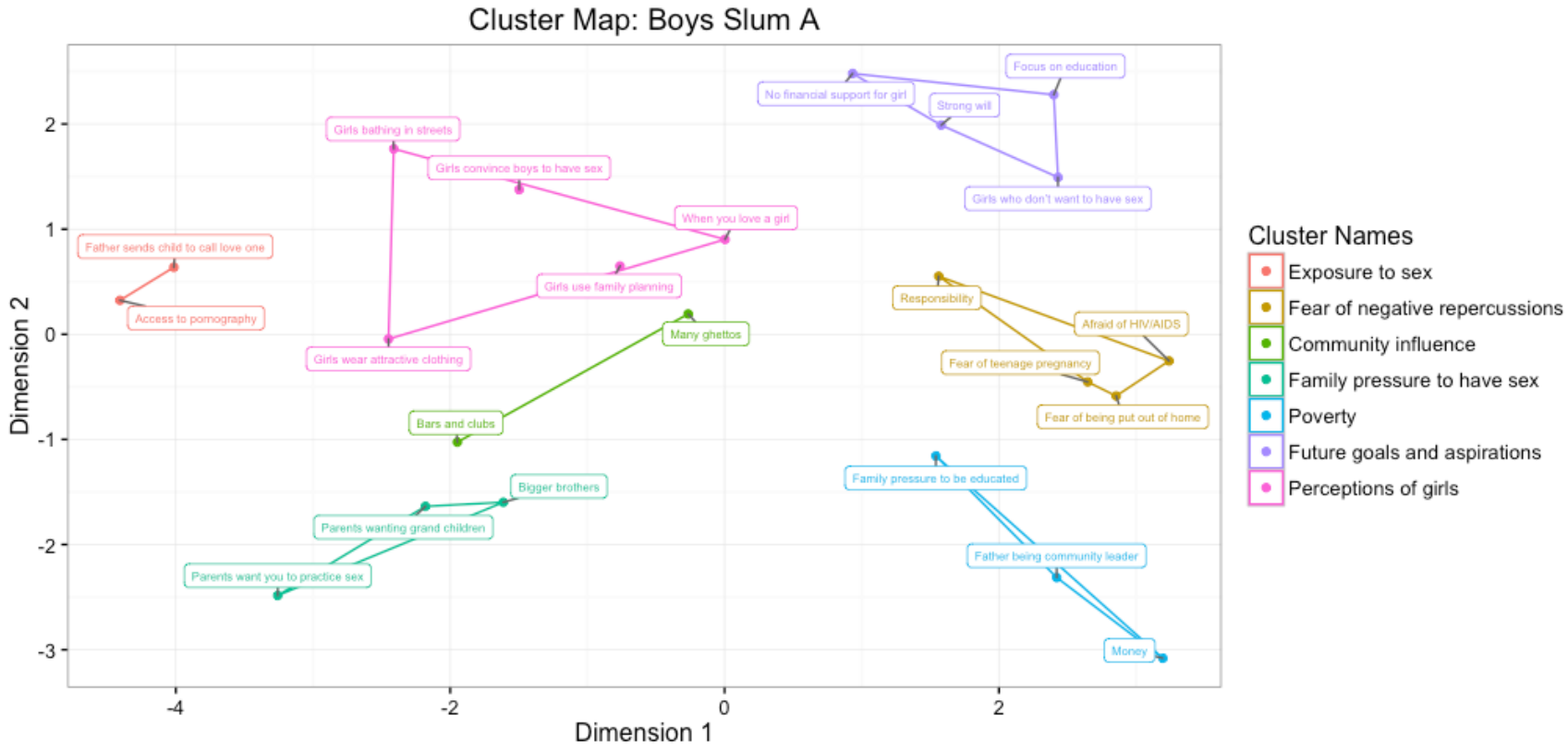

645

646 Figure 2: Girls Cluster Map, Slum B




647

Figure 3: Boys Cluster Map, Slum A



650 Figure 4: Boys Cluster Map, Slum B

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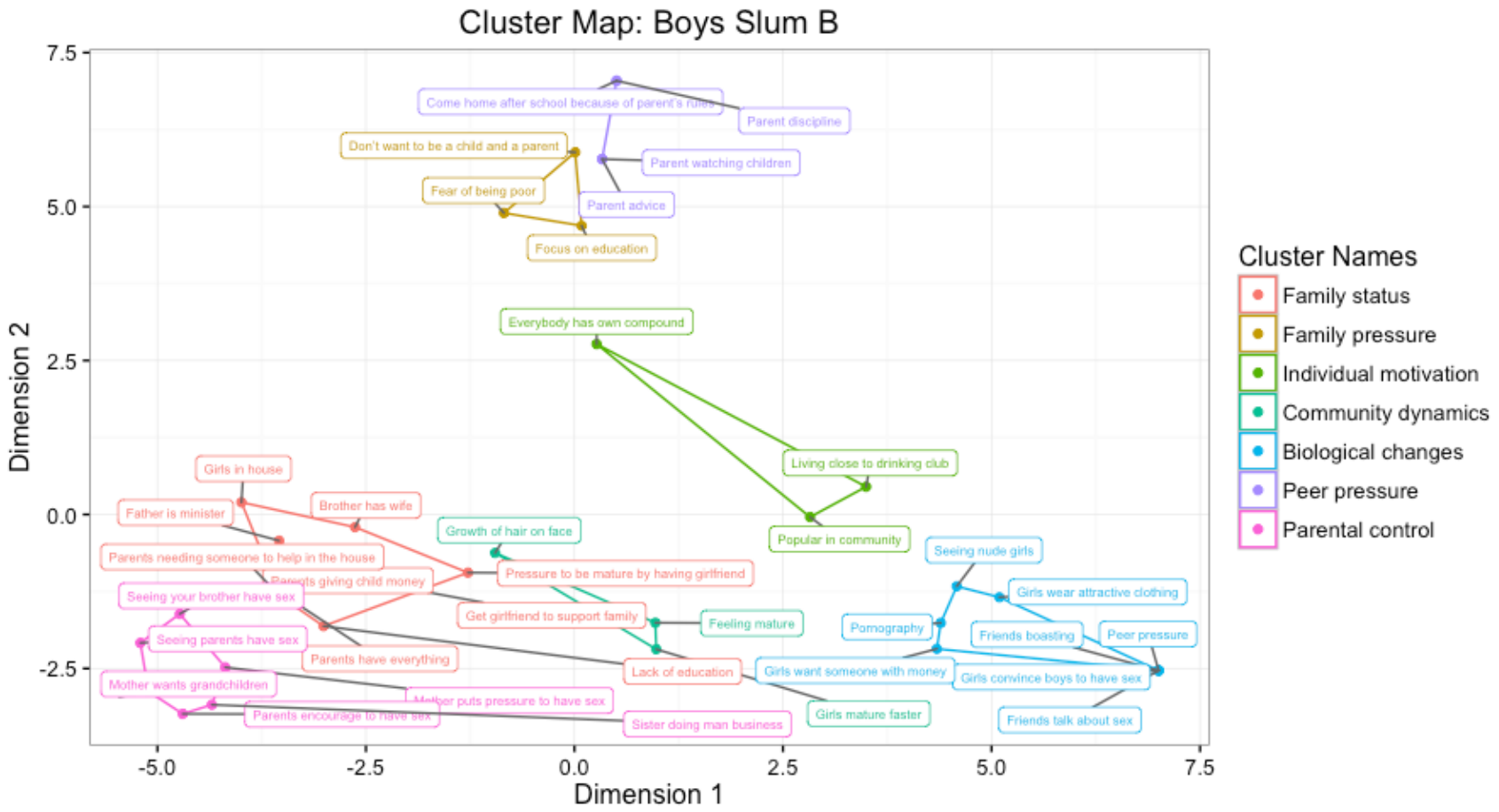


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