THE CHALLENGES OF SAMPLING STREET CHILDREN FOR INTERVENTION RESEARCH: CAN RESPONDENT-DRIVEN SAMPLING ADDRESS THEM?

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Abstract

Youth and children in Africa constitute a population at the center of societal interactions and transformations that are often placed at the margins of the public sphere and major political, socio-economic and cultural processes. The last two decades characterized by political conflict, armed violence and the HIV/AIDS pandemic created crises of unprecedented proportions that has seen children end up either in battle fronts, child labor/prostitution or streets. To begin addressing crises, for example of street children, there is need for evidence-based programmatic interventions for such vulnerable children. However, one challenge of gathering data for evidence-based interventions among street children is that traditional approaches to sampling marginalized populations lead to biased estimates of risk behavior and disease prevalence. Recruitment of a representative sample of such populations is compromised by the absence of a sampling frame from which a truly random sample can be obtained. In order to develop more representative samples of hidden populations such that of street children, respondent-driven sampling (RDS) has been suggested. By respondent-driven sampling taking care of the biases that are traditionally inherent in non-probabilistic sampling methods while not requiring the existence of a sampling frame, it comes out as the most attractive sampling method for use among street children.

Introduction

Youth and children in Africa constitute a population at the center of societal interactions and transformations that are often placed at the margins of the public sphere and major political, socio-economic and cultural processes (De Boeck and Honwana 2005). In many circumstances, they are denied meaningful access to education, livelihoods, healthcare and basic nutrition making them particularly vulnerable. As it would be expected, the
past two decades characterized by political conflict, armed violence and the HIV/AIDS pandemic have created a crisis of unprecedented proportions for already vulnerable African children with many of them ending up either in battle fronts, child labor/prostitution or streets.

The prevailing circumstances requires us to start dealing with this crisis promptly by inter alia: (a) addressing the dynamics of both local and transnational forces that are affecting African youth and children, (b) examining children and youth as plural and heterogeneous categories with varied and multifaceted experiences and expectations and, (c) interrogating the meanings of childhood and youth in particular social contexts. To enable us carry out this function appropriately, we need specialized and suitable methods that enables us answer the questions we ask about youth and children. This paper, therefore, reviews the challenges inherent in sampling street children described in literature as hidden population and the potential of respondent-driven sampling (RDS) in performing this task.

**Street children**
Although street children and all the challenges they present are here with us, the question of how to define a street child, is till unfortunately, generating much discussion. Some people argue that the term is socially constructed category of children that in reality does not form a clearly defined, homogeneous population or phenomenon (Moura 2002). The concept of ‘Street children’ covers children in such a wide variety of circumstances and characteristics that researchers, policy-makers and service providers find it extremely difficult to describe and target for interventions. However, when we unmask the concept and get rid of the word ‘street’ we find individual children, both girls and boys of all ages, living and working in public spaces, visible in most of the Africa’s urban centers (De Benitez 2007). Consequently, we are able now to see girls, who may not be physically seen on the street because of the harsh environment, on the periphery of the street engaged in activities like sex work/barmaid, house-helps (house girls).

Even though the definition of ‘street children’ is contested, many practitioners and policymakers use UNICEF’s concept of inadequately protected or supervised boys and
girls aged under 18 for whom ‘the street’ has become home and/or their source of livelihood (Black 1993). As per the foregoing definition, street children are found living in wide variety of structures including abandoned buildings, cardboard boxes, parks and even on the streets. However, inherent in all contested definition of street children is the fact that there are no precise categories of the children, but rather a continuum, ranging from children who spend some time in the streets and sleep in a house with ill-prepared or unknown adults to them as may be the case of girls who solicit money for sex, to those who live entirely on the streets and have no adult supervision or care. Therefore, the widely accepted set of definitions attributable to UNICEF categorizes street children into: (a) children on the street, that is, those engaged in some kind of economic activity ranging from begging to vending who go back home at the end of the day and contribute to the family earnings. This group of children may be attending school and still retain a sense of belonging to their family but are candidates of permanent life on the streets given the economic fragility seen in their families and; (b) children of the street, that is, those who actually live on the street (or outside of a normal family environment). Family ties may exist but are tenuous and are maintained only casually or occasionally.

In some literature, street children have been described as a “muted” group (Hecht 1998) that is only peripheral or marginal to the dominant society. Usually, the nature and activities of muted groups are typically outside of the awareness of members of the dominant society. Consequently, their nature and activities are frequently not noticed, misinterpreted and/or misunderstood. As a result, perceptions of muted groups tend to be stereotyped most commonly consisting of either romanticized or deviant caricatures. This group characteristic of street children presents clear challenges to programmatic or research interventions aimed at addressing some of the problems they face on the street. For instance, no one knows how many street children there are in the world or even in specific urban centers.

**Historical context of street children**

Children making the street their homes or source livelihoods is not a new phenomenon but instead dates back to as early as the third century based on the account of Alan Ball in his book ‘History of abandoned children in Soviet Russia 1918 -1930’ (Ball 1996).
Ball points out that orphaned and abandoned children were a source of misery from earliest times accounting for most of the boy prostitutes in Augustan Rome that moved a church council of 442 in southern Gaul to lament that ‘children were exposed more to dogs than to kindness’. In Tsarist Russia, seventeenth-century sources described destitute youths roaming the streets (besprizornye) that survived every attempt aimed at eradicating the problem (Neuberger, 1985). According Ball’s (1996) account, by 1922, there were at least 7 million homeless children in Russia as a result of nearly a decade of devastation from World War I and the Russian Civil War. Abandoned children formed gangs, created their own argot, and engaged in petty theft and prostitution. In Britain, Lord Anthony Ashley Cooper (English Politician and Philanthropist) in 1848 referred to more than 30,000 'naked, filthy, roaming lawless and deserted children', in and around London (Col 2007).

Although the problem of street children may be comparatively new phenomenon in Africa coinciding with urbanization and transition to a market economy (Kopoka 2000), it came in a magnitude that cannot be compared to what happened anywhere else in the world. The traditional systems that would ordinarily absorb orphans have, by and large, been overwhelmed by the magnitude of the problem getting African agencies ill-prepared to handle the problem (Young and Barrett 2001; Veale and Dona 2003). This may partly explain why African governments have not acted in a manner consistent with recognizing and dealing with the problem.

**Causes of problem of street children**

Many widely varying causes have been attributable to the phenomenon of street children in urban areas especially in Africa (De Benítez 2007). However, the causes are highly dependent of each individual case and the surrounding socio-political environment. The report of World Health Organizations (WHO) released in 1993 gives a catalogue of reasons that are thought to push children on to the streets. These reasons vary from family breakdown, armed conflict, poverty, physical and sexual abuse (violence), dislocation through migration, acculturation to orphanhood (mainly caused by AIDS). However, some people have dismissed causes such as poverty as a simplistic approach to a complex problem. For instance, De Benítez (2007) argues that if poverty were the cause of
children ending up on the streets to fend for themselves then we would have millions of children abandon their impoverished homes for the streets. There is consensus, however, that HIV/AIDS epidemic has led to large numbers of orphans and vulnerable children some of whom end up on the streets as the traditional foster care systems get overwhelmed. This is probably why most published surveys report the great majority of street children as either being single or double orphans (Veale and Dona 2003; Beyene and Berhane 1997). Whatever the cause(s), we already have the problem that we need to find short-, mid- and long-term solutions to the misery of the children.

Accessing street children
The issues of gaining access to a particular research population and the outsider identity of the researcher are particularly problematic when conducting research in a foreign culture and setting (Young and Barrett 2001). The practical difficulties are compounded when the study population is of hidden population such as street children, who, because of the intense and haphazard nature of street life often result in a way of living that may not be familiar to majority of researchers. Street children have a very fluid way of life that results in occasional employment, pick-pocketing, disruptive behavior which often results in conflict with the public and the police. The spaces they occupy are often marginal niches in the urban landscape which are constantly in transition. Based on the foregoing nature of children’s lifestyle, it becomes challenging for a researcher to gain access to street life, street spaces and even to the street children themselves. The access difficulties are even further compounded if the researcher, as is often the case, is of unfamiliar identity to the children in terms of either race, gender, language and/or class.

Methods used to collect information from children
Using appropriate methods to study children is very crucial not only for ethical reasons but also for validity of information collected. Studies of children, especially, vulnerable ones such street children have been rightly accused of relying on adults' assumptions about how children feel and what their needs are (Ennew 2003). According to Ennew (2003), children are rarely asked about their lives but instead researchers ask parents, teachers or staff of institutions associated with the children. Furthermore, in the event that they ask the children directly, they seldom use tools that are relevant to children's
experiences, interests or use of language. Even though some researchers may try to approach children's worlds through non-verbal research methods such as collecting drawings, they frequently fail to ask children what the drawings are intended to represent, relying instead on adult interpretations. Under these circumstances, even if we had a sound sampling procedure, we would still fail to capture quality and relevant information from the children. This clearly shows that collecting worthwhile information from children that can be used in programmatic interventions is a continuum in which sampling procedure only part of it.

The problems inherent in adult-centered approaches in children research are clearly illustrated by Swart’s work among street children in Johannesburg (Swart 1990). Swart gives an account of two street children who drew graveyards. A psychologist’s interpretation of their pictures might have been that the children are so depressed to the point of being fixated on death. However, none of the children was thinking about their death but of the unfortunate circumstances that made them leave home to live on the street. In one case, the boy represented when he had a quarrel with his brothers and sisters at his mother's grave-side that made him leave home to live on the street and the other one was depicting the burial place of his beloved grandmother (Swart 1990). This is an effective warning that we are likely to get nothing from the children if we rush making decisions on the methods/designs of children studies especially the muted group such as children on and/or of the street.

**Sampling procedures**

In research, sampling, which is basically the act and process of selecting a suitable representative part of a population for the purpose of determining characteristics of the whole population, is inevitable. This is because taking a census of the population of interest is practically limited by the huge amount of money and time required, often the large size of populations, inaccessibility of some of the populations and stringent accuracy of data usually desired. Although for the foregoing reasons we opt to use samples rather take the census of the population, we, nonetheless, always need to be prepared to deal with the challenges associated with using samples namely representativeness. In reality, the representativeness of the sample is usually contingent
upon the sampling procedure(s) used with some procedures being obviously better than others. The accuracy and reliability of the resultant data depends a lot on how well these challenges are eventually managed throughout the sampling process.

The desirability of a sampling procedure depends on both its vulnerability to error and its cost. However, economy and reliability are competing ends because to reduce error often requires an increased expenditure of resources failure to which unreliability sets in. Of the two types of statistical errors, namely sampling and non-sampling (measurement) error, only sampling error can be controlled by exercising care in determining the method for choosing the sample. The sampling error may be due to either bias or chance with the chance component (random error) existing no matter how carefully the selection procedures are implemented. The only way that has identified to try and minimize chance sampling errors is selecting a sufficiently large sample. Sampling bias, on the other hand, can be minimized by the wise choice of a sampling procedure.

The ideal sampling methods are those that give every element of the population a non-zero equal chance of being included in the sample as is the case with random sampling methods (Thompson and Philips 2007). However, such methods require a well-defined and effective sampling frame that is not always available in hard-to-reach populations such as street children. Even in cases where an effective sampling frame and/or sampling strategy exists, one has still to grapple with making both theoretical and practical decisions about how much time, money and effort is required to maximize the responses (Semaan et al 2002; Lee 1993). Two approaches have traditionally been considered. One is a cost-conscious approach, exemplified by Sudman and Kalton (1985), who concluded that the biases resulting from not chasing up hidden elements of a population are often less undesirable than the major increase in cost in trying to access hidden elements. However, this approach can only be defended if the main purpose of the research is to report on measures of central tendencies, where extreme cases are not of central importance.

Contrary to the cost-conscious approach, if a major concern of the research is to ensure that the whole range of expressed needs and perspectives in the population are
represented, then it is essential to try to ensure that hidden respondents are adequately represented. Despite the existence of sampling methods (such as snowball, convenience, quota, and other forms of contact interviewing, outcropping and time-space) that are used in sampling hard-to-reach individuals within a community, these methods do not produce samples that are representative. In snowball sampling, for instance, a diverse range of first respondents (seeds) are chosen, interviewed and asked to introduce the researchers to other members of the community. This goes on with every participant interviewed until either the whole community has been interviewed or else the sample size limits are met (Faugier and Sargeant 1997).

Despite high validity of snowball samples, they have the following potential biases that make them inappropriate in certain circumstances: unknown representativeness; social distance between pairs of individuals; ‘islands’ different subsets that might or might not be connected; overlapping acquaintanceship circles increasing likelihood of resample; affiliation and “force field” biases – some people have greater presence and visibility in the community than others. These inherent challenges have given rise to respondent-driven sampling (RDS) (an augmented form of snowball sampling) that has potential to reach every element of the hidden population is capable of generating random samples (Heckathorn 2002; Salganik and Heckathorn 2004).

**Respondent Driven Sampling**

Respondent-driven sampling (RDS) combines snowball sampling with a mathematical model that weights the sample to compensate for the fact that the sample was collected in a non-random way. RDS represents an advance in sampling methodology because it resolves what had previously been an intractable dilemma of:

- Non-random selection of initial study participants, known as seeds.
- Tendency for *in-group affiliation*, where initial study participants tend to list people of similar demographics such as race, socioeconomic status levels, education, or characteristics (such as interests) as members of their networks.
- Tendency for cooperative study participants to enroll in a study (volunteerism) and reclusive study participants not to enroll in a study (masking).
Differential recruited social network sizes.

For instance, if a study focuses only on the most accessible part of the target population, standard probability sampling methods can be used but coverage of the target population is limited. To put this into perspective, street children can, for example, be randomly sampled from institutional feeding programs. However, this approach is only limited to children who attend such programs and misses out on many children who may prefer not or go to different programs. Therefore, a statistically representative sample is drawn of an unrepresentative part of the target population, so conclusions cannot be validly made about the entirety of the target population. Characteristically, RDS involves: (i) documentation of who recruited whom tracked through a coupon system; (ii) rationed recruitment with generally no more than three coupons allotted per ‘seed’, (iii) gathering and recording information on personal network size; and (iv) establishing preexisting relationship between recruiters and recruits (Magnani et al 2005).

RDS overcomes the challenges inherent in non-probabilistic sampling by showing that the breadth of coverage of network-based methods can be combined with the statistical validity of standard probability sampling methods to make it possible to draw statistically valid samples of previously unreachable groups. In essence, respondents recruit their peers, as in network-based samples, and researchers keep track of who recruited whom and their numbers of social contacts. A mathematical model of the recruitment process then weights the sample to compensate for non-random recruitment patterns. This model is based on a synthesis and extension of two areas of mathematics, Markov chain theory and biased network theory, which were not previously a part of the mathematical sampling theory. RDS statistical theory, therefore, enables researchers to provide both unbiased population estimates and measures of the precision of those estimates. This extends the realm within which statistically valid samples can be drawn, to include many groups of importance to public health and/or public policy.

Using both analytic methods and simulations when applied in a way that fits the statistical theory, RDS produces estimates that are "asymptotically unbiased" with bias only on the order of one divided by the sample size (Thomson and Philips 2007). So, for
samples that are large enough, this method is unbiased as it controls for the effects of differences in network sizes. RDS fits the sampling of street children basically because it is able to address the traditional problems/dilemma inherent in the non-probabilistic sampling methods and produce a representative sample of the children while not requiring the existence of a sampling frame that is usually difficult to obtain for street children. With a representative sample, we are able to obtain unbiased and comprehensive data that can be used for policy and program implementation.

**Conclusion**
Research on street children aimed at policy formulations and program interventions require data that is reproducible and generalizable to different circumstances. Such data can only be obtained from a representative sample of the children that is quite challenging to achieve due to the hidden nature of the children on street. By respondent-driven sampling taking care of the biases that are traditionally inherent in non-probabilistic sampling methods while not requiring the existence of a sampling frame, it lends itself so far the as most appropriate sampling method for use among street children.
References
Ennew, J, Difficult Circumstances: Some Reflections on ‘Street Children’ in Africa. Children, Youth and Environments 13(1), Spring 2003
Heckathorn D, 2002, Respondent-driven sampling II: Deriving valid population estimates from chain-referral samples of hidden populations. Social Problems, 49(1), 11-34.
Kopoka PA, 2000, The problem of street children in Africa: An ignored tragedy. Paper presented to an International Conference on Street Children and Street Children's Health in East Africa, to be held in Dar-es-Salaam, Tanzania, April 19th - 21st April 2000