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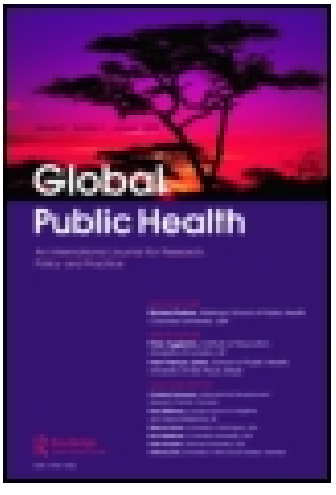

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Hope: A new approach to understanding structural factors in HIV acquisition

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Hope: A new approach to understanding structural factors in HIV acquisition

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This paper presents the first empirical results of a long-term project exploring the use of hope as a concept summarising people's experience of the social, economic and cultural world they inhabit. The work has its roots in attempts to understand socio-economic aspects of HIV/AIDS epidemiology through recourse to the term 'structural drivers'. In this paper, we recognise the distinguished contribution made by that body of work but adopt a different theoretical approach, one based on the idea of emergent social properties. This is an idea derived from the Durkheim's notion of a 'social current'. One such emergent property is hope and its potential use and applicability as an epidemiological variable is described. The variable is measured using the Snyder scale developed by the late Rick Snyder for quite other purposes in the USA. We use data from the long-standing UK MRC/UVRI General Cohort Study in Uganda together with a smaller study of some fishing communities. The results show that the Snyder scale (1) does measure a real variable, (2) does mean something to Ugandan rural populations and (3) can be used to explore some known risk factors for HIV acquisition.

Keywords: HIV/AIDS; hope; Uganda; structural drivers; social science

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Introduction

Here we report the first findings from a larger project exploring the role of the variable *hope* as a way to access what have been described as 'structural factors' in transmission of HIV and possibly some other sexually transmitted infections (STIs). The initial theoretical ideas behind this work have been described in detail elsewhere (Barnett, 2007, 2008; Barnett & Weston, 2008; Bernays, Rhodes, & Barnett, 2007).

In this paper, we examine applicability of a hope scale developed and validated on US populations in a non-US context, Uganda.

Why hope?

This paper reports on some findings of a small part of a larger theoretical and practical project which engages with two broad areas: (1) how to use social science concepts in

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ways that might lead towards a generalised understanding of the social science of infectious disease processes and (2) the potential use of this knowledge for better policy formation. Aspects of the policy implications of the proposed approach have been discussed in earlier publications, notably (Barnett & Weston, 2008), they are not discussed further here.

Infectious diseases of humans are 'social events' in both their epidemiology and/or their effects. Recent advances in two areas of social science, both very influential in many other fields, have been of potentially profound importance for our understanding of the social science of infectious diseases. The first of these is the literature which concerns itself with happiness and in particular with happiness economics (Barrotta, 2008; Blanchflower & Oswald, 2004, 2007; Botha & Booysen, 2014; Elmslie & Tebaldi, 2014; Fako, 2006; Frey, 2008; Frey & Stutzer, 2002; Goudie, Mukherjee, de Neve, Oswald, & Wu, 2014; Layard, 2005; Minja et al., 2001; Nettle, 2005; Oswald, 1997; Westaway & Wessie, 1994); the second is the development of our understanding of risk (Elster, 1986; Goldstein & Hogarth, 1997; Schwarz, Kahneman, & Diener, 1999) and subsequent and related developments in behavioural and experimental economic (Gilovich, Griffin, & Kahneman, 2002; Kahneman, 2011; Kahneman, Slovic, & Tversky, 1982; Kahneman & Tversky, 2000; Maital, 2007; Tversky & Kahneman, 1981). Happiness economics invites us to reconceptualise the way that we think about disease impact and its 'costs' and unhappiness and our actions. Some of the drivers of and costs associated with our actions are best thought about in terms of hedonic rather than monetary measures, and indeed may not easily be measured in monetary terms other than perhaps in the form of practically useful but theoretically problematic notions such as quality adjusted life years. It also invites us to consider how people look at the present in terms of future happiness or unhappiness. This orientation towards future happiness is captured by the familiar, even quotidian, notion of hope (Braithwaite, 2004; Ezzy, 2000; Filmer, 1996; Frey & Stutzer, 2002; Kelly, 2007; Locsin, 2002; Locsin, Barnard, Matua, & Bongomin, 2003; McKirnan, Ostrow, & Hope, 1996; Pettit, 2004; Sen, 1999; Snyder, 1996). Hope is a possible way of thinking about the relation between individuals' behaviours and their implicit and/or explicit assessment of risks associated with those behaviours. This idea has numerous wider implications, particularly with regard to ideas about structural determinants or 'drivers' of behaviours, which affect infection risk and is discussed in greater detail in what follows. Its quotidian nature also means that it can enter easily into the day-to-day discourse of policy and political discussion, thus facilitating the often complex and convoluted, sometimes even perplexing, communications between social scientists and those who develop and make policy.

Work on hope and its role in the social epidemiology of HIV/AIDS (or other infectious diseases) examines the ways this variable may contribute to understanding individual or group susceptibility to infection. It is argued that by measuring hope using a validated scale we may gain access to subtle observations by human actors situated within social structures and historical moments – their socio-economic milieu – of their experience of those things on their agency in relation to their perception and experience of social structure. This measure of hope is, at the individual level, an *emergent property* of both agency and structure: a product of agency and structure. Or, in other terms, it is – for the individual – the site where the intersection of agency and structure is experienced. However, this is not the whole story. Hope does not refer only to the experience of individual social agents. It may also be thought of an emergent property at the *group* level, at the collective level. Here it may be considered as akin to what Emile Durkheim

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(1938/1964) described as a *social fact*: 'a category of facts which present very special characteristics: they consist of manners of acting, thinking and feeling external to the individual, which are invested with a coercive power by virtue of which they exercise control over him' (p. 52). In other words, hope, and other similar entities, may at one level be emergent properties of the individual in their environment and, at another level, emergent properties of the shared experiences of groups of social actors in common social and economic structural situations or circumstances. Such measures of emergent properties may be useful indicators – albeit indirect, and as yet not clear how indirect – of the forces at work at the collective level. These forces are important in the acquisition of infectious diseases, and the more we are able to understand them and their effects on the social epidemiology of infection, the more we may be able to integrate such social science understanding into our responses.

However, the concept of hope, particularly in the context of its relations to happiness theory and behavioural economics, has potentially wider applications. Thomas Picketty (2014) remarks as follows in relation to economic and social change and the way it affects individual (and no doubt also group) hope:

> the transformations entailed by a growth rate of 1 per cent are far less sweeping than those required by a rate of 3–4 per cent, so that the risk of disillusionment is considerable – a reflection of the hope invested in a more just social order, especially since the Enlightenment. Economic growth is quite simply incapable of satisfying this democratic and meritocratic hope, which must create specific institutions for the purpose and not rely solely on market forces or technological progress. (p. 96)

Rapid social and economic change is often associated with the emergence of new infectious diseases; the impact of new diseases or expansion of their range (as with Ebola) affect individuals and groups. In each case, in their emergence or their impact, infectious disease events may be better related and understood through use of a rigorously defined and scientifically deployed concept of hope.

Background

Uganda's HIV epidemic is of long-standing (Serwadda et al., 1985). In so far as this project concerns hope and infectious disease in Uganda, some background is appropriate.

Uganda became independent from Britain in 1962, and it is 40 years since HIV/AIDS first appeared there. Immediate post-independence optimism was followed by increasing instability and insecurity in the later 1960s. Idi Amin's coup in January 1971 did not bring peace. In August 1972, he expelled all Asians, most of whom did not have Ugandan citizenship, expanding the public sector to take over their expropriated properties and businesses. The result was economic chaos, which continued when Amin was ousted in 1979. These events were particularly disruptive for people living close to the Tanzanian border, the site of our study. Here there was considerable fighting. In 1986, when current president Yoweri Museveni took power, the area was less directly affected by fighting but experienced economic and political turmoil (Tadria, 1985). The HIV epidemic followed closely, touching nearly every family in southern Uganda (Barnett & Blaikie, 1992; Hansen & Twaddle, 1995; Iliffe, 2006, pp. 23–26). Yet, over the past 25 years, these people have lived in a relatively peaceful environment, although with the uneven and limited levels of economic growth (Seeley, 2014) characteristic of a 'land-locked, resource-scarce country with bad neighbors' (Collier, 2007, p. 53).

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This paper uses data collected in Uganda and derived from two sources:

(1) A long-term cohort study, the General Population Cohort (GPC), established in 1989 by the UK Medical Research Council (MRC) and the Uganda Virus Research Institute (UVRI). Located in Kalungu District, south-western Uganda, a population of approximately 10,000 people in a cluster of 15 villages was studied from 1989 to 1999.[1] In 2000, this study was expanded to cover a further 10 villages. The researched population includes approximately 20,000 people.[2]

(2) A smaller population outside the GPC. This is the Fisher Folk Study (FFS; Asiki et al., 2011; Seeley et al., 2012). The FFS village included in this study is a small settlement on the shores of Lake Victoria. The population engages in a mixture of fishing and farming. The FFS, conducted from 2009 to 2011 in five fishing villages, assessed HIV prevalence and incidence, risk factors for HIV infection and the feasibility of conducting future trials in what was believed to be a highly mobile population (Asiki et al., 2011).

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The general hypothesis

Over the last decade, the term 'driver' has increasingly been used in the HIV/AIDS policy research community and even in the wider infectious disease community (Adimora et al., 2006; Beyrer, 2007; Chen et al., 2006; Curtis & Aunger, 2011; Dickinson & Stevens, 2005; Gillespie, Kadiyala, & Greener, 2007; Leendertz et al., 2006; Liverani et al., 2013; Moreno, 2006; Morisky, Nguyen, Ang, & Tiglao, 2005; Orenstein, 2006; Polley, 2005; Renton, Gzirishvilli, Gotsadze, & Godinho, 2006; Sopheab, Fylkesnes, Vun, & O'Farrell, 2006; Sumartojo, 2000; Sunmola, 2005; Walsh, Breuer, Sanz, Morgan, & Doran-Sheehy, 2007; Williams, 2005). Attempts at defining these 'drivers' appear most recently in a series of publications (Auerbach, Parkhurst, & Cáceres, 2011; Gupta, Parkhurst, Ogden, Aggleton, & Mahal, 2008; Kippax, Stephenson, Parker, & Aggleton, 2013; Parkhurst, 2013). In this context, 'drivers' describes 'the patterning of human sexual behaviours … deeply embedded in, and shaped by, underlying social, economic, and legal-political structures', and it is claimed that this framing term can contribute to reducing HIV risk by identifying 'changes in broader structural elements (be they economic opportunities, social norms and gender roles, legal freedoms, or combinations of these factors)' (Parkhurst, 2013, p. 1).

The idea of 'drivers' avoids theoretical problems associated with the more precise and logically demanding idea of 'cause' (Hume & Flew, 1962; Hume & Millican, 2007; Read & Richman, 2000). 'Drivers' turn out on inspection to be what are broadly described as 'structural factors'. These are assumed to influence rates of HIV sero-prevalence. The term 'driver' has been deployed in part for a very good reason – to balance assumptions that behavioural changes apparently necessary for HIV prevention are often viewed as solely the responsibility of individuals. This perspective is often used to interpret many other areas of human weakness,[3] from alcohol use to obesity. However, experience shows that individual behaviour change is very difficult, not least where sexual behaviour is concerned, because of the simultaneously very private but also intensely sociocultural nature of human sexuality. The insight that broader social, cultural, economic and even environmental factors may affect HIV transmission has been present in discussions of HIV prevention for at least 20 years (Barnett & Blaikie, 1992; Barnett & Parkhurst, 2005; Barnett & Whiteside, 2006; Connell et al., 1989; Geissler & Prince,

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2010; Kippax et al., 2013; Mann, Tarantola, & Netter, 1992; Parker, Herdt, & Carballo, 1991; Schoepf, 2004; Sumartojo, 2000; Tarantola & Gruskin, 2004).

Such insights about 'broader' 'structural' 'factors' and 'drivers' of the pandemic are undoubtedly useful (Govender, Seeley, & Watts, 2014). They may even in some sense be 'true'. However, the capacity of current social sciences (in which we include economics, sociology, social anthropology and political science) to engage with them is limited. Two recent papers (Glass & McAtee, 2006; Janes, Corbett, Jones, & Trostle, 2012) recognise this and look for a greater contribution from the social sciences to enhance our understanding of infectious disease transmission. In the main, the observation that there are 'social factors' continues to be repeated, presenting a disparate range of 'structures' or 'factors', which no doubt do influence transmission in some way. But the distinct role of these variables, their interactions and their history and ontological status remain vague.

The term 'drivers' remains unexamined, perhaps because its use guards against any closer examination of the relation between these social 'factors' or 'structures' and the vexed concept of 'cause'. Among the best account of the role of these 'drivers' is a recent paper by Parkhurst (2013). Here structural drivers are said to drive risk, and some chains of interlinked causality are sketched out. But the central structure-agency problem in social sciences is not confronted (Giddens, 1979) and as long as it remains unexamined, social scientists will struggle to contribute to disease prevention in ways that their disciplines appear to promise. Indeed, the following observation from a significant early paper in this field remains as valid today as it was prescient then:

> However, important areas remain to be addressed. (1) How best to identify and analyse the different kinds of constraint that may be present in a particular situation – economic constraints, constraints linked to gender and sexuality, and limitations imposed by obligations of age and social status. (2) The need to develop methodologies suited to the evaluation of enabling interventions. (Aggleton, 1996, p. 26)

Here we seek to build on this important plea. We do not dismiss the structural drivers literature, but we do begin from a different perspective, one which, while cognisant of the role of structural factors and of those researchers who have pursued this problem so assiduously over two decades, avoids trying to specify what these might be. Instead, it confronts the underlying structure-agency problem in social sciences (Barnett, 2007, 2008; Barnett & Weston, 2008; Giddens, 1979) by going around it and recognising that, to treat these two analytical categories as distinct is to risk missing the analytical point, much as in physics it is an error to understand light as wave *or* particle when it is/can be either or both.

The point is as follows: we could spend several careers trying to specify different portfolios of 'structural factors' and suggest how these might act as 'drivers'. In that specification, we might indeed pursue measurement of the relative effects of such component factors in the universe of behavioural multiple causality. What is required now, if there is to be any practical result from such deliberations, is a different approach. In what follows we describe that approach briefly, showing how, instead of specifying structural drivers and their interactions in contributing to disease transmission, it makes sense to use another approach connecting social structure, individual agency and subjective perception into a single measure and then trying to see whether this measure relates to known factors for HIV acquisition.

We then report on research, which forms part of a programme to test this approach in Uganda and in Tanzania.

The key but not very contentious theoretical assumption is that human beings in their everyday experience negotiate a path between their individual wills and the constraints of the world they inhabit, a world which can also be understood to inhabit them through their consciousness. Rather than endeavouring to *solve* the structure-agency paradox, we suggest there is instead a range of sociological concepts, which describe people's lives as a balance between selfhood and external structures. Each individual experiences the constraining structure of their world, and it becomes a part of their internal world, affecting the decisions they take, perhaps more important are *able* to take. This internal world is an emergent property of the complex of structures within which their life takes place. At the macro level, the level of social life, these internal emergent properties emerge as social currents such as waves of opinion, 'crazes', fashions, prejudices and even, as in the classic study by Durkheim (1897/1970), social currents leading to suicide rates.

Emile Durkheim (1938/1964, 1897/1970) wrote of this problem when he described suicide, the apparently most solitary of acts, as paradoxically also an intensely social act because it reflected the action of what he called 'social currents' on the individual. From this perspective, when people look to the future, they adjust their expectations and in particular in the present context, their assessment of risk, and act on the insights, perceptions, knowledge and beliefs they have about themselves and their social, cultural, economic and ontological environment. They then formulate their expectations and actions in terms of their hopes.

Here we posit that individual and group hope schedules affect individual and group risk perception and behaviour, and that further there is a relationship between hope, risk exposure and acquisition of HIV and/or behaviours, which are known to increase risk of HIV acquisition (Barnett, 2007, 2008; Barnett & Weston, 2008). We do not report on a rigorous test of that hypothesis in this paper; we merely report on a first step in such a test by assessing the applicability of a particular research instrument. In so doing, we also present some very preliminary results.

Discussion of what the scale is supposed to do and whether it is measuring anything and if so, what?

The late C.R. Snyder (1995; an exponent of 'positive' psychology and its application to improving motivation) defined hope 'as the process of thinking about one's goals, along with the motivation to move toward (agency) and the ways to achieve (pathways) those goals' (p. 356). To explore these ideas, he developed the State Hope Scale (Snyder et al., 1996). This is a simple scale for measuring an individual's level of hope along the two axes of *agency* ('successful goal-directed determination') and *pathway* ('successful goal-directed planning'). This conceptualisation of hope does not describe a vague sense of hopefulness. It is more tightly defined and endeavours to define hope as a state where goals are formulated and realistic pathways are identified through which those goals may be pursued. Thus, it combines the two elements already referred to above, the interior aspiration as well as the individual's implicit knowledge and assessment of the context within which those aspirations may be pursued. The original scale (Snyder et al., 1991) consists of the following 12 questions (of which 4 are fillers designed to distract the subject from the true focus of the research instrument) and was scored as indicated below:

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The Hope scale—

Directions: Read each item carefully. Using the scale shown below, please select the number that best describes YOU and put that number in the blank provided.

1 = Definitely False 2 = Mostly False 3 = Mostly True 4 = Definitely True

(1) I can think of many ways to get out of a jam (Pathways)
(2) I energetically pursue my goals (Agency)
(3) I feel tired most of the time (Filler)
(4) There are lots of ways around any problem (Pathways)
(5) I am easily downed in an argument (Filler)
(6) I can think of many ways to get the things in life that are important to me (Pathways)
(7) I worry about my health (Filler)
(8) Even when others get discouraged, I know I can find a way to solve the problem (Pathway)
(9) My past experiences have prepared me well for my future (Agency)
(10) I've been pretty successful in life (Agency)
(11) I usually find myself worrying about something (Filler)
(12) I meet the goals that I set for myself (Agency)

(Snyder et al., 1991, p. 585).

The two subscales are scored on a Likert scale with a maximum score on each sub-component (Agency/Goal and Pathway/Planning) of 16 and a maximum score of 32 on the full Hope scale. In later versions of the scale, Likert scoring scales of more than four points were used, sometimes up to eight intervals.

When developed and tested in the USA, the scale was shown to be robust and valid on the usual criteria: internally consistent, good test–retest reliability, good convergent and discriminant validity and evidence suggesting that Hope scale scores augmented the prediction of goal-related activities and coping strategies beyond other self-report measures. In addition, construct validation support was provided with regard to predicted goal-setting behaviours and corroboration of goal appraisal processes accompanying the various levels of hope (Snyder et al., 1991). As far as is known, the scale was not tested outside of the USA during its development and was used only once on a non-university student population in the USA.[4] Since then it has been translated and found comprehensible, consistent and valid in Arabic (Abdel-Khalek & Snyder, 2007). A recent study (Boyce, 2013; Boyce & Harris, 2013) used the scale in South Africa, but the instrument was not translated into a South African language although the respondents were African.[5] It is also evident that use of such an approach will ultimately necessitate consideration of variability of hope over time both in individuals and in groups (Krueger & Schkade, 2008). We do not explore this question here, merely observing that all perceptions and subjective states vary over time, as indeed do physiological states such as blood pressure (Blanchflower & Oswald, 2007), and such questions will be explored in the future for hope as they have been extensively for happiness (Blanchflower & Oswald, 2007; Frey & Stutzer, 2002; Nettle, 2005; Oswald, 1997). For now we (1) report on the use of the Snyder Hope scale in a Ugandan rural population and (2) note that this empirical exploration forms a small part of a wider theoretical enterprise engaging with social science, epidemiology and disease control.

As the first step in testing our hypotheses about hope and its association with HIV acquisition and/or behaviours known to increase infection, we wanted to assess the

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suitability of the Hope scale for use in Uganda. To this end, the scale was independently translated by two translators from the US English original to Luganda and then back-translated. From these translations, an agreed Luganda translation was developed. Translation and back translation did not present many difficulties, the main one being the US English colloquial term 'jam' to mean 'difficulty'. This was resolved. The version of the Hope scale with which we began had an eight-point Likert scale. Attempts to use such a finely differentiated scale were informative. Translation of the eight-point scale was more problematic since wording to denote the finer degrees of difference in 'false' and 'true' statements was difficult to achieve and pre-testing of the scale with Luganda speakers confirmed that, while gradations for a six-point scale was possible, wording for gradations for eight points was not. The agreed translation of the scale and scoring was then tested in two populations. It was administered as a component of a longer interview and was not self-administered as community levels of literacy were not high. Use of a six-point Likert scale means that, for the Uganda data, the maximum score on the scale was 48, and for each of the two main elements, Agency and Pathway, the maximum score was 24.

Here we examine the responses to the Hope scale of respondents in our two sites, the GPC and the FFS study village. The objectives of the analysis were to:

(1) Examine the scores obtained on the Hope scale and the two subscales in each site;
(2) Investigate factors associated with the overall Hope scale and the two subscales in each site;
(3) Compare the results on the scales between the two sites;
(4) Explore the association between risky behaviours and the overall Hope scale and the two subscales in the FFS site.

Choice of two different populations in the same district, situated 25 km apart (one on the shore of Lake Victoria and the other inland), allowed us to test the instrument in a general population where HIV incidence is low and at a fishing site where HIV incidence is much higher (see Seeley et al., 2012). The particular villages from the GPC were selected from the set of 25 villages from which the cohort was drawn because the biennial demographic and medical survey for the larger study was conveniently taking place in those villages at the time we were able to collect data for this study. The fishing village was selected from two adjacent villages included in an FFS in 2009–2011. The smaller of the two villages was selected not only because of size but also because there was less ongoing research activity at the site.

The sample from the GPC consisted of 100 consenting adult participants in two villages surveyed during the biennial survey round of the GPC (each village has approximately 500 adults). Data collection for that survey takes place at a hub, a centrally located place in the village where the team is based for the two- to three-week period of data collection (Asiki et al., 2013). One person was selected randomly from the first four men and first four women who came to attend the GPC data collection at the hub; thereafter, the fourth man/woman after that was selected until the necessary sample number was reached. The sample from the fishing village consisted of 74 people (roughly equal numbers of men and women) randomly selected from the total sample of 150 people who participated in the FFS project.

A smaller sample was drawn in addition to the two random samples of people who answered the hope questions. These people were interviewed at length to provide a qualitative data-set. These respondents were adults *not* selected for the quantitative data

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collection. At each of the two sites, 30 people were selected for the individual interviews. In the GPC, this was done at the end of each day at the hub by randomly selecting five identification numbers from those not selected to test the Hope scale. Those chosen were visited by an interviewer the following day. Eleven men and twelve women agreed to be interviewed. In the fishing village, 15 men and 15 women were selected, and all participated in the interviews.

The Hope scale was completed for each participant by the interviewer, and an ultra-mobile personal computer was used for data capture. The individual interviews did not have a formal guide. People were asked to talk about their past life and their plans for the future, *without* the interviewer specifically prompting for themes about 'hope' or which made respondents feel 'hopeful'. These interviews were tape recorded and later transcribed into Luganda and translated into English.

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Hope scores in the two study groups

In the GPC, 96 respondents completed the Hope questionnaire. For the overall Hope scale, the mean score was 36.8 (SD 5.2), with mean score for the Agency subscale 18.2 (SD 3.1) and mean score for the Path subscale 18.6 (SD 3.3). Reliability of the two subscales and the Hope scale was measured using Cronbach's alpha (Cα; Spiliotopoulou, 2009; Tavakol & Dennick, 2011). For the full Hope scale, the Cα was 0.54, which was also the value for the Path subscale, while for the Agency subscale it was 0.43. In the FFS cohort, 74 respondents completed the questionnaire. For the overall Hope scale, the mean score was 41.1 (SD 4.1), with mean scores for the Agency subscale of 19.3 (SD 3.0) and for the Path subscale of 21.8 (SD 2.2). The Cα for the full Hope scale was 0.43, for the Path subscale 0.47 and for the Agency subscale 0.24.

Factors associated with the scale scores in the GPC

Table 1 shows the scores on the two subscales and the overall Hope scale broken down by levels of the available explanatory factors. In unadjusted models, the scales varied either statistically significantly ($P < 0.05$) or marginally significantly ($0.05 < P < 0.10$) between levels of the following factors.

Path score

There was a marginally significant relationship between age when categorised and the path score ($P = 0.06$), with the youngest age group (15- to 19-year-olds) having a higher mean path score than other age groups. However, there was no evidence of a trend in path scores with increasing age. The path score varied significantly ($P = 0.02$) with the quality of roof of the household; the mean path score was highest (19.37) for those with a good quality roof (the categories were good, fair and poor) but was lower for those with a fair roof (17.23) than those with a poor roof (18.73). The path score was significantly ($P = 0.009$) higher for those who owned their own house (18.89) than for those who did not.

Agency score

There was a significant linear trend of agency score increasing with age ($P = 0.048$), with an increase in agency score of 0.36 units for each 10-year increase in age. The mean agency score was significantly ($P = 0.04$) higher for those who owned 'other' land (18.85) than for those who did not (17.56).

Table 1. Mean path, agency and full hope scores broken down by socio-economic factors for the GPC respondents.

Factor	Level (*n*)	Path score	Agency score	Hope score
Overall	All (96)	18.60	18.21	36.81
Gender	Male (44)	18.66	18.39	37.05
	Female (52)	18.56	18.06	36.62
Age (grouped)	<20 (12)	20.25	17.67	37.92
	20–29 (17)	17.82	17.53	35.35
	30–39 (21)	19.71	18.05	37.76
	40–49 (11)	17.0	17.64	34.64
	50–59 (17)	17.65	18.76	36.41
	60 and older (18)	18.83	19.22	38.06
Education level	None (10)	17.1	19.3	36.4
	Primary (62)	18.94	17.95	36.89
	Lower secondary (S1–S4) (10)	18.4	18.7	37.1
	Higher secondary (S5–S6) (7)	16.57	18.0	34.57
	Tertiary (7)	20.14	18.43	38.57
Marital status	Ever married (63)	18.51	18.30	36.81
	Never married (33)	18.79	18.03	36.82
HIV status	Positive (6)	20.5	19.0	39.5
	Negative (86)	18.43	18.22	36.65
	Not tested (4)	19.5	16.75	36.25
Quality of roof of house	Good (51)	19.37	18.64	38.02
	Fair (30)	17.23	17.60	34.83
	Poor (15)	18.73	17.93	36.67
Type of wall of house	Not brick (30)	18.33	18.47	36.8
	Brick (66)	18.72	18.09	36.82
Number of rooms in house	2–3 (31)	18.94	17.65	36.58
	4 (41)	18.12	18.46	36.59
	5 or more (24)	19	18.5	37.5
House owned by household members	Yes (87)	18.89	18.33	37.22
	No (9)	15.89	17.0	32.89
Own building for renting	Yes (11)	19.73	18.82	38.55
	No (85)	18.46	18.13	36.59
Land belong to household	Yes (89)	18.71	18.27	36.98
	No (7)	17.29	17.43	34.71
Land used for crop cultivation	Yes (86)	18.66	18.06	36.72
	No (10)	18.1	19.5	37.6
Quality of land	Fertile (11)	18.91	18.27	37.18
	Mixed (50)	18.74	17.86	36.6
	Infertile (25)	18.4	18.36	36.76
Household owns other land	Yes (48)	19.06	18.85	37.92
	No (48)	18.15	17.56	35.71
Does household employ others (permanent or temporary)	Yes (15)	17.8	17.87	35.67
	No (81)	18.75	18.27	37.02

Hope score

The mean hope score varied significantly ($P = 0.03$) with the quality of the roof of the household, being highest for those with a good roof (38.02), but lower for those with a fair roof (34.83) than for those with a poor roof (36.67). The mean hope score was

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significantly ($P = 0.02$) higher for those who owned a house (37.22) than for those who did not (32.89). The mean hope score was also significantly ($P = 0.04$) higher for those whose households owned other (additional land; 37.92) than for those who did not (35.71).

Exploratory multiple regression models were fitted to find factors associated with each scale adjusting for other factors. A liberal *P*-value of 0.10 was used to explore any factors that may be associated with the scales. The results are summarised in Table 2 and commented on in the next paragraphs.

For the Path Scale, three factors were marginally significant, namely education level of the respondent, the quality of the roof of the respondent's house and whether the house was owned by the respondent or his/her family. All of these are associated with social status, wealth and income, factors known to be associated with differential propensity to acquire HIV and some other infections (Drain, Smith, Hughes, Halperin, & Holmes, 2004; Farmer, 2004; Ghobarah, Huth, & Russett, 2004; Holtgrave & Crosby, 2004; Larson, Lin, & Gomez-Pichardo, 2004; Piot, Greener, & Russell, 2007; Smith, 2002; Zierler et al., 2000). The path score was highest for those whose house had a good roof and lowest for those with a fair roof; on average, the mean path score was 2.09 units higher if the house was owned by the respondent. The effect of level of education was measured relative to those who had primary education. Compared to these respondents,

Table 2. Results of fitting multiple regression models for factors associated with scales in GPC.

Factor	Level	Estimate	95% confidence limits	*P*-value
(a) Path score				
Constant		16.95	14.28; 19.62	
Education	None	−1.99	−4.12; 0.14	0.096
	Primary	0	Reference level	
	Lower secondary (S1–S4)	−1.25	−3.39; 0.89	
	Higher secondary (S5–S6)	−2.64	−5.13; −0.14	
	Tertiary/further	0.37	−2.15; 2.90	
Quality of roof	Poor	0	Reference level	0.060
	Fair	−0.85	−0.89; 2.88	
	Good	0.99	−2.87; 1.17	
House owned by respondent	No	0	Reference level	0.074
	Yes	2.09	−0.21; 4.38	
(b) Agency score				
Constant		16.10	14.43; 17.77	
Age	Per 10-year increase	0.35	0.008; 0.70	0.045
Own other land	No	0	Reference level	0.039
	Yes	1.29	0.064; 2.51	
(c) Hope score				
Constant		32.30	29.01; 35.60	
House owned by respondent	No	0	Reference level	0.023
	Yes	4.07	0.58; 7.56	
Own other land	No	0	Reference level	0.018
	Yes	2.64	0.47; 4.81	
Employ workers	No	0	Reference level	0.037
	Yes	−3.17	−6.14; −0.20	

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the mean path score was lower for those who had no education. It was also lower for those who had secondary education, perhaps reflecting the poor employment opportunities for those who had completed secondary education but been unable to move onwards and therefore experienced frustration of their aspirations (Westaway, Barratt, & Seeley, 2009), and (adjusting for the other two factors which are measures of socio-economic status) was only slightly higher for those who had some further education.

For the Agency scale, only age, as a continuous variable with a linear effect (P = 0.045) and whether the household owned other land[6] (P = 0.039), were significant. The agency score increased on average by 0.35 for every 10-year increase in age, so the magnitude of the effect was not very strong, while participants from households who owned other land on average had an agency score 1.29 units higher.

For the full Hope scale, significant factors were whether the house was owned by the participant or his/her family (P = 0.023), whether the household owned other land (P = 0.018) and whether the household employed other workers (P = 0.037). The hope score was on average 4.07 units higher for participants who owned their house and 2.64 units higher for participants who owned other land but was 3.17 units lower for participants for whom the household employed workers. In all but one of the 15 cases of households who employed workers, these were temporary workers, so the variable 'employed workers' might indicate a household's inability to cope with the work rather than its being an employer running a farm business and pursuing a profit maximising strategy.

Factors associated with the scale scores in the FFS cohort

Table 3 shows the scores on the two subscales and the overall Hope scale broken down by gender, age and HIV status, which were the only available explanatory factors for all 74 participants from the FFS (as the majority were subsequently screened out of the main cohort). Neither gender nor age nor HIV status approached statistical significance.

The mean scores on both subscales were similar for males and females. Ignoring the two participants aged below 20, there was some evidence of an increasing trend in the agency score with increased age, although this did not reach statistical significance.

Table 3. Mean path, agency and full hope scores broken down by age and gender for the FF respondents.

Factor	Level (*n*)	Path score	Agency score	Hope score
Overall	All (74)	21.80	19.34	41.14
Gender	Male (41)	21.68	19.10	40.78
	Female (33)	21.94	19.64	41.58
Age (grouped)	<20 (2)	22.0	20.0	42.00
	20–29 (21)	21.33	18.62	39.95
	30–39 (20)	21.85	19.55	41.40
	40–49 (20)	22.1	19.6	41.70
	50–59 (8)	21.38	19.25	40.62
	60 and older (3)	23.67	21.0	44.67
HIV status	Positive (8)	22.12	20.25	42.38
	Negative (26)	21.85	19.88	41.73
	Not tested (40)	21.7	18.8	40.5

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The scores were very similar for participants irrespective of whether they tested HIV-positive, HIV-negative or did not have an HIV test.

Comparison between the two groups

There was overwhelming evidence ($P < 0.0001$) that the mean path score was higher in the FFS cohort (mean 21.8) than in the GPC (mean 18.6). There was also strong evidence ($P = 0.02$) that the mean agency score was higher in the FFS cohort (mean 19.3) than in the GPC (mean 18.2). Hence there was conclusive evidence ($P < 0.0001$) that the overall hope score was higher in the FFS cohort (mean 41.1) than in the GPC (mean 36.8). Fitting analysis of covariance models adjusting for age, gender and HIV status led to very similar conclusions.

In other words, the observed differences between the mean scores in the two groups cannot be explained by differences in the age, gender composition or HIV status of the cohorts: there are definite differences between the two groups in their relative hope scores. The markedly higher hope scores (both Agency and Path and overall) among the FFS as compared with GPC are interesting, and the reasons for the difference may be hypothesised as having to do with differences between a 'frontier society' with a recent history of in-migration among the FFS population as contrasted with long-established farming communities based on coffee and bananas in which a process akin (but not identical to) to 'involution' had occurred in the sense that term was developed by Geertz (Chrétien, 2004; Geertz, 1963; Seeley, 2014). Thus, in the GPC communities, with the exception of education which offers a way out for some, life depends upon farming, sometimes using migrant labour, and petty trading, and for some, but not all of the households, this way of life appears to be 'involutionary' (Geertz, 1963).

Association between hope and subscale scores and 'risky behaviour' in the FFS community

In the survey of the FFS cohort, a Risk Exposure Questionnaire (REQ) was used.[7] This was administered to 26 (19 HIV-negative and 7 HIV-positive) of the 74 respondents included in the sample for our current study. The REQ investigated six 'risky' behaviours over the preceding three-month period. The 'risky' behaviours were alcohol consumption (dichotomised as weekly or more frequently vs. less than weekly), evidence of having experienced an STI (one or more of abnormal or smelly genital or urethral discharge, genital sores or ulcers, or having been informed by a nurse or doctor that the respondent had an STI), whether the respondent reported more than one sexual partner in the past three months, whether the participant had engaged in risky sex (defined as having either more than one partner or at least one new partner in the previous three months and not reporting condom use always with all such partners), whether or not the respondent had sex under the influence of alcohol or drugs and whether or not the participant had engaged in any transactional sex (defined as either having received money, gifts or help in exchange for sex or having given money, gifts or help in exchange for sex).

Table 4 shows the mean scores for the Hope scale and the two subscales by the levels of the six risky behaviour variables. The only comparison reaching statistical significance was that between risky behaviours and the agency score. Here the Agency subscale mean score was significantly higher among respondents who consumed alcohol less than weekly than for participants who consumed alcohol weekly or more frequently, and correspondingly the hope score was marginally significantly higher for those consuming

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Table 4. Mean path, agency and full hope scores broken down by risk exposure factors.

Factor	Level (*n*)	Path score	Agency score	Hope score
Overall	All (26)	22.31	19.54	41.85
Drinking frequency[a]	Less than weekly	22.33	20.39	42.72
	Weekly or more	22.25	17.62	39.88
STI symptoms	No (12)	22.17	19.09	41.25
	Yes (14)	22.43	19.93	42.36
More than one partner in last three months	No (20)	22.55	19.6	42.15
	Yes (6)	21.5	19.33	40.83
Risky sex (partner without always using condom)	No (15)	22.53	20.2	42.73
	Yes (11)	22.0	18.64	40.64
Sex under influence of alcohol or drugs	No (15)	22.60	19.93	42.53
	Yes (11)	21.91	19.0	40.91
Any transactional sex (giving or receiving)	No (13)	22.31	19.15	41.46
	Yes (13)	22.31	19.92	42.23

[a]Drinking frequency is the only variable for which the difference in mean scores reached statistical significance.

alcohol less than weekly. However, for a number of the risky behaviours, the scores were higher for those who did not exhibit the behaviour concerned, e.g. the path score and hope score were higher among respondents who did not have more than one partner in the previous three months, and also for those who did not engage in risky sex (as defined above) as well as for those who did not engage in sex under the influence of alcohol or drugs. The fact that these results did not reach statistical significance could in part be due to the small sample sizes in these two studies.

Ethnographic data

Detailed qualitative structured interview material was collected from 23 of the people in the two GPC villages and from 30 people in the FFS village. These interviews were extensive, lasting from 30 minutes to 2 hours in some cases. The following observations have been derived from analysis of the ethnographic data:

(1) Children, particularly educated children, were viewed as an important source of security for the future. They would not only be able to better themselves but also support their parents. Hence children and agency were identified.
(2) Narratives about investing in livelihoods as providing hope for the future were frequent.
(3) There were some marked differences between the GPC and FFS respondents with regard to agency:
    (a) The FFS respondents have engaged in a range of different moneymaking jobs in the past (often involving migration) and seemingly more optimistic about their options for the future.
    (b) In contrast, while respondents in the GPC were aware of opportunities outside the villages in which they lived and were often hopeful that relatives (particularly children) working in towns (and fishing sites) might be able to better the family income, they did not see other ways forward. Thus, for them, hope was closely linked to the importance of family and friends as a source of agency.

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(c) In both the GPC and FFS interviews, people who scored high on the Snyder scale often had a more optimistic take on life, chatting about their kids, their work and their prospects to a greater extent than did those who scored lower on the Snyder scale.

These findings are significant in so far as they lend further support to the way that hope and hopelessness as experienced by individuals and groups reflect their experience of the opportunities and constraints offered by the structures within which they live. This observation has been noted also by a recent study, also using the Snyder scale among youth in Tanzania (Nalkur, 2009).

Conclusions

We conclude as follows: the Snyder scale does work in Uganda in the sense that it is understood and has meaning when used in a Luganda-speaking population. The relatively low Cα scores suggest that in later work on this problem we should investigate the reasons for this more closely in relation to qualitative interviews focused on perceptions and meanings of hope in these communities. The qualitative data and quantitative data taken together suggest that the variable *hope* is in some way reflecting the perceptions and actions of people in the two communities as responses to their rather different structural situations. The differences in their structural situations as reflected in their hope scores are in some way associated with risk factors for STI/HIV acquisition. Although not discussed in this paper, additional analysis of the data revealed that removal of any one component from the Snyder scale, and even from either of its two components, Pathway and Agency separately, increases the separate and combined Cα scores markedly.[8] Why and how this should happen will be a topic for further examination in a later phase of this study in Uganda and elsewhere.

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Notes

1. The intention of this study was to examine prevalence, incidence, risk factors and trends of infection with the human immunodeficiency virus (HIV) in a rural African population (Nunn et al., 1997). More recently, research activity has broadened to include the epidemiology and genetics of other communicable and of non-communicable diseases, including cancer, cardio-vascular disease and diabetes (Asiki et al., 2013).
2. Data are collected through an annual census and since 2012 a biennial questionnaire and serological survey. Details of sexual behaviour, medical, socio-demographic and geographic

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factors are recorded. Blood specimens are obtained at each annual survey. Serum is tested for HIV-1 and the remaining fraction is stored at −80° in freezers in Entebbe. HIV prevalence has remained relatively stable in this population, with about 8% of participants infected.
3. This word is used ironically to note the often-implicit moral judgement contained within such perspectives when they inform social policy.
4. Personal communication: it was apparently tested on a Korean population in New York.
5. Out of curiosity, we compared the Ugandan scores with those obtained in South Africa. We do not believe that the Snyder scale was ever intended to make cross-cultural comparisons nor should it be used in that way. In general, the Ugandan hope scores were higher than were those in the South African study.
6. By *other land,* we mean land other than the plot on which the homestead was situated and which was used by members of that household for cultivation.
7. We use this term in inverted commas because our theoretical position assumes that much if not all risk behaviour has a socio-economic and cultural element (Barnett & Blaikie, 1992).
8. We are very grateful to Dr Shirley Huchcroft for her considerable assistance and skill in making this observation.

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