



Institute for Health and Development
Communication

ECONOMICALLY EVALUATING THE 4TH SOUL CITY SERIES

COSTS AND IMPACT ON HIV/AIDS AND VIOLENCE AGAINST WOMEN

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CONTENTS

Executive summary	2
1. Introduction	4
1.1 The entertainment education strategy in health & development.....	5
1.2 The Soul City Institute for Health & Development.....	6
1.3 What is economic evaluation?.....	7
1.4 Measuring outcomes or benefits – challenges for prevention programmes....	8
1.5 Outcome measures from behaviour change theory.....	10
1.6 Aims of the study.....	11
2. Methods	12
2.1 Costs of the Soul City series 4	12
2.2 Exposure to Soul City media	13
2.3 Characteristics of those accessing Soul City media	15
2.4 Measures of effect used	15
3. Costs of Soul City series 4	19
3.1 Overall cost	19
3.2 Unit cost analysis	20
4. Exploring cost per outcome of SC4 – Unweighted scale of effect..	22
4.1 Under assumption 1 – increased coverage	22
4.2 Under assumption 2 – joint media process	28
5. Weighted scale – reflecting the relative importance of items	35
4.1 Under assumption 1 – increased coverage	35
4.2 Under assumption 2 – joint media process	36
6. Implications for Soul City and entertainment education strategies.	38
Bibliography	42

EXECUTIVE SUMMARY

With the large number of health and development problems facing South Africa and the Sub Saharan Region more generally and the limited resources available to combat these, strategies which have the potential to benefit large numbers of individuals at relatively low cost are actively sought. More recently this has been coupled with an increasing demand from decision makers for evidence on the level of benefit to their populations gained from various interventions developed for the resources each consumes. The systematic assessment of both the costs and consequences of alternative programmes in order to compare alternative courses of action is known as economic evaluation (Drummond et al, 1997). This technique is being increasingly applied routinely to the prioritization of health related interventions.

Use of the mass media is one vehicle that has the potential to reach large numbers of people with limited and localized costs thereby achieving significant economies of scale. Its use to promote social change is therefore gaining in recognition. In South Africa, Soul City has been utilising an entertainment-education strategy since 1991 in order to inform the public, raise debate and shift attitudes and behaviour around key health and development concerns (Usdin et al, 2000). It enjoys a huge popularity, being one of the highest rating television dramas in South Africa over its successive series from 1994 to date. Soul City employs a multi media strategy, producing a television drama, radio dramas and print materials serialized in 10 newspapers throughout the country and distributed as booklets. Adult education packs and facilitator manuals are also made available. This approach both increases peoples access to Soul City by making a range of media types available as well as reinforces messages conveyed.

This study was a preliminary investigation into economically evaluating Soul City's fourth series as part of a far wider evaluation that the institute undertook.

An economic costing of the entire process of the Soul City's fourth series formation, development and production was undertaken from the perspective of the provider. This included donated items such as advertising and newspaper space for the print material's serialisation as well as proportionate allocation of Soul City's own staff costs.

Intermediate measures of effect recognised in behaviour change theory were used for two of the fourth series key themes, HIV/AIDS and violence against women. These were changes in knowledge, attitude, intention and action measured along both an unweighted and weighted scale, the latter recognising the degree of importance of each of the items contributing to the scale (which was calculated only for HIV/AIDS related knowledge and action scales).

As economic evaluation requires the comparison of groups with and without the intervention of interest, individuals that accessed Soul City 4 media were compared with those who did not. Data was taken from the national survey completed by CASE (2000) as part of the overall Soul City 4 evaluation and two basic assumptions made to define exposure groups. The first approach suggested that underlying Soul City's multi media strategy was the primary intention to reach greater numbers of people by having the three media types. Here, then, those "exposed" to Soul City 4 were defined as those who had accessed any of the types of series media at least once. This constituted 82% of the national sample (n=1981). The second assumption posed that the reinforcing effect of the combination of media types was of greater importance and therefore the "exposure" group was restricted to those who had accessed all three media types, television, radio and print at least once (25% of the sample).

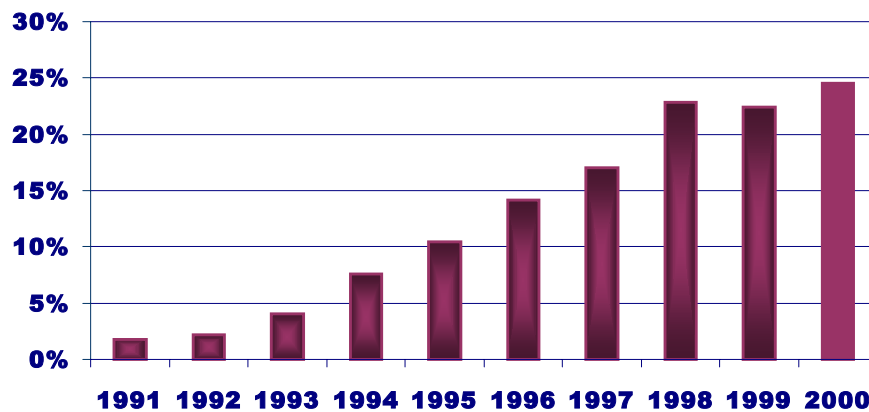
Large differences in knowledge, attitude and action related to both HIV/AIDS and VAW were noted with significant gains associated with Soul City 4. This was particularly so for HIV/AIDS, a recurring theme over a number of previous series, supporting the notion that exposure over time is required to realise eventual shifts in behaviour. Costs per change in intermediate effects were relatively low though due to a lack of studies in this area, any meaningful conclusions are difficult to make. Cost effectiveness ratios followed the increasing pattern expected over the constructs with knowledge being "cheaper" to change than action. The lower costs per effect under the increased reach assumption illustrated that the benefits of increasing the access of individuals to Soul City's fourth series outweighed the greater gains at the individual level from having messages reinforced by exposure to all three media types. Weighting the outcomes had a small effect on the resulting cost effectiveness ratios, increasing the cost per effect on knowledge and decreasing the cost per effect on action for HIV/AIDS. This can be interpreted as Soul City successfully promoting actions that were viewed as being more important in preventing HIV transmission. Knowledge of important aspects of HIV was high in both the Soul City exposure and non-exposed groups, thereby changes that occurred were on the items of lower importance.

Though conventionally economic evaluation focuses on final effects of any programme, this study indicates that where those impacts cannot be estimated due to complexities in achieving them, intermediate changes have importance and can and should be valued. Further work is required to investigate what other outcomes of health education for behaviour change programmes may not be captured by conventional economic evaluation and therefore what the risks to informed resource allocation for these programmes may be.

1. INTRODUCTION

Social and development problems afflict societies worldwide. One of the greatest health and development issues facing Sub Saharan Africa today is the HIV/AIDS pandemic. South Africa currently has one of the greatest rates of expansion in the world with new infections, as shown in the national annual antenatal surveys, growing at an increasing rate each year until the late 1990's (see figure 1). Further, whilst the HIV epidemic is maturing, the AIDS epidemic and related deaths are in their early stages. Whilst no medical cure exists, (though life can be substantially prolonged and quality of life improved), many people working in the area grapple with how to bridge the gap between knowledge around HIV/AIDS existing in the country and substantially changing people's behaviour in order to curb transmission. To date, most initiatives in South Africa have been undertaken at a relatively localized level targeting small populations. Increasingly, however, ways of gaining greater reach of prevention activities and education across populations have been sought.

Figure 1: HIV infection levels in South Africa – from the annual antenatal survey



HIV/AIDS whilst probably the highest profile problem, is not the only major social concern facing South Africa and Sub Saharan Africa more widely. High crime rates, gross inequities in socioeconomic conditions and violence against women are widespread and threaten the country's and region's future human and economic development.

Violence against women (VAW) is widespread and shown to cause global disease burdens among young to middle aged adult groups in the realm of those highly recognized causes such as cancer, heart disease and AIDS (Hiese et al, 1994). In South Africa it has been estimated that one in every

four women have survived some form of domestic violence (Department of Justice, 1999).

Violence against women has been gaining prominence as a key health and development issue in South Africa with a legislative impetus through the passing of the domestic violence act no. 116 of 1998 which addresses many inadequacies of previous legislation.

1.1 The Entertainment – Education Strategy in Health and Development

With the many problems that need to be addressed in the country and region there is great competition for limited resources available. This is one of the reasons cited by Singhal and Rogers (1999) that the use of mass media may provide unique opportunities to reach large numbers of people with messages promoting social change. This is particularly so in the current times when more and more people even in remote rural communities are gaining access to media via radio and printed material. It therefore has the potential to influence individual and social change on a large scale but with limited and localized costs.

This use of media to convey social messages is not a new concept, although, traditionally entertainment media and educational media were seen as two distinct categories. Over the past 25 years, however, there has been a surge in the combination of these programmes in, what has been called, an entertainment – education strategy in order to obtain advantages from each (Singhal & Rogers, 1999).

Entertainment education programmes have used a variety of media such as radio dramas and television series to address issues such as family planning (Mexico, India, Nigeria, The Gambia) gender equality (India) and HIV/AIDS (India, Tanzania, South Africa). Positive effects of these programmes have been witnessed for example in gaining family planning & HIV prevention adoption in Tanzania (Rogers et al 1999), changes relating to gender equality and HIV prevention in India (Singhal et al, 1999) and other examples (see Singhal & Rogers, 1999 for a good summary of many of these).

More and more examples of the use of the media in this way are arising and larger sums of money are increasingly being devoted to their development. In South Africa alone there have recently been additions to the number of programmes particularly using this medium for communicating HIV/AIDS and sexuality related messages both on a small scale (for example the SMASH project (PSI, 2000) and large such as Soul City and the more recent Love Life initiative. The government of South Africa is also currently embarking on the development of a national HIV/AIDS media strategy. The potential of the media to promote social change is still, however, far from fully utilized.

1.2 The Soul City Institute for Health and Development Communication.

Soul City is one specific long standing large scale use of edutainment in South Africa and is well known throughout the country and internationally. Initiated in 1991, Soul City uses a mixture of prime time television and radio dramas together with print material to raise debate, inform the public and shift attitudes and behaviour around key health and development concerns (Usdin et al, 2000). Soul City's first television series was aired in 1994, since then a further 4 series have been shown comprising of 13 episodes, on SABC's highest rating television station, SABC1 or Simunye (making 5 series in total). These have covered a range of topics from tobacco and energy saving in the home to youth sexuality, HIV/AIDS, and violence against women.

Kumaranayake et al (2000) state that

"The challenge in using mass media directed at the general population is to develop messages that are generally understandable and acceptable yet that still manage to be personally persuasive"

This is arguably one of the greatest keys to Soul City's ratings success. Extensive time and effort goes in the background research for Soul City series messages and the appropriateness of the messages to the Soul City target groups. Suggestions for messages to be communicated in the series are first called for from the general public. Initial message development then takes place within the Soul City Institute for Health and Development and message outlines are developed and tested with focus groups made up of members from the target audience for acceptability and relevance. Full message briefs are developed and form the basis for script writing for the television and radio programmes. This is a lengthy and well structured research process which generally spans approximately one year prior to script writing.

Kumaranayake et al (2000) further go on to state that a mass media strategy

"... has the potential to reach a large number of people relatively easily. Its coverage depends on the form of media used and access to that media amongst the groups targeted"

The Soul City adult (between the ages of 16 – 65) series targets "African" and "Coloured" previously disadvantaged South Africans. Although the series is suitable for all populations, theory of communication suggests that specific targeting and testing of materials makes it more effective. Soul City boasts one of the highest rating television programmes on prime time television. It further uses its variety of media types, both to increase its coverage as well as reinforce messages given.

Evaluations of each series are conducted routinely by the Soul City institute. A far larger scaled evaluation was embarked upon for Soul City's fourth series, however, employing a number of research components including a national impact survey, sentinel site surveys, qualitative investigations and more.¹ This economic evaluation component forms just one part of this overall evaluation.

1.3 What Is Economic Evaluation ?

Economic evaluation is the comparison of costs and benefits of a programme to find out whether that programme is worth implementing or not or to what extent it should be implemented given other competing demands for resources. It acknowledges that in any context there are not enough resources to undertake all desired programmes such as for health and education. Economic evaluation therefore suggests that, to some degree, priorities for spending should be set on the basis of how much benefit is achieved for a set cost, or, in economics terms, the efficiency of a programme.

The basic approach is to measure all relevant costs and benefits and determine the ratio between the two (Sloan, 1996). A "true" economic evaluation does two things. It looks at both the costs and consequences of a programme and compares this ratio between programmes. Drummond et al (1997), widely regarded as one of the worlds experts on economic evaluation of health related programmes, therefore defines economic evaluation as

"the comparative analysis of alternative courses of action in terms of both their costs and consequences." Pg 8 & 9.

Costs are generally measured broadly as reflecting the true value of all resources consumed in producing a programme whether paid for in monetary terms or not and no matter where the provision of them originated.

The measurement of benefit is far more involved and varies depending on the type of economic evaluation undertaken.

1.3.1 Types of Economic Evaluation

There are two common broad types of economic evaluation, cost benefit analysis (CBA) and cost effectiveness analysis (CEA) These differ only in the way that consequences or outcomes are measured. Cost benefit analysis measures outcomes in monetary terms by asking how much people would be

¹ For details on each of these evaluation components and their results refer to Soul City's website <http://www.soulcity.org.za> on which detailed reports and summaries are available for downloading.

willing to pay for a programme given described benefits. Cost effectiveness analysis measures benefits in terms of standard clinical outcomes such as numbers of additional years of life gained as a result of the programme. A specific type of CEA measures also the quality of life that is gained by looking at peoples valuation of the relative desirability of various states of health and how these states proceed from the implementation of a given intervention. This is combined with the numbers of years of life gained to produce an outcome of quality adjusted life years or QALYs in what is a Cost Utility Analysis (CUA). More recently other techniques of economic evaluation have also been applied to health programme evaluation such as conjoint analysis (Ryan & Hughes 1997, Ryan et al, 1998: Ratcliffe, 2000).

1.4 Measuring outcomes or benefits – challenges for prevention programmes

Health promotion or prevention related programmes pose specific challenges to conventional methods in economic evaluation. This may explain the lack of evidence surrounding the relative cost effectiveness of differing health promotion activities.

Some of these involve the costing of resources used such as the complication of often having a large number of players providing inputs to promotion programmes (Godfrey, 2000). Most of the perceived barriers to economically evaluating such programmes, however, lie in measuring the effects or outcomes attributable to the specific intervention.

The measurement of outcomes relevant to the programme in question is the greatest and most interesting challenge in economic evaluation generally. In terms of what outcome should be measured, Drummond et al (1997) state that

“although intermediate outcomes may themselves have some value (or clinical meaning), the economic analyst should choose an effectiveness measure relating to a final outcome”. Pg 102.

This is difficult for prevention programmes as final outcomes may occur so far into the future that they are not observable in any study of normal time frame. The long follow-up that would be required to show behaviour changes resulting from the intervention of interest would therefore be very costly (Godfrey, 2000). In these cases, modeling often plays a role in economic evaluation where the use of likelihood estimates for differing sets of final outcome are predicted from more immediate or intermediate changes. However, again, as Drummond et al (1997) acknowledge

“The success of this approach depends on the extent to which the link between intermediate and final outcome has been established” pg 103.

Certainly in relation to education for behaviour change programmes, the path to final outcome is not well understood. For example, if education is provided around the prevention of HIV, the path from this intervention to the number of HIV transmissions averted, one commonly used measure of final outcome, is not straightforward and will depend upon a myriad of individual and social factors. This is evidenced by the fact that over 85% of the South African population have been reported to have good knowledge of what HIV/AIDS is, how it is contracted and how it can be prevented and yet the country still has one of the highest transmission rates in the world today (Whiteside & Sunter, 2000).

If this lack of clarity precludes modeling to final outcome, does this mean that these programme should not be assessed in terms of their cost effectiveness? We would then have to unquestioningly accept the level of resources currently being devoted to education for behaviour change initiatives in South Africa and abroad as being suitable or to change them with little basis of evidence.

It is further questionable as to whether individual level even final outcomes will fully capture the wide ranging types of benefits resulting from prevention and promotion oriented health programmes.

Greater recognition has been given in recent times to the important role changes in external environment, community structure and peer relations play in health gain. This is certainly true of entertainment education where

"it can influence the audience's external environment to help create the necessary conditions for social change at the group or system level. Here the major effects are located in the sociopolitical sphere if the audiences external environment". (Singhal & Rogers, 1999 pg 9)

Many of these benefit types are likely to remain excluded from any conventional form of economic evaluation.

Although it has been suggested that willingness to pay may provide a means of encompassing such benefit (Godfrey, 2000), it is doubtful that measures of WTP supplied by individuals will take into account wider community benefit unless the scenarios presented specifically included these. Further, the myriad of impacts that have and are likely to result of promotion programmes may preclude this being possible.

These are among some of the reasons health promotion specialists are more than a little wary of economic type analyses and has prompted some health economics researchers to advocate for extensions to conventional benefit assessment. For example Jan (2001) states that

"the reductionism of conventional forms of economic evaluation,..., can cause a number of such programmes to be overlooked. As such, this imposes fairly

strict limits on the capacity of economic evaluation to inform public policy” pg 1565.

Sheill & Hawe (1996) argue this even more strongly explicitly advocating for new methods and approaches.

“If health economics fails to develop new constructs to deal with these new approaches in health promotion, the application of existing techniques to community programmes will mislead health care decision makers about their value and potential. (pg 241).

Although evaluation of education for behaviour change programmes has also, to date, largely focused on the individual (Singhal & Roger, 1999), the field of communication a behaviour research uses a variety of dimensions upon which to investigate the impacts of such programmes. These may provide some assistance in looking at important dimensions that could be used in economic analysis at least as intermediate outcomes where final impacts are not yet observable.

1.5 Possibilities for outcome measurement from communication and behaviour change theory.

Some theories of behaviour change pose that there is a progression of change in an individual through various constructs prior to a positive action change taking place. Certainly some studies have noted that whilst interventions evaluated appear to have little impact on behaviour, changes in other constructs such as awareness, knowledge and attitudes had changed (Valente, 1997 in Singhal & Rogers, 1999; PSI, 2000).

If final behaviour change is solely used as the measure of outcome therefore, unless lengthy follow up period is conducted, many positive effects of a programme may be overlooked simply because the individual being moved in some way toward changing their behaviour but the end change has not yet occurred.

As the duration of research into communication for social change has progressed, there has been increasing recognition that a straightforward linear stages to behaviour change process may be an oversimplification of the process of behaviour change, but that rather individuals will move in and out of various stages. This may help to explain why fall off effects have been noted after the cessation of one programme, (DeLamater et al, 2000), and why longer intervention periods seem to have great impact on behaviour (PSI, 2000).

That aside, there are a number of constructs that are fairly universally agreed to be positive indicators of eventual change in behaviour, some being easier to measure than others. A few that have been used to measure the

impact of an education for social change intervention are outlined in table 1.5.1.

Table 1.5.1: Indicators of impact used in evaluation of health related education for social change programmes

Knowledge	DeLamater et al, 2000
Awareness	PSI, 2000
Perceived Risk	DeLamater et al, 2000
Intention	DeLamater et al, 2000; Noell et al 1997;
Attitude	DeLamater et al, 2000, Noell et al, 1997;
Frequency of discussion	Rogers et al, 1999;
Self Efficacy	DeLamater et al, 2000; Rogers et al, 1999; PSI 2000;

1.6 Aims of the study

The study reported here was conducted in order to estimate some measure of cost effectiveness of the Soul City 4 intervention in preventing violence against women (VAW) and HIV/AIDS transmission. As discussed above, paths to behaviour change are not yet well understood. This, together with the lack of behavioural data available in the survey that could specifically used to model from that which existed to HIV transmissions averted (eg number of sexual partners etc), meant that estimates of what may be considered in conventional economic evaluation as final outcome were not possible. Intermediate outcomes at an individual level were therefore taken from fields of behaviour change and communication theory. These were used in estimated progressive cost effectiveness ratios of cost per change in awareness, knowledge, attitude and action related to VAW and HIV/AIDS. Those constructs more difficult to change at an individual level would then have higher costs per effect than others.

This study aims to provide preliminary steps to investigating the cost effectiveness of education for behaviour change programmes and not a detailed, "how to" methodology. The method of synthesis may be seen by some to be quite rough, however this has been done to provide a general indication of how some intermediate constructs of behaviour change may be used in economic evaluation of education for behaviour change type programmes.

2. METHODS USED IN THIS ECONOMIC EVALUATION STUDY

Given the above, the study reported here utilised a number of unconventional approaches to outcome measurement. Determination and analysis of costs, though, will vary little between types of economic evaluation completed and the area to which they are applied.

2.1 Costs of the Soul City series 4.

□ Scope of the costing

Costs for the formation, development and production of Soul City series 4 were collected for the years 1997/98, 1998/99 and 1999/2000. In order to ensure comparability in the summation of cost data all costs were inflated to 1999/2000 Rand using 1.1062 (97/98) and 1.0628 (98/99) as the multipliers to adjust for inflation. Costs for the fourth series were allocated to both key theme (HIV/AIDS, VAW, SB&S and HBP) and media type (TV, radio and print).

Collections of NNVAW costs for the network partnership with Soul City were not available and therefore costs for this activity included represent those borne by Soul City alone. The economic costs for this activity will therefore be underestimated in this report.

The costs of like skills and adult education training packs were also excluded as their production occurred subsequent to the national survey period upon which the outcome data for this study were built. Their inclusion would therefore inflate the costs relative to the effect measured by the survey.

□ Data sources

The majority of the cost information was obtained easily from the Soul City Institute for Health and Development Communication's financial records. Financial systems of the Institute categorised costs by stage of the production process (formative research, development and production) as well as media type. Costs of donated newspaper space for the serialization of the print media were obtained from a valuation supplied by Newsclip. Advertising conducted by sponsors on behalf of Soul City was obtained directly from the sponsoring organisation and their contracted advertisers.

Soul City staff time was valued for the 4th series for each of the relevant years by retrospective estimates of staff members. This was requested by year and type of production activity, for example, formative research, booklet development and production and general administration.

□ **Allocation approaches used**

Data collection for Soul City's 4th series specifically was challenged due to the concurrently running evaluation of the preceding series and development of the succeeding one. The Institutes expenditures were recorded by related series for all expenses other than general overheads. The latter were allocated to the series in the same proportion as staff time percentage estimates resulting from the time allocation sheets described above.

Where the cost by key theme was desired, total costs were allocated by the proportion of total exposure that theme received in each media. For television and radio this was the proportion of total episodes devoted to the topic of interest. For print media it was the proportion of all booklets produced.

When analyzing costs by media type, those costs incurred across media were allocated in the proportions obtained by dividing media type specific costs into total media costs.

2.2 Exposure to Soul City media

Given the multimedia strategy of Soul City and the number of episodes of differing themes contained, one of the first challenges in this study was to define exposure and non-exposure groups for the intervention. With so many potential groupings of exposure to varying media types two functions of Soul City's media strategy were used to define possible intervention groups based on two production process assumptions. This is done to clarify the costs that should be matched with the intermediate outcomes achieved in differing groups. The first assumption is that indeed, Soul City's use of the varying media increases coverage thereby increasing the number of people in whose lives Soul City generates some change in knowledge, attitude, intention and / or behaviour and therefore overall impact it achieves. The second assumption focuses more on the reinforcing effect when more than one type of media is accessed by an individual suggesting that Soul City could also be seen to be a joint production process, thereby aiming to have each individual accessing all media types to gain greatest impact. This may decrease the coverage if only individuals accessing all media types are considered which will act to reduce overall impact. The impact on each individual may be higher, however, and thereby act to increase the impact. The outcome of the combination between these two effects and whether the final impact achieved is greater or lesser than under the increased coverage assumption is not clear. These two hypotheses are applied later in this report and their relative cost effectiveness discussed.

An important part of any mass media programme is the reach that the intervention achieves. This is at the core of ratings competition for commercial television as well as sales and distribution of printed news media.

Unlike usual cost effectiveness studies, then, where the scaled up effect would be calculated on the basis of the entire population receiving the intervention, here the reach of the programme is an important variable. Soul City is not an intervention which is given, but is chosen by the general public in terms of whether they watch, read or listen or not.

In determining its population wide effect, therefore, it is not sufficient to look at only its impact for those choosing to expose themselves to Soul City media, but to look at the proportion of the population indeed choosing to access it.

Table 2.2.1 below gives the 15 potential groups of exposure and the number of people in the national sample that chose to access each category of media.

Table 2.2.1 : The number of people accessing varying combinations of Soul City media (taken from the CASE national survey, evaluation sample, n = 1981)

TYPE OF MEDIA & COMBINATION ACCESSED	NO PEOPLE IN SAMPLE	OF IN	% PEOPLE IN SAMPLE	OF IN
No Exposure to Soul City	361		18.2%	
TV only	125		6.3%	
Radio Only	120		6.1%	
Newspaper Only*	18		0.9%	
Other print media only**	39		2.0%	
TV & Radio	164		8.3%	
TV & Newspapers	37		1.9%	
TV & Other print media	81		4.1%	
Radio & Newspapers	8		0.4%	
Radio & other print media	58		2.9%	
Newspaper & other print	50		2.5%	
TV, radio & news	70		3.5%	
TV, radio & other print	159		8.0%	
TV, News & Other print	168		8.5%	
Radio News & Other print	40		2.0%	
All Media types	483		24.4%	
TOTAL	1981		100%	

*the serialisation in the newspapers or media releases

** full booklets, lifeskills materials etc

The table above shows that an estimated 81.8% of the population access Soul City media in some way. Staggeringly the greatest proportion of the sample actually access all types of media distribution that Soul City employed. This group were greater in number than those with no exposure to Soul City.

If these proportions are then used to scale up the coverage to the population an estimated 17.792 million people would have accessed some type of Soul City series 4 related media, with 5.279 million accessing all media types and only 3.932 million having no exposure to Soul City messages.

2.3 Characteristics of those accessing Soul City media.

On investigation of the national evaluation survey there appears to be little differences between those accessing Soul City media and those that are not. The important exception to this is education.

On average those that choose to access Soul City media are more educated than those that do not. Table 2.3.1 below shows the distribution between those accessing any Soul City Media, those accessing all types of media and those with no exposure to Soul City series 4.

Table 2.3.1 Educational breakdown of those accessing Soul City media versus those who do not.

EDUCATION LEVEL REACHED	ANY SOUL CITY MEDIA	ALL TYPES MEDIA	NO SOUL CITY EXPOSURE
No Formal Schooling	3.9 %	1.7 %	18.8 %
Primary Schooling	22.2 %	12.7 %	40.3 %
Secondary Schooling (exc matric)	44.9 %	46.9 %	31.1 %
Matriculated	23.1 %	29.6 %	7.6 %
Tertiary Education	5.9 %	9.2 %	2.2 %
TOTAL	100 %	100 %	100 %

It may not be surprising that those at lower levels of education do not access all types of Soul City media as there is a large correlation between education level and possession of a television set. Interesting, though, was the greater education level on average of individuals accessing at least one type of Soul City media over those with no exposure to Soul City.

A multinomial logistic regression model showed significant effect of education on all behavioural construct measures. Soul City exposure had a remaining highly significant effect on top of this together with a significant interaction effect between the two. Analysis of Soul City 4 impact stratified by educational level was therefore undertaken for the entirety of this study. Results of this are explored in section 5 and 6 of this report.

2.4 Measures of effect used

As discussed, this study approached outcome measurement with the underlying principle that intermediate outcomes of Soul City 4 have important intermediate effects that may not, as yet, have led to the actual changing of behaviour. A progressive approach to effect measurement was therefore taken in this study. Rather than one final outcome scale being paired with the cost data, costs by theme of interested were combine with each of a number of measures of effect.

Soul City measured a number of impacts as suggested by behaviour change theory in their national impact survey (CASE, 2000). Those used in this cost

effectiveness study were determined through consultation with Soul City based on the number of items available in the survey data to make up a construct, the importance placed by the Soul City Institute on a particular construct and the conduciveness of wording of the items to allow the formation of a cardinal measure of effect suitable for combination with cost data. These are outlined in table 2.4.1 below.

Table 2.4.1: Matrix of measures of effect by theme

THEME	CONSTRUCT	DESCRIPTION	NO. ITEMS BASED ON
HIV/AIDS	Knowledge ²	Number of correct answers to knowledge questions	4
	Intention	Number of actions that respondent suggested they would consider completing out of the list given	5
	Action	Number of actions actually taken in the 6 – 7 months prior to the evaluation survey*	5
VAW	Awareness	Whether the respondent has heard of sexual harassment	1
	Knowledge	Number of correct answers to knowledge questions	6
	Attitude	Number of desirable responses to questions related to the respondents attitude toward VAW	9
	Action	Number of actions taken against violence against women	4

*This covered the period from the beginning of the Soul City 4th TV series.

Each construct comprises of a number of items, meaning here, the number of questions available for a respondent to answer that relate to the same construct of behaviour change. For example, the knowledge construct for the HIV/AIDS theme comprised of four questions to which the respondent should have answered true or false. These were, "There is a cure for HIV/AIDS"; "There is nothing I can do to prevent getting HIV/AIDS"; "You can tell someone has HIV/AIDS just by looking at them"; and "If you are faithful to every partner this will prevent you from getting HIV/AIDS". A correct response (this case being the negative each time) would score 1 and the incorrect response 0.

The cost effectiveness study consisted of two phases. Firstly, an unweighted scale of effect on each construct was used. For this part of the study the number of correct responses given were simply summed across the individual. For the HIV/AIDS knowledge construct this then produced a score between 0 and 4. Because scores will then related to the number of items in a construct, however, rendering the resulting CE ratios as incomparable with those on other constructs the overall number was then adjusted by simply

² Possible responses to knowledge questions were stated in terms of agreeing or strongly agreeing. Similarly for disagreeing. In this case this were added together for the correct response.

dividing the total by the number of items included in the construct scale. This was completed for each of the above constructs.

Though it may seem obvious in the above example that certain items are likely to have more importance than others, this simple additive and unweighted scale has been shown to be sufficient in many studies related to health outcome measurement. Weighting the items only appears to have little effect, however, for scales that comprise of at least around 40 items (Streiner & Norman, 1995). This being far from the case in this study, the second phase of the evaluation used a weighted scale of effect. This was however, restricted to measures for HIV/AIDS.³

In order to develop weights, 21 experts were asked to complete a Visual Analogue Scale questionnaire during a face-to-face interview. 19 people completed the questionnaire all working or having worked in fields related to HIV prevention. They were presented with a questionnaire for HIV/AIDS knowledge and action. The knowledge component included a number of different scenarios of knowledge that combined correct and incorrect responses to each of the four items. For example

Person H

knew there was no cure for HIV/AIDS, knew that it was FALSE to say that there is nothing they can do to prevent getting HIV/AIDS, said that you CAN tell someone has HIV/AIDS just by looking at them and agreed that if you are faithful to every partner this will protect you from getting HIV/AIDS

The action component included scenarios of differing combinations of the five actions listed in the survey a person took. For example

Person B

Asked their partner to use and condom. They did NOT phone an AIDS helpline, help someone who is HIV positive, ask their partner to go for an HIV test or go for an HIV test themselves.

Respondents were asked to place each person on a diagrammatic thermometer from 0 – 100. They were instructed to place the person they felt had the least knowledge of (or action against) HIV/AIDS at 0 and the person with the greatest at 100 and then place the remaining people at spaces between each other relative to the lesser or greater degree of knowledge (or action) they felt that individual showed.

Although there is some debate over whether VAS scores can be considered cardinal or simply ordinal,

“Nevertheless from a pragmatic viewpoint, it appears that under most circumstances, unless the distribution of scores is severely skewed, one

³ This was because the method used to gain weights would have required respondents to complete an extremely lengthy questionnaire for the VAW theme as a large number of questions made up both the knowledge and attitude constructs.

can analyse data from rating scales as if they were interval without introducing severe bias” (Streiner & Norman, 1995)

This principle has certainly been applied in previous economic evaluation studies (Kirigia, 1998). In this study here standardized weights for each items were obtained using the VAS scores as the dependent in an OLS regression model with dummy variables for responses to each of the knowledge or action questions.

Knowing that there is something you can do to prevent getting HIV/AIDS came out as the item of far greatest importance to the panel interviewed, followed by knowing that you cannot tell if someone has HIV/AIDS just by looking at them, then that there is no cure for HIV/AIDS and lastly that being faithful to every partner did not necessarily protect you from getting HIV/AIDS.

The action weighted over twice as important as any other was whether you had asked your partner to use a condom. Lower weights were given to the HIV test for both partner and self and lowest weights were given to helping someone who is HIV positive and phoning an AIDS helpline, with the score being particularly low for the helpline.

Weights were then calculated for each individual for HIV knowledge and action according to the combination of responses given which was then multiplied by the maximum score possible (4 for knowledge and 5 for action) to give a weighted scale of HIV related knowledge and action.

Mean scores for both the weighted and unweighted scales were compared by education strata between the exposed and non exposed groups. Independent samples t test were used where sample size within strata allowed or via the Mann Whitney U non parametric statistic where small sample sizes were found (i.e. all media – no schooling and no exposure - matric & tertiary).⁴ Those differences found to be statistically significant between the exposed and non-exposed groups were then extrapolated to the African and coloured 16-65 population of South Africa, applying the same proportions of the population that would be considered as “exposed” as were found in the national survey sample.

⁴ The exposure group being those that accessed any SC4 media at least once for assumption 1 of increased coverage and those that accessed all media types at least once for assumption 2 – joint media.

3. COSTS OF SOUL CITY SERIES 4 (all in 99/00 equivalent Rand)

3.1 Overall cost

The total economic cost of the media side of Soul City series 4 came to 28.3 million Rand (1999/00 Rand). By far the largest component of this was borne by Soul City itself at 22.3 million Rand.⁵ The costs valued not borne by Soul City came to 6.365 million Rand, or 22% of total cost.⁶ Costs of administration encompassed only 6.1% of total costs and publicity and advertising another 11.8%. Lastly the formative research process, undertaken for all media types jointly comprised only 1.3% of total costs as the main input to this process was Soul City staff time. For the rest of the analysis these costs were distributed to each of the media types on the basis of each types contribution to overall media costs.

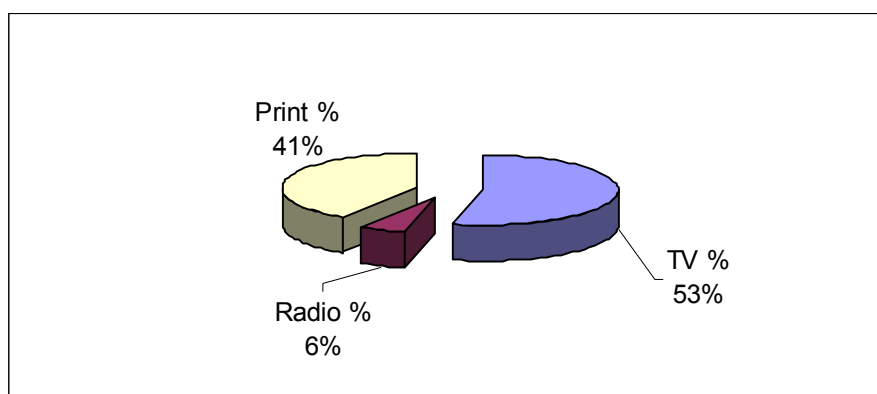
Table 3.1.1. below shows the total costs of Soul City series 4 by media type after this additional allocation.

Table 3.1.1: Total costs of the Soul City Series 4 by two themes of interest & major activity (IN R000'S (1999/00 Rand)

	VAW	HIV/AIDS	HBP	SB	TOTAL
TV Cost	6,916	3,533	2,765	1,902	15,116,502
Radio Cost	493	376	402	337	1,607,756
Booklet / Print Cost	3,925	375	3,660	3,581	11,541,413
TV %	24.5%	12.5%	9.8%	6.7%	53.5%
Radio %	1.7%	1.3%	1.4%	1.2%	5.7%
Print %	13.9%	1.3%	12.9%	12.7%	40.8%
TOTAL AMOUNT	11,334	4,284	6,827	5,821	28,266
TOTAL PERCENTAGE	40.1%	15.2%	24.2%	20.6%	100.0%

NB – This includes formative research & administration apportioned to each media based on their existing proportions of total cost. Excludes advocacy activities.

Fig 3.1.1 Breakdown of total costs by media type



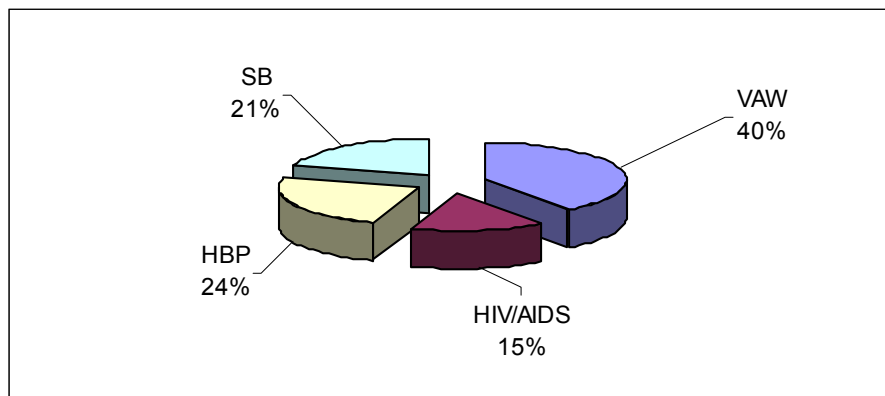
⁵ This excludes evaluation costs and costs of translation but does include salaries and overheads apportioned to series 4 as well as a 3 years annual cost of capital equipment.

⁶ Note that this does not include the VAW partnership for which the economic cost would be far greater due to the input by the National Network on Violence Against Women. These costs were not available.

As may have been expected Soul City television was the most expensive medium used in the 4th series. It accounts for approximate 53.5% of the total cost of the media part of the fourth series. More detailed analysis showed that script production and monitoring for the 13 episodes aired is the most costly component of the television series. It also had the highest proportion of Soul City staff time spent of the three media types.

The largest component of the print cost was actually the value of the serialisation in the newspaper media. An independent news media valuation company valued the serialisation in 10 newspapers at 1.3 million for each serialisation. This cost was donated to Soul City, borne by the newspapers themselves.

Fig 3.1.2: Breakdown of costs by theme



Costs were apportioned to each theme on the basis of the proportion of overall episodes devoted to that theme. VAW therefore has the greater cost as it received the greatest coverage of all topics in series 4. It was the focus of 5.75 TV episodes of the 13, 17.5 radio programmes of the 60 and one of the three booklets. The relatively lower cost of HIV/AIDS in this series is largely due to its not being the topic of a booklet being sufficiently covered as part of the print media in previous Soul City series.

The remainder of this analysis will be restricted to HIV/AIDS and violence against women (VAW) as they are the key areas for this study.

3.2 Unit cost analysis

Table 3.2.1 outlines the cost per target individual potentially reached.

Given the high coverage gained by Soul City the cost per person reached with each message is surprisingly low. Here the percentage of the population reached is based on the number of people that saw Soul City television or listened to the radio etc regardless of what other Soul City media exposure

they had additionally. This explains the higher exposure percentages shown in table 3.2.1 than previously in table 2.2.1.

The target population upon which this is based in the black and coloured population between the ages of 15 and 65 as taken from the 1996 census and grown using the population group specific growth rates from Statistics South Africa (2000) of 2.4 for the African population and 1.9 for the coloured.

Table 3.2.1: Unit cost of people reached with VAW and HIV messages (costs in 000's 1999/00 Rand)

THEME	GROUP	% POPN EXPOSED	RELEVANT POPN (000's)	RELEVANT COST (SA RAND - 000's)	COST PER PERSON REACHED (SAR)	COST PP REACHED US\$
HIV/AIDS	Television	65.0%	8,068	3,533	0.44	0.06
	Radio	55.6%	6,902	376	0.05	0.01
	Print	61.1%	7,584	375	0.05	0.01
VAW	Television	65.0%	8,068	6,916	0.86	0.12
	Radio	55.6%	6,902	493	0.07	0.01
	Print	61.1%	7,584	3,925	0.52	0.07
TOTAL	Television	65.0%	8,068	15,117	1.87	0.26
	Radio	55.6%	6,902	1,608	0.23	0.03
	Print	61.1%	7,584	11,541	1.52	0.21

NB: Two themes will not add to total as high blood pressure and small business themes have not been included in this analysis – though are included in the total costs

As previously suggested, the only problem here may be the increased coverage gained due to previous audience accessing the prior series. What proportion of the prior series costs should possibly be allocated to the series 4 impact due to this however were not estimated as part of this study.

It must be noted again that costs of the violence against women partnership or the Helpline initiated were not included here.

4. EXPLORING COST PER OUTCOME OF SOUL CITY SERIES 4 - Unweighted scales of effect for HIV/AIDS & VAW

4.1 Assumption 1 – Increased Coverage Through Multi-Media Strategy (No Exposure Vs Any Exposure).

Under the first assumption of increased coverage for the determination of an exposure t tests were used to determine significant differences in the mean individual scores on the unweighted HIV/AIDS and VAW construct scales between those that accessed no Soul City media and those that accessed any at least once.⁷ All results are shown by education strata as education appeared to have a significant interaction effect with exposure to Soul City media. Table 4.1.1 summarises those effects where those that had any exposure to Soul City media had significantly higher mean scale scores (P < 0.05), suggesting association with Soul city media.

Table 4.1.1: Significant effects by construct and education level (all) – No exposure vs any Soul City exposure groups

	NO SCHOOL	PRIMARY	SECONDARY	MATRIC & TERT
HIV/AIDS KNOWLEDGE	X	X	X	X
HIV/AIDS INTENTION		X	X	X
HIV/AIDS ACTIONS		X	X	X
VAW AWARENESS	X	X	X	X
VAW KNOWLEDGE	X	X	X	X
VAW ATTITUDE		X	X	
VAW ACTIONS		X		

Violence against women, a more recently conveyed message, was more amenable to change as a result of Soul City exposure at the knowledge and awareness level, with fewer impacts on behaviour. Conversely, HIV/AIDS messages have been around for sometime. Existing knowledge levels are higher than for VAW and here significant impacts of Soul City media exposure also occur in intention to act and actual behaviour.

4.1.1 Comparison of construct scores for HIV/AIDS

The HIV related scales used of knowledge, intention and action can be interpreted as a mean score per individual and then compared between the exposure and non exposure group. Figures 4.1.2a to 4.1.2c compare the levels of knowledge, intention and action related to HIV/AIDS between

⁷ Where strata sample sizes were small (<20), Mann Whitney U tests, a non parametric equivalent were used.

individuals with no Soul City 4 exposure and those that accessed any type of Soul City 4 related media at least once.

Fig 4.1.2a: - Comparison of mean HIV/AIDS knowledge levels between groups – any SC4 media exposure vs no exposure by education level.

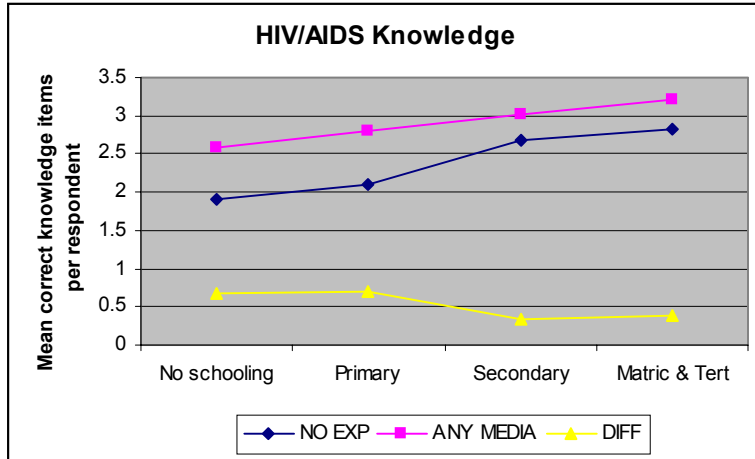
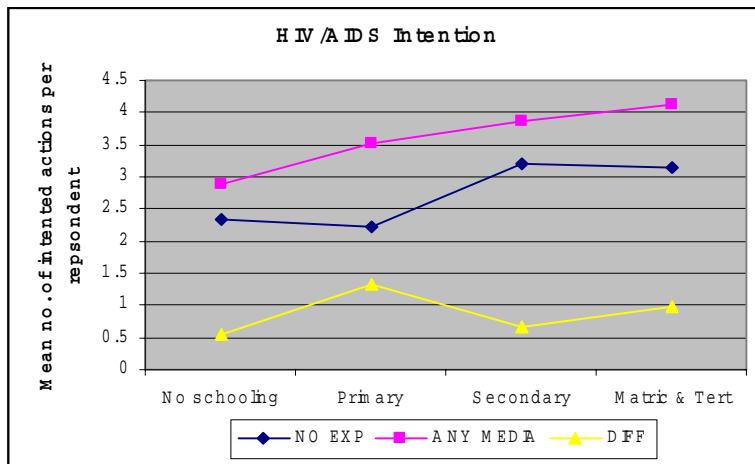


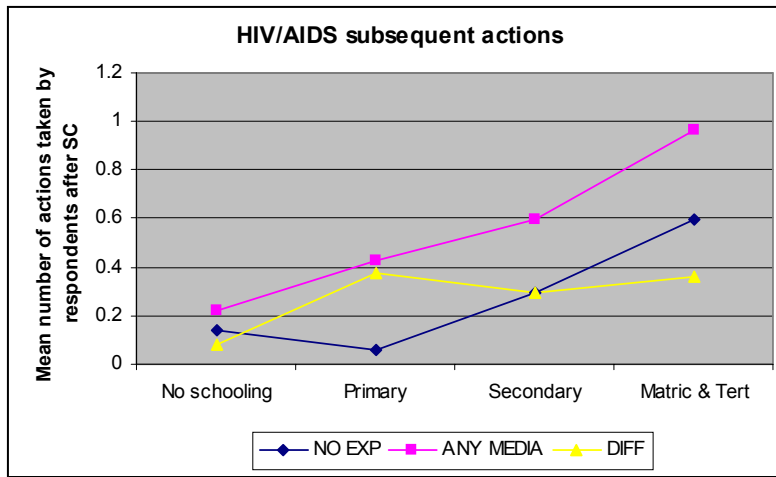
Fig 4.1.2b: - Comparison of mean no. HIV related actions being considered between groups – any SC4 media exposure vs no exposure by education level.



The impact of Soul City in relation to HIV/AIDS increases across the behaviour change constructs from knowledge to actions taken directly subsequent to the exposure to the media.

Notice that for individuals with no formal schooling the greatest difference between groups with soul city exposure and those without occurs in HIV related knowledge. Intentions to act and action are not yet significantly impacted in this group. This is expected due to the higher levels of knowledge already possessed by those with more formal education.

Fig 4.1.2 c: - Comparison of mean no. HIV related actions taken subsequent to SC4 - between groups – any SC4 media exposure vs no exposure by education level.



For these individuals then, greater impacts occur where Soul City becomes a vehicle for shifting intentions to act and actual behaviour as the prior knowledge levels are already high.

Consistently the Soul City exposure group’s changes in knowledge, intention and action increase with education whereas the change tapers off with education for those not accessing Soul City media.

4.1.2 - Comparison of construct scores for violence against women

Figures 4.1.3a to 4.1.3d below show the difference between groups in constructs around violence against women. In each case the average score per individual is higher in the any Soul City exposure groups than in the no exposure group and there is a trend for the gap between groups to widen with education. This would be as expected from all models of health production.

Fig 4.1.3a: - Comparison of mean awareness levels between groups – any SC4 media exposure vs no exposure by education level.

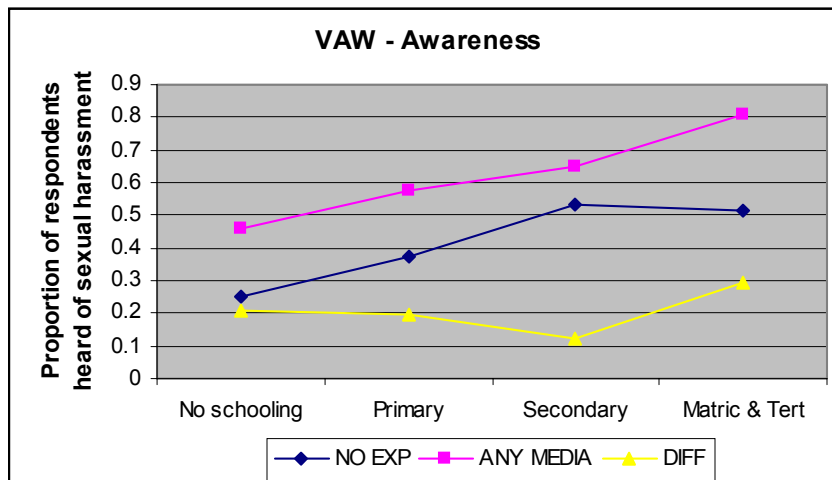
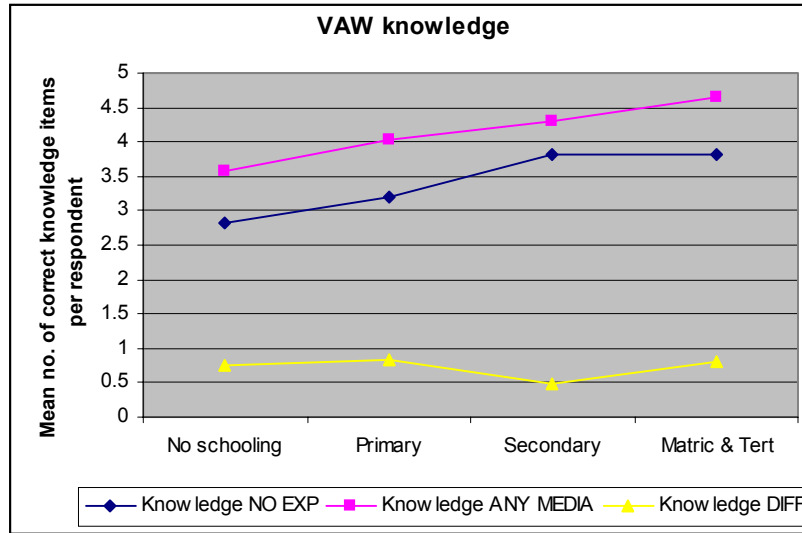


Fig 4.1.3b: - Comparison of mean VAW knowledge levels between groups – any SC4 media exposure vs no exposure by education level.



Health production functions suggest that for every health input received whether this be treatment of health education messages, individuals with higher levels of education will produce more output from this than those with lower. These graphs illustrate this well. Awareness, knowledge, attitude and action all increase with education on the whole. Soul City exposure causes there to be a shift upward in each of the constructs and the gap tends between those with and without Soul City exposure tends to widen with education.

Fig 4.1.3c: - Comparison of mean positive VAW attitudes between groups – any SC4 media exposure vs no exposure by education level.

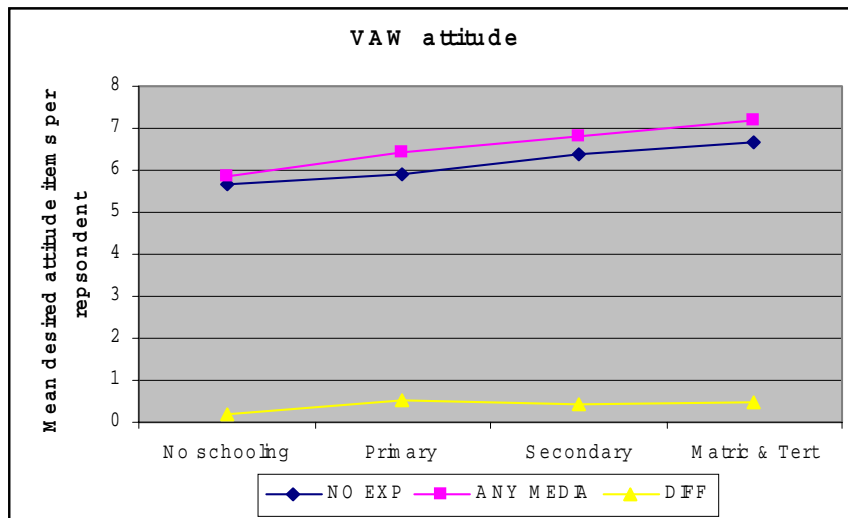
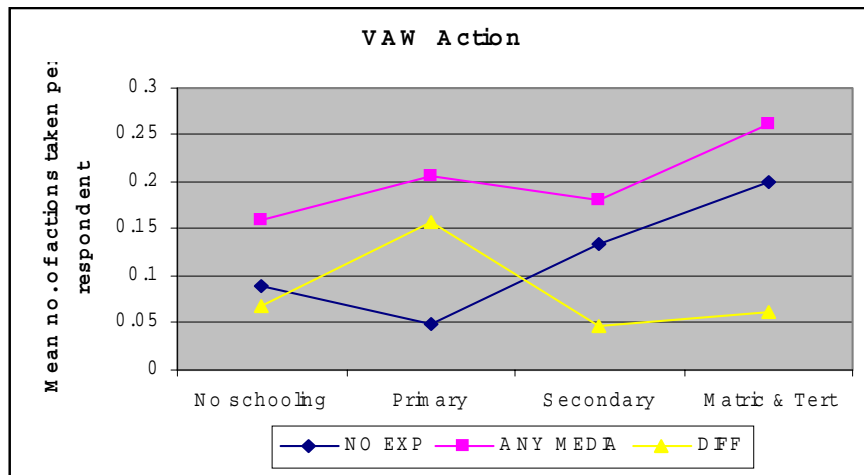


Fig 4.1.3d: - Comparison of mean no. actions taken between groups – any SC4 media exposure vs no exposure by education level.



It seems that exposure to Soul City 4 had a strong effect on awareness of sexual harassment and knowledge around violence against women. Not surprisingly attitudes and actions are, on the whole, more difficult to change. This is particularly understandable as messages on violence against women are only recently becoming more common and indeed series 4 was the first time Soul City directly addressed this issue in its media programming.

4.1.3 Potential population impacts and cost effectiveness of Soul City series 4 under the increased reach assumption.⁸

The astounding reach that Soul City series 4 had, coupled with the impacts as described in the previous section result in a potentially extremely large impact nationally. Even where significant changes only are considered, as in table 4.1.4, the additional knowledge and intention gains are huge. This is easier to see if we look at table 4.1.5. where, taking the reach into consideration, over half of the target population would experience a unit increase in knowledge on average.

As may be expected, impacts decrease along the behaviour change process and there is a large gap between intention to act and actual behaviour change. Overall impacts are greater for HIV/AIDS than for violence against women and this has already been suggested to be due to the more recent appearance of VAW messages generally and in Soul City specifically. Action against violence against woman seems particularly hard to impact at this stage.

⁸ It should be noted that all population impacts reported are assuming that coverage remains constant i.e. these are not extrapolating results based on 100% of the South Africa population accessing Soul City but that proportions of audience noted in the national survey (Case 2000) remain the same across the South African black and coloured population.

Table 4.1.4: Additional knowledge, attitude, intention and action achieved (adjusted for number items in each construct).

		No schooling	Primary	Secondary	Matric	TOTAL
HIV/AIDS	Knowledge	1,483,372	2,555,353	4,741,717	1,564,984	10,345,427
	Intention		2,716,744	4,904,653	1,643,166	9,264,564
	Action		395,949	802,705	389,852	1,588,505
VAW	Awareness	1,119,295	2,175,937	4,156,901	1,634,336	9,086,469
	Knowledge	1,328,210	2,410,188	4,525,366	1,520,082	9,783,846
	Attitude		2,409,955	4,716,532		7,126,486
	Action		230,761			230,761

Table 4.1.5: Additional knowledge, attitude, intention to act and action achieved per 100 individuals at each education level – no exposure to any type of media (adjusted for number items in each construct).

		No schooling	Primary	Secondary	Matric	Whole pop
HIV/AIDS	Knowledge	52.26	52.81	64.31	70.59	58.15
	Intention		56.15	66.52	74.11	52.07
	Action		8.18	10.89		8.93
VAW	Awareness	39.43	44.97	56.38	73.71	51.07
	Knowledge	46.79	49.81	61.37	68.56	54.99
	Attitude		49.81	63.97		40.05
	Action		4.77			1.30

If non statistically significant increases are added impact is, of course greater though this has not been considered in the cost effectiveness calculations. Table 4.1.6 is simply shown for interest to illustrate that the direction of effect of Soul City exposure is consistently positive.

Table 4.1.6 – Overall impact if non statistically significant changes were added – no SC4 exposure vs any media type groups.

		No schooling	Primary	Secondary	Matric	TOTAL
HIV/AIDS	Knowledge	1,483,372	2,555,353	4,741,717	1,564,984	10,345,427
	Intention	1,293,980	2,716,744	4,904,653	1,643,166	10,558,544
	Action	105,397	395,949	802,705	389,852	1,693,902
VAW	Awareness	1,119,295	2,175,937	4,156,901	1,634,336	9,086,469
	Knowledge	1,328,210	2,410,188	4,525,366	1,520,082	9,783,846
	Attitude	1,386,948	2,409,955	4,716,532	1,543,218	10,056,652
	Action	96,081	230,761	292,904	129,293	749,038

If significant impacts as shown in table 4.1.4 are considered against the theme specific cost, table 4.1.7 shows the cost effectiveness ratios of having access to any soul city 4 media compared with no exposure to this

programme. The cost applied is the sum of the cost of each media type as all media exposure is being considered in the outcome measure.

Table 4.1.7 Estimated cost per item adjusted change in each construct (costs in 000's 1999/00 Rand)

		ADDITIONAL (in 000's)	COST (SAR - 000's)	C/E (SAR)	C/E (US\$)
HIV/AIDS	Knowledge	10,345	4,284	0.41	0.06
	Intention	9,265		0.46	0.07
	Action	1,589		2.70	0.38
VAW	Awareness	9,086	11,334	1.25	0.18
	Knowledge	9,784		1.16	0.16
	Attitude	7,126		1.59	0.22
	Action	231		49.12	6.92

4.2 ASSUMPTION 2: - A JOINT MEDIA PROCESS – (No exposure vs All Media Exposure groups)

The joint media assumption suggests that, to gain desired impact, each media integrates together to reinforce messages and therefore acts as a unit that cannot be separated and the same impact remain. In this case however, those accessing all four media types are fewer in number and therefore under this assumption, the reach gained is drastically reduced.

The pattern of significant impacts is similar to that under the increased coverage assumption. Again table 4.2.1 shows that later behavioural changes stages are more amendable to impact for HIV/AIDS message than for VAW. Here very few impacts are seen at the no formal schooling education level. This is largely due to the small sample size of only 8 people in the national evaluation survey belonging to this category.

Table 4.2.1 : Significant effects by construct and education level (all) – No exposure vs all Soul City exposure groups

	NO SCHOOL	PRIMARY	SECONDARY	MATRIC & TERT
HIV/AIDS KNOWLEDGE	X	X	X	X
HIV/AIDS INTENTION		X	X	X
HIV/AIDS ACTIONS	X	X	X	X
VAW AWARENESS		X	X	X
VAW KNOWLEDGE		X	X	X
VAW ATTITUDE		X	X	
VAW ACTIONS		X*		

4.2.1 Comparing the construct means - HIV/AIDS

A comparison of the means in the sample, however, does seem support the joint media suggestion of the reinforcing effects of each media type as differences between this all media accessed group and those with no exposure to Soul City are greater than in the previous increased coverage analysis.

With the higher knowledge levels around HIV / AIDS the effect of education on knowledge increase under this assumption also lessens across levels.

Fig 4.2.2a: - Comparison of mean HIV/AIDS knowledge levels between groups – all SC4 media exposure vs no exposure by education level.

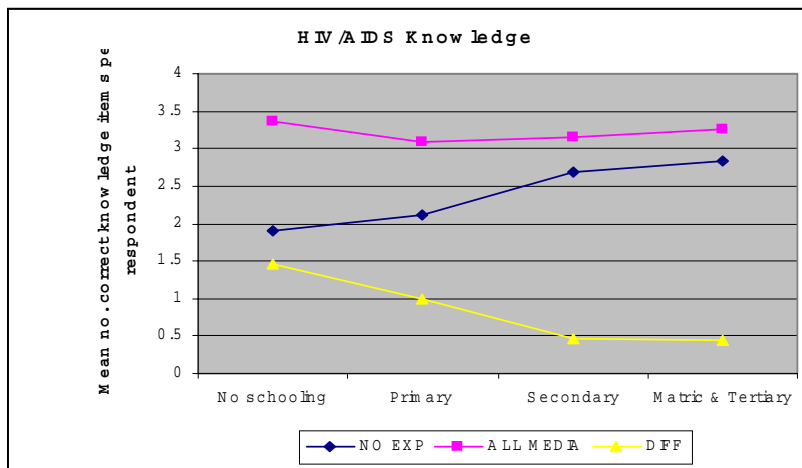


Fig 4.2.2b: - Comparison of mean no. HIV related actions being considered between groups – all SC4 media exposure vs no exposure by education level.

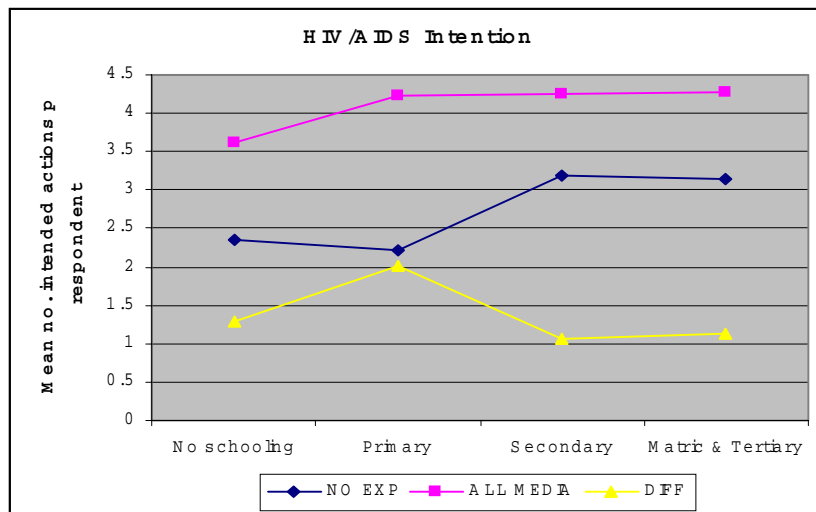
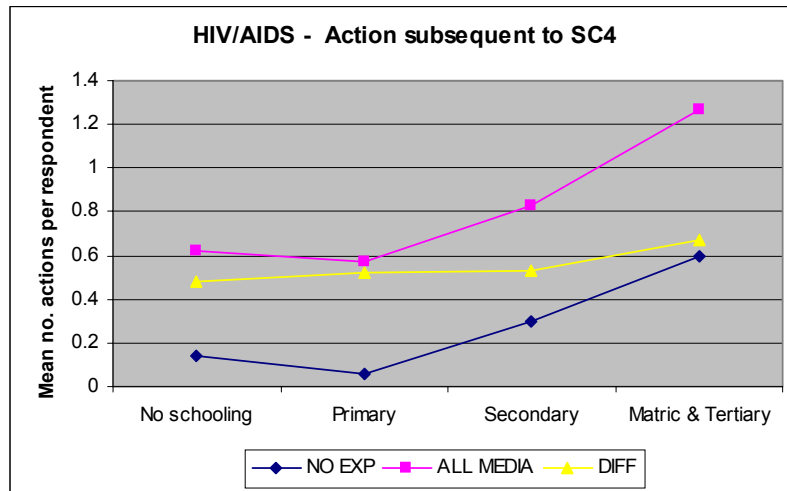


Fig 4.2.2 c: - Comparison of mean no. HIV related actions taken subsequent to SC4 - between groups -all SC4 media exposure vs no exposure by education level.



4.2.2 Comparing the construct means for VAW

Figures 4.2.3a to 4.2.3d show the differences in mean awareness, knowledge, attitude and action between the all media exposure and no exposure groups. For the no formal schooling strata, results should be interpreted with caution as there were very few individuals without formal education that accessed all media types. This may be largely due to the high correlation between TV ownership and education level through the link with socio-economic status of both variables.

On the whole differences between the all media exposure groups and the no Soul City 4 exposure are greater than where access to at least one media type was considered. This is evidenced by the great gap between the all media and no exposure lines in the below figures.

Fig 4.2.3a Proportion of respondents having heard of sexual harassment – all SC4 media vs no exposure groups

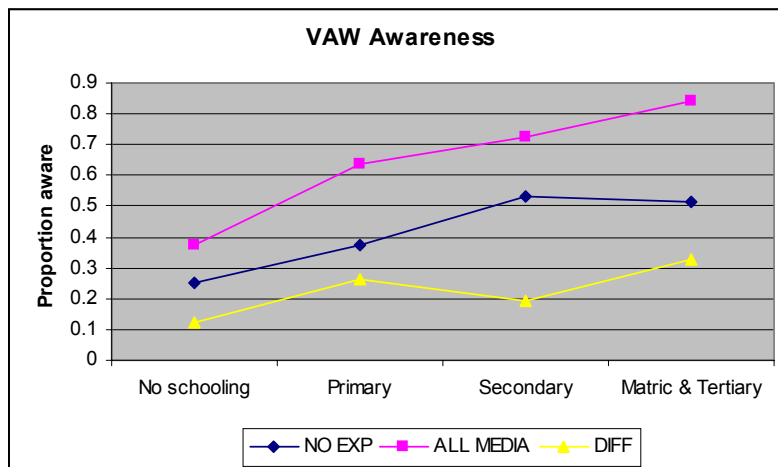


Fig 4.2.3b: - Comparison of mean VAW knowledge levels between groups – all SC4 media exposure vs no exposure by education level.

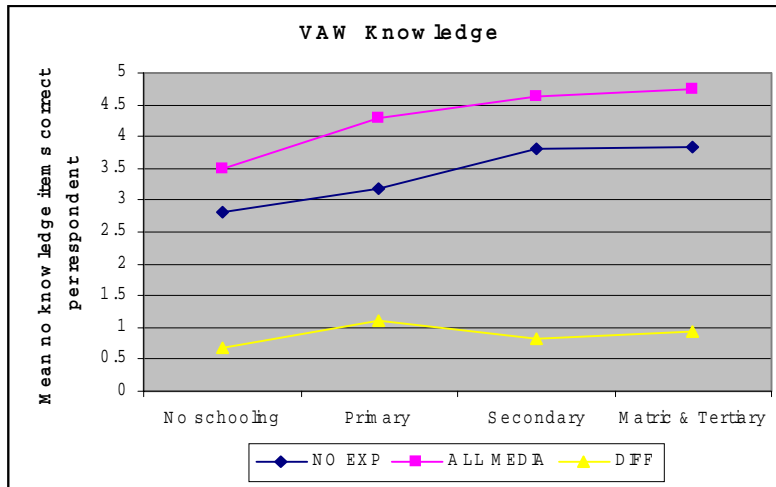


Fig 4.2.3c: - Comparison of mean positive VAW attitudes between groups – all SC4 media exposure vs no exposure by education level.

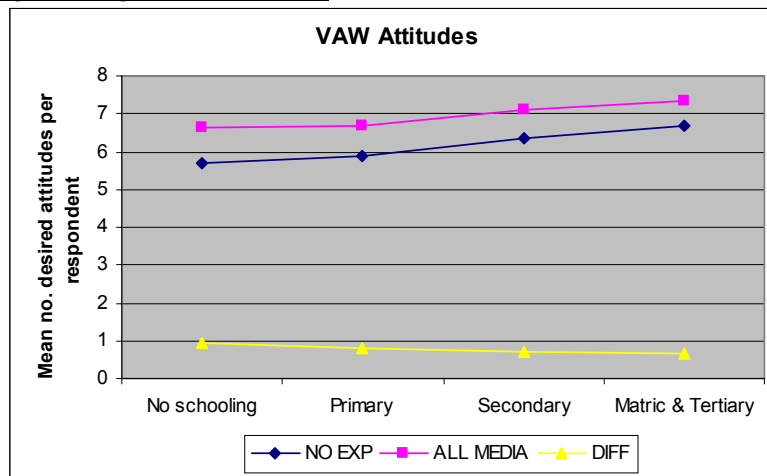
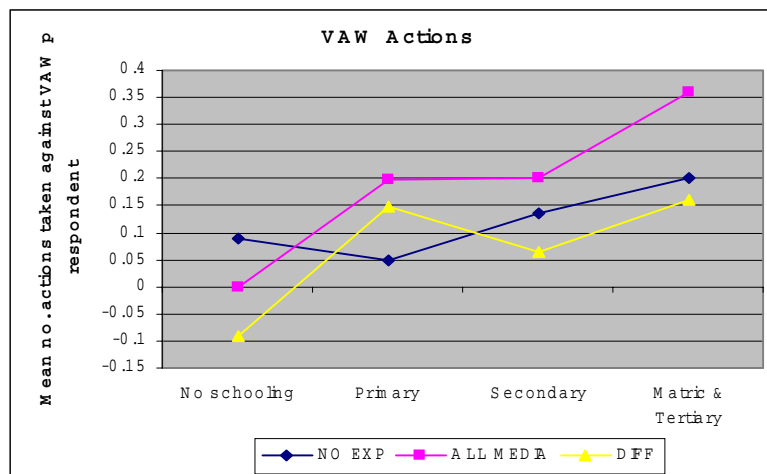


Fig 4.2.3d: - Comparison of mean no. actions taken between groups – all SC4 media exposure vs no exposure by education level.



The increased impact of Soul City media at the individual level under this assumption of accessing all media types, however, can be seen to be much greater than under the previous assumption (see appendix for exact figures). This is the case across all constructs. This evidence tends to support the idea of significant interaction effects between the media types.

4.2.3 Potential population impacts and cost effectiveness of Soul City series 4 under the joint media assumption

Though the individual level impacts if all Soul City media are accessed rather than only one or two types are greater, we must remember that if the joint production assumption means that only those accessing all media types are considered, the reach of the programme is significantly reduced. Table 4.2.4 illustrated this well though the negative numbers may tend to confuse things initially. This is easily explained.

At the lower levels of formal education strata, there is a very small percentage of the sample that accessed all Soul City 4 media, as previously mentioned. On the other hand the percentage of those with no formal schooling or primary school levels of education are greater in the no exposure to Soul City media. Although the mean knowledge, intention etc is greater in the all media groups, the far greater numbers of individuals at these levels of education having no media exposure but still giving some, although fewer, correct responses means that the overall number of correct responses is greater in the no exposure group. When scaled up to the population using the sample percentages in each exposure group the difference in numbers between groups becomes wider.

These negative numbers are purely an effect of the reduced reach particularly for individuals in these education strata if all media access was the defining criteria for the programme. This effect is removed and outweighed by the positive impact at the higher education strata as more people have had exposure to all Soul City 4 media types.

The overall impact is therefore still high and positive, but not as great as that produced with the increased reach of allowing the inclusion of individuals accessing any media into the exposure group. In other words the effect of the increased reach of having various media types outweighs the interaction effect of having each media reinforce the others messages at the individual level.

Table 4.2.4 : Additional knowledge, attitude, intention to act and action achieved – no exposure to all types of media (adjusted for number items in each construct).

		No schooling	Primary	Secondary	Matric & Tert	TOTAL
HIV/AIDS	Knowledge	-279,460	-315,336	1,131,748	1,607,328	2,144,280
	Intention		-132,958	1,328,586	1,150,499	2,346,127
	Action	-4,572	59,661	339,323	356,150	750,563
VAW	Awareness	-	-164,136	1,147,510	1,163,892	2,147,266
	Knowledge		-360,408	1,140,720	1,047,555	1,827,867
	Attitude		-535,965	1,090,938		554,973
	Action		13,844			13,844

Table 4.2.5: Additional knowledge, attitude, intention to act and action achieved per 100 individuals at each education level – no exposure to all types of media (adjusted for number items in each construct).

		No schooling	Primary	Secondary	Matric & Tert	Whole pop
HIV/AIDS	Knowledge	-321.60	-46.82	45.70	102.76	40.62
	Intention		-19.74	53.65	73.55	44.44
	Action	-5.26	8.86	13.70	22.77	14.22
VAW	Awareness		-24.37	46.33	74.41	40.68
	Knowledge		-53.52	46.06	66.97	34.62
	Attitude		-79.58	44.05		10.51
	Action		2.06			0.26

Again table 4.2.6 shows the addition to the overall population impact if non-significant effects were also included. These however, have not been included in the cost effectiveness calculations.

Table 4.2.6: Overall impact if non statistically significant changes were added – no SC4 exposure vs all media type groups.

		No schooling	Primary	Secondary	Matric & Tert	TOTAL
HIV/AIDS	Knowledge	-279,460	-315,336	1,131,748	1,607,328	2,144,280
	Intention	-283,167	-132,958	1,328,586	1,150,499	2,062,960
	Action	-4,572	59,661	339,323	356,150	750,563
VAW	Awareness	-154,828	-164,136	1,147,510	1,163,892	1,992,438
	Knowledge	-296,578	-360,408	1,140,720	1,047,555	1,531,289
	Attitude	-401,504	-535,965	1,090,938	1,046,706	1,200,175
	Action	-16,545	13,844	82,729	125,646	205,675

This reduced impact resulting from the reduced reach under this assumption is reflected in the cost effectiveness ratios shown in table 4.2.7. Placing restrictions on the media access classified as exposure would reduce the

overall impact of Soul City series 4. Using a variety of media types allows more people, and particularly those less advantaged, to benefit from the Soul City messages.

Table 4.2.7: Estimated cost per item adjusted change in each construct under the joint production assumption

		ADDITIONAL (in 000's)	COST (SAR - 000's)	C/E (SAR)	C/E (US\$)
HIV/AIDS	Knowledge	2,144	4,284	2.00	0.28
	Intention	2,346		1.83	0.26
	Action	751		5.71	0.80
VAW					
	Awareness	2,147	11,334	5.28	0.74
	Knowledge	1,828		6.20	0.87
	Attitude	555		20.42	2.88
	Action	14		818.67	115.31

5. WEIGHTED SCALES – REFLECTING THE RELATIVE IMPORTANCE OF THE ITEMS

5.1 Under the increased reach assumption 1

Table 5.1.1 shows the additional HIV related knowledge and action gains by educational strata significantly associated with any exposure to Soul City 4 media ($p < 0.05$) per 100 people in that strata and in the overall population.

Table 5.1.1: Additional actions per 100 population achieved through exposure to any SC4 media.

	No schooling	Primary	Secondary	Matric & higher	OVERALL POPULATION
Knowledge	52	53			23
Action		11	15	20	12

Comparison of the above figures with those using the unweighted scale in table 4.1.5 shows that weighted knowledge gains are lower than the unweighted. Effectively, this implies that the changes reported, largely occurred on the items weighted of least importance by the panel of experts. Further investigation of the underlying data shows this to indeed be the case, however, this is largely due to individuals knowing the important aspects of HIV with or without Soul City 4 so there was little room for impact, particularly at higher education levels. Interestingly though for those that did not access any SC4 media, the consistent pattern between the two high importance items of knowledge ie that there is something I can do to prevent getting HIV/AIDS and that you cannot tell someone has HIV/AIDS just by looking at them is that more people knew the latter but felt the former was not the case. This pattern however, was reversed in the two higher educated groups who had accessed Soul City 4 media. The greatest change occurred in knowing that there was no cure for HIV/AIDS which was not highly rated by experts interviewed, hence the decreased impact of Soul City 4 on the weighted scale of knowledge than the unweighted.

This is reflected in a higher cost per weighted knowledge effect gained below in table 5.1.2. The cost per effect has now risen to 15 US cents versus 6 cents under the unweighted measure.

Table 5.1.2: cost per weighted effect on HIV related knowledge and action – increased reach assumption

		ADDITIONAL (in 000's)	COST (SAR - 000's)	C/E (SAR)	C/E (US\$)
HIV/AIDS	Knowledge	4,041	4,284	1.06	0.15
	Action	2,221		1.93	0.27

Interestingly the reverse is true for HIV related actions taken subsequent to the beginning of the Soul City series 4 airing, implying that Soul City was successful in prompting people to take action in the areas that are more important according to our interviewees. Again investigation of the underlying data shows this to be the case as tables 5.1.3(a) and 5.1.4(b) illustrate.

Table 5.1.3 (a) actions taken by individuals not accessing Soul City 4 media – by education strata.

	n	Phoned helpline	Helped HIV+ person	Asked partner to use condom	Asked partner to get HIV test	Went for HIV test self	TOTAL ACTIONS	MEAN NO PER INDIV.
No schooling	67	0	1	3	2	1	7	0.10
Primary	144	0	0	6	1	1	8	0.06
Secondary	111	0	3	15	7	8	33	0.30
Matric & Tertiary	35	2	3	10	2	4	21	0.60
TOTAL	357	2	7	34	12	14	69	0.19
% of individuals		0.6%	2.0%	9.5%	3.4%	3.9%		

Table 5.1.3 (b) actions taken by individuals who accessed Soul City 4 media – by education strata.

	n	Phoned helpline	Helped HIV+ person	Asked partner to use condom	Asked partner to get HIV test	Went for HIV test self	TOTAL ACTIONS	MEAN NO PER INDIV.
No schooling	63	0	1	8	4	1	14	0.22
Primary	358	4	12	66	36	35	153	0.43
Secondary	723	12	32	208	100	77	429	0.59
Matric & Tertiary	468	18	35	202	88	107	450	0.96
TOTAL	1612	34	80	484	228	220	1046	0.65
% of individuals		2.1%	5.0%	30.0%	14.1%	13.6%		

These show that there was a 21% difference (across all education strata) in the numbers of people taking the most highly rated action ie asking their partner to use a condom between the non exposed and exposed group. Similarly higher percentage differences in numbers of respondents taking the mid rated actions relating to obtaining an HIV test for themselves or their partners (11% and 10% respectively) were seen between the exposed and non exposed groups versus the low rated actions of phoning and AIDS helpline and helping someone who is HIV+ (1.5% and 3 % respectively).

5.2 Under the joint media assumption 2

A similar reduction in effect under the narrowing assumption of joint production were observed under weighted effect as for the unweighted in section 5.1.1 previously. Table 5.2.1 shows the additional knowledge and action related to HIV associated with exposure to all three Soul City 4 media, television, radio and print materials.

Table 5.2.1: Additional knowledge & action per 100 population achieved through exposure to any SC4 media.

	No schooling	Primary	Secondary	Matric & higher	TOTAL
Knowledge	-353	-57	44		8
Action		11	19	23	19

As for assumption 1 an increased in cost per effect on knowledge is evident with a decrease in the cost per action taken after weighting for importance of the items measured along each of these constructs.

Table 5.2.2: cost per weighted effect on HIV related knowledge and action –joint media assumption

		ADDITIONAL (in 000's)	COST (SAR - 000's)	C/E (SAR)	C/E (US\$)
HIV/AIDS	Knowledge	402	4,284	10.66	1.50
	Action	1,026		4.17	0.59

However as was noted in the results reported in section 4.2, placing restrictions on the type of exposure seen as beneficial to the receiver decreased the reach of the intervention or the overall number of people seen as beneficiaries and therefore significantly decreases the impacts included.

6. IMPLICATIONS FOR SOUL CITY AND ENTERTAINMENT EDUCATION STRATEGIES

Though intermediate constructs recognized to be associated with behaviour change were used in this study rather than final health outcome in the quantification of impact, the degree of change in these associated with Soul City 4 exposure leaves little doubt that the intervention had substantial impact on its audience.

Economies of scale achieved in the production of Soul City series 4 (as for previous series) due to its popularity and following were substantial. The cost per person reached of 50 US cents for the entire series and all media is very low. Though few comparisons can be made due to the general lack of costing studies of mass media interventions this Soul City 4 fared well against a TV only anti smoking initiative targeted at students which estimated that a national programme could be delivered at US \$8 per person (Secker-Walker, 1997). Preliminary estimates of cost per person reached by family planning related television programmes run in Egypt ranged between US0.08 and US0.20 cents (though these excluded many overhead costs and were for single media only).

Additional actions against HIV/AIDS were associated with Soul City at a cost of 38 US cents per additional action taken. This too may be favourable when considered with cost per family planning adopter reported at between 29 and 79 cents for one radio based programme in Tanzania (Singhal & Rogers, 1999) and US\$6.76 in another television based intervention (Kincaid et al, 1993 in Singhal & Rogers, 1999). Numbers of actions may reflect some over reporting of desirable behaviour, as measures were self reported, (Freimuth et al, 2001), however the large differences between exposed and non exposed groups make this implausible as an explanation for the difference. Results are very difficult to generalize, though, even between contexts let alone between programmes where differing messages were conveyed and researchers have been warned against attempting to do this (Godfrey, 2001).

The fact that HIV/AIDS related action appeared significantly cheaper to prompt in this study than that against violence against women may support a suggestion that interventions which contain messages that people have had longer exposure to are more likely to shift individuals into actually changing their behaviour rather than having initial impact only on predictors such as knowledge and attitude. This was also suggested in previous research undertaken by the SMASH project in South Africa and three other countries (2000).

"Results suggest that intervention periods of less than two to three years are not likely to bring about changes in adolescent behaviour – although they can improve the knowledge and attitudes that lead to behaviour change" (PSI,2000).

If violence against women is a continuing theme in future series then, we may expect to see declines in a cost per effect gained in any number of the constructs measured.

This raises a question as to whether there is an optimal level of exposure in order to achieved sustained positive behaviour. Shorter term exposure to health and development media programmes has been known to result in effects falling off over time (DeLamater et al, 2000). On the other hand, if sustained behaviour change is achieved, repetition of similar messages may not be using available resources to the greatest benefit. This requires further research in the health and development communication arena.

The results discussed above are those reported under the increased reach assumption and utilizing unweighted scales of outcome. The use of the weighted scale further reduced the Soul City's costs in gaining additional positive behaviour as those actions taken were predominately asking a partner to use a condom and going for or asking a partner to go for an HIV test. These were the actions weighted most highly by the group of expert respondents and therefore scale scores were shifted upwards as a result of the weighting process. Adjusting for the relative importance of various pieces of knowledge around HIV/AIDS, however, shifted the scale scores downward. This is due to the increase in questions answered correctly largely being attributable to positive changes in knowledge for items of least importance as rated by the expert panel (FAITH and CURE). Rather than Soul City 4 being unsuccessful in producing the desired changes, however, this was because there existed more universal knowledge in the areas of greatest importance and so there was little room for improvement for even those that did not access SC4 media.

Cost effectiveness ratios were higher under the joint media assumption showing that, whilst individual impact is greater with reinforcement of messages given through the various media types, the percentage of the population that would access all three media types is so much lower than those that access at least one that the overall impact would be lower. This alludes to the benefits of employing a multimedia approach, particularly over television alone, where although it has the greatest impact of any single media, the addition of other media types and in particular radio, incurs far greater benefits through the increased coverage achieved, for relatively little cost.

Limitations of the study

It was noted earlier in the report that the loyalty of the Soul City audience is very high. This has benefits for the behaviour change gains that are more likely to arise from repeated exposure to health related messages. It also, however, complicates the assignment of costs to effects produced. If the effects noted here, at least for HIV/AIDS which was a previous theme

whereas violence against women was not, are partially attributable to previous series impact then some proportion of previous series costs should be allocated to this. Determination of what this proportion should be, however is problematic without a detailed analysis of previous exposure to Soul City messages which was not possible with the data available for this study. This omission may tend to overestimate the cost effectiveness of Soul City 4 as reported here.

However, also omitted are the impacts produced in those that have been indirectly exposed to the messages contained in Soul City 4. Research has shown that Soul City episodes become a topic of conversation within social networks. It is highly likely, therefore, that positive change is not restricted to those that have reported accessing Soul City media which were the only effects considered in this study. This omission is likely to cause an underestimation in the cost effectiveness of the intervention and the two to some extent will net each other off. Further, as other authors on economic evaluation of health promotion have discussed (Sheill & Hawe 1996; Jan, 2000; Godfrey 2001) there is sure to be a number of other benefits of the series to the community as well as the individual that have not been captured here. This is a preliminary look at costs and effects of Soul City 4.

Where unconventional approaches to measurement are taken, obvious questions about the rigour of the approach are posed. Here total theme costs of the Soul City series 4 were compared with additional positive responses given by the groups exposed to either all media types or at least one SC4 media type over those that did not access it at all. This was done across a variety of what can be seen as intermediate outcomes rather than the eventual impact on health through, for example, HIV transmissions averted, the most common measure of health impact used for HIV prevention programmes. It is difficult to conceive what might be used as a final measure of outcome for impact on violence against women but perhaps DALYs or QALYs gained. Insufficient information on sexual behaviour at an individual level existed to allow the use of an impact predictive model.

Problems, however, do arise for economic evaluation through the use of such intermediate measures of effect. For example although the use of a measure of knowledge has theoretical basis in the evaluation of health communication programmes, it can come easily unstuck if cost effectiveness comparisons across communication programmes are to be made. Knowledge questions used will related to the specific health messages being conveyed. Is it possible to compare 4 out of 5 questions answered correctly about HIV/AIDS with a programme that asks respondents to answer questions relating to its message on dealing with burns? It would be possible to manipulate results by asking easier questions for one programme over another.

The question remains, however, that even if we arrived at a model that could accurately estimate the behaviour change and therefore eventual impact on health at an individual level arising from Soul City's 4th series, whether this

would truly reflect the programmes complete benefit. Much of the literature on economic evaluation and health promotion suggests that benefits on a wider community and social scale are also important products of the introduction of a health promotion programmes and that these would be lost if only individual level changes were considered. This would certainly be true of the Soul City intervention which included initiatives to promote collective efficacy around VAW and the reduction of stigma around HIV/AIDS to mention just two additional impacts.

Economic evaluation is being increasingly used to set priorities for national health spending both in developed and developing nations (Rhodes 2000, Shani et al, 2000). If measures that aim to capture these wider benefits are not developed, then health promotion initiatives such will continue to be undervalued in any comparison with treatment interventions where economic evaluation is used. Valuing these changes, though, and putting them into a measure that may be used in economic evaluation is a challenge.

Making this more difficult is the fact that the types and relative importance of the community level changes are likely to vary significantly between communities with differing social contexts and vary across time. As economic evaluation is about comparing interventions in order to guide resource allocation into its most efficient use, this is problematic as it restricts comparisons that can be made to those within the same social context.

In order to fill its comparative function, economic evaluation requires a single outcome measure that is interval measured so as to enable its pairing with the costs of the intervention. It is also desirable to have such a measure that may be applied to compare not only between health promotion programmes but between promotion and curative ones. Measures have been developed so far in the Quality Adjusted Life Year (QALY) and disability adjusted life year (DALY) to combine multidimensional effects, in this case, quantity and quality of life. Perhaps a multidimensional quantification of benefit that can also be applied to health promotion programmes encompassing community and individual level benefit is in the future. Currently though, the lack of evidence around cost and impact of health promotion programmes is not allowing a question of which prevention programmes are the most efficient let alone their relative cost effectiveness versus other types of interventions (Rhodes, 2000).

What is certain, however, is that as resources for social service provision declining and an increasing emphasis is placed on evidence of efficiency in order to gain resources, health promotion programmes and particular those such as entertainment education strategies that utilize mass media to potentially gain enormous coverage, must be able to compete in the same evidenced based arena as curative programmes in order to voice the large benefits that they have been known to have on health and development throughout history.

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