University of Cape Town
Faculty of Education

AN EVALUATION OF THE IMPACT OF A TEN HOUR HIV/AIDS PREVENTION PROGRAMME ON MALE ADOLESCENTS' HIV/AIDS-RELATED KNOWLEDGE, ATTITUDES AND BELIEFS

by

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A dissertation presented in fulfilment of the requirements for the degree of
MASTER OF EDUCATION

July 1994

The financial assistance of the Centre for Science Development towards this research is hereby acknowledged. Opinions expressed in this publication, or conclusions arrived at, are those of the author and are not necessarily to be attributed to the Centre for Science Development.

DEDICATION

To my Mum and Dad, Valerie and Layton Mitchell.

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ACKNOWLEDGEMENTS

I should like to sincerely and gratefully acknowledge the assistance of my two supervisors, Associate Professors Kevin Rochford and Tim Dunne. Their sensitive, professional guidance, perceptive advice, and ever-ready support and encouragement enabled this research to be completed.

The assistance of the following individuals and organisations whose professionalism, support, genuine interest and co-operation is gratefully acknowledged:

Other UCT Staff Members:

Ms Jacqui Somerville, Computer Technology Services [BMDP programs and data organisation].

Dr Judith Head, Sociology Department [feedback on the initial draft Chapter 2 - the theoretical frameworks].

Mr John Valentine and Mr Lance MacLeod, Audiovisual Unit, School of Education [equipment for the instructional interventions].

Mr Mike Fielding and Mrs Janet Jackson, Professional Communications Unit [organisation, layout and presentation of the dissertation].

Mrs Japthas, Information Technology Services [layout of the data coding boxes in the Comprehensive Questionnaire; data capture and verification].

Mrs Paula Foley and Mrs Cynthia Williams in the Postgraduate Scholarships Office; Mrs Tirol Nicolay and Mrs Maureen Douglas, Faculty Office, School of Education [good humour, support and encouragement].

Ms Janet Wilson, Teaching Methods Unit [generation of the overlapped bar graphs in Chapter 5].

Library Staff in the following libraries: Education, Institute of Child Health, Interlibrary Loans, Linear, African Studies, and Medical School.

The 1991 postgraduate students at The Woolsack residence [reviewing APWA Scale items].

The 1991 HDE Biology Method students [initial piloting of Scales].

Other libraries:

Library personnel at the ATICC and Planned Parenthood Association libraries, Cape Town.

Diocesan College, Cape Town:

Mr John Gardener, past Headmaster of Diocesan College [allowing me to conduct my research amongst his Standard 9 students in 1991; support and interest in the study].

Mr Hugh Fynn and Mrs Rene Raff, Staff Members responsible for the school's Life Styles Programme [helpful advice, assistance and co-operation].

Mr Simon Poole, Head of the Biology Department, [logistic support during implementation of the interventions at DC].

Mr Frank Hill, Estate Manager [organising the intervention venues at Diocesan College].

The 1991 Standard 9 students who so willingly participated in the research.

St Stithians College, Johannesburg:

Mr Clive Watson and other St Stithians Staff Members [conducting the test-retest of the study's Comprehensive Questionnaire and returning them timeously].

The 1992 Standard 9 students who completed the Comprehensive Questionnaires.

Implementers of the Experimental Programme:

The Planned Parenthood Association of the Western Cape [providing two staff members to implement Phases I, II, IV, and VII(A) of the ten hour HIV/AIDS programme].

Mr Ivor Dorrington, [the young man who, despite being in the final stages of AIDS, willing gave up his time and energy to come and discuss HIV infection and AIDS with the students (Phase III)].

Dr Grazzioli [Phase V of the ten hour HIV/AIDS programme which explored "Caring Relationships"].

Dr Adrian Perkel and Mr Jeremy Davidson, Clinical Psychologists from the University of the Western Cape, [Phases VI and VII(B) of the ten hour HIV/AIDS programme].

Implementers of the Control (placebo) Programme:

Mr Jeffrey Kagan [Interpersonal Conflict Resolution workshop]; Mr Peter Schultz and Ms Bettina Meier from SANCA [Substance Abuse workshop]; Ms Heather Kenyon and her colleague [Feminine Perspectives]; Mr John Hill [Media and Values workshop]; the Reverent John Atkinson [Marriage, Divorce and Remarriage workshop]; Professor Peter Beighton [Medical Genetics and Mankind lecture]; and Mrs Rene Raff [Teenage Pregnancy - the Options].

Funding Bodies:

Financial assistance from the CSD [HSRC Bursary, 1991], and UCT [Research Scholarship, 1992].

Others:

Dr Adrian Perkel, UWC [initial help with conceptualisation of the research].

Ms Claudia Regnart [reviewing the language of items in the Comprehensive Questionnaire].

Mr Alex Hangartner [teaching me Word Perfect].

Ms Heather Campbell [proof reading].

To all friends, work colleagues and extended family, too numerous to mention by name, a sincere thanks for your loving care, support, help and encouragement.

Last, but by no means least, I should like to acknowledge, with heartfelt thanks and great appreciation the constant, unconditional love, support and encouragement I received from my family: my parents Mr and Mrs Layton Mitchell and my brother Christopher of Cape Town; my two sisters Colleen and Patricia in Europe, and my brother Phillip in the USA. Additional thanks to my parents for all the special lessons that they have taught me, for all the many ways they have helped me grow, for always setting the good example and for being behind me all the way. I should like to end by paying homage to my mother, Mrs Valerie Mitchell. Mum, your dignified and indomitable spirit, and the great and abiding courage you have shown in peacefully coming to terms with cancer, provided me with the inspiration to see this research through to its completion. Thank You!

SUMMARY

The *raison d'être* of this study is a rigorous, controlled empirical evaluation of the impact of a professionally delivered, specially designed ten hour HIV/AIDS prevention programme, implemented over two full teaching days, on equivalent groups of Standard 9 (Grade 11) male students aged 16-18 years (mean age 16.4 years), enrolled at a private boys' high school in Cape Town, in 1991. The secondary aim of the investigation was to elicit qualitative and quantitative feedback from experimental subjects with respect to their perceptions of the quality, content and presentation of the ten hour HIV/AIDS prevention programme.

The design of the ten hour HIV/AIDS prevention programme and the choice of outcome measures used to evaluate the impact of the programme were based within the framework of a five-faceted theoretical perspective and on previous research findings. The five "families" of theories which provided the framework were: cognitive decision-making theories (the Health Belief Model (Becker 1974), and the Theory of Reasoned Action (Fishbein and Ajzen 1975); Social Cognitive Theory (Bandura 1986); motivation theories; social influence theories and attitude theories.

Employing a Solomon four-group design students were randomly drawn from the study population and randomly assigned to one of four small groups (n=15): a pretested experimental group; a non-pretested experimental group; a pretested control group; and a non-pretested control group. Experimental groups received the ten hour HIV/AIDS prevention programme which focused on knowledge and understanding of HIV and AIDS, realistic risk evaluation, "ownership" of the HIV threat, sexual behaviour in the context of caring rather than "casual" relationships, and the skills required to avoid and/or reduce the sexual transmission of HIV. Control groups concurrently received a Life Styles (placebo) programme. Both treatments were implemented using teaching strategies consonant with the self-empowerment model of health education.

A refined Comprehensive Questionnaire, comprising piloted, refined, valid and reliable scales which were either developed or adopted, was used as a repeated measures instrument in the investigation. One experimental and one control group completed the Comprehensive Questionnaire two weeks prior to the intervention; whereas all four groups completed the Comprehensive Questionnaire at post-testing (conducted immediately after completion of the two day interventions), and again at follow-up-testing six-and-a-half weeks later. Statistical tests were performed on the data sets generated by the refined outcome measures in the Comprehensive Questionnaire in order to evaluate the short-term, pretest, interaction, drop-off and long-term effects of the programme on the students' knowledge and understanding of HIV/AIDS; attitude towards people with AIDS; self-efficacy beliefs with respect to both avoiding and reducing the risk of sexual transmission of HIV; and beliefs about the social norms relating to HIV/AIDS preventive behaviour.

Statistical evidence substantiated the following conclusions: (a) in the short-term the ten hour HIV/AIDS prevention programme was successful in substantially improving (i) the knowledge and understanding of HIV and AIDS of both the pretested and non-pretested experimental groups relative to the control groups, and (ii) the pretested experimental groups' attitudes towards people with AIDS relative to the pretested control group; (b) at post-intervention there were no pretest or interaction effects; and (c) these study findings are most probably generalisable to similar populations of boys in South Africa. Notwithstanding the fact that no definitive conclusions could be drawn about the drop-off and long-term effects of the ten hour HIV/AIDS programme, due to subject attrition which occurred between post-testing and follow-up-testing, statistical evidence suggested that over the six-and-a-half weeks between post-testing and follow-up-testing, and the eight-and-a-half weeks between pretesting and follow-up-testing, the pretested experimental groups' initially improved attitude towards people with AIDS, evident at postintervention, was not sustainable at a measureable level relative to the pretested control group. Furthermore, pretested experimental groups' initially improved knowledge and understanding of HIV and AIDS (relative to the pretested control group), evident at post-intervention, was no longer evident at follow-up-testing. This finding was attributed to uncontrollable information contamination. Finally, a non-significant trend indicated that the pretested experimental groups' self-efficacy had improved in the long-term.

Students' perceptions of the ten hour HIV/AIDS prevention programme were obtained from: their unelicited comments made at post-testing (in the Comprehensive Questionnaire); and from their quantitative ratings and qualitative comments made in response to a Supplementary Questionnaire administered six-and-a-half weeks after the programme had been implemented. Conclusions drawn from this feedback indicated that meeting with, and talking to a young man in an advanced stage of AIDS had made the most powerful impact on the students' "ownership" of the HIV threat; the Planned Parenthood Association's input in the knowledge and understanding phases of the programme had been successful in addressing student's questions about HIV and AIDS; the sexologist's input in the "caring relationships" phase of the programme had interested and/or made a significant impression on some participants; the Clinical Psychologists' had made a positive impact on some individuals; the use of workshops and small group discussions had been helpful in creating a social climate conducive to active participation; and finally, the wholistic approach of the ten hour HIV/AIDS programme had been appreciated.

Many recommendations were made for future adolescent HIV/AIDS programmes, and for further research in the field.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ANOVA	Analysis of variance
APB	HIV/Aids Preventive Behaviour
APP	ten hour HIV/AIDS Prevention Programme (the experimental treatment)
APWA	Attitude towards People With AIDS
a.r.	available range
ATAU	Attitude Towards Alcohol Use
AZT	Zidovudine (drug used in treatment of HIV-infected patients)
BMDP	Bio-Medical Data Processing
CQ	Comprehensive Questionnaire
D	Item Difficulty Index
DC	Diocesan College
HBM	Health Belief Model (Becker *et al.* 1974)
HIV	Human Immunodeficiency Virus
HRB	High Risk Behaviour
KI	Knowledge Instrument
PLWA	People Living With AIDS
PPA	Planned Parenthood Association of the Western Cape
PSN	Perceived Social Norms
PT	Perceived Threat
PTS	Perceived Threat Scale (Keen 1990)
PWA	People With AIDS
Q1	Question 1
Q2	Question 2
RSE	Rosenberg's Self-Esteem Scale (1965)
SCT	Social Cognitive Theory (Bandura 1986)
SE1	Self-Efficacy scale (§ C, Q1, of the CQ)
SE2	Self-Efficacy scale (§ C, Q2, of the CQ)
SQ	Supplementary Questionnaire
SSF	St Stithians College students at First testing
SSG	St Stithians College students at second testing
SSS	Social Support Scale (Keen 1990)
STD	Sexually Transmitted Diseases
Std	Standard
TRA	Theory of Reasoned Action (Fishbein and Ajzen 1975)
UCT	University of Cape Town
V	Item Validity
vs	versus
WHO	World Health Organisation

CHAPTER 1

INTRODUCTION TO THE STUDY

CHAPTER 1

INTRODUCTION TO THE STUDY

1.1 THE PURPOSE OF THE STUDY

The *raison d'être* of this study is a rigorous, controlled empirical evaluation of the impact of a professionally delivered, specially designed ten hour HIV/AIDS prevention programme, implemented over two full teaching days, on equivalent groups of Standard 9 (Grade 11) male students aged 16-18 years (mean 16.4 years), enrolled at a private boys' high school in Cape Town, in September 1991. Piloted, refined, valid and reliable scales were adopted, developed and used in the measurement and evaluation of the short-term, pretest, interaction, drop-off and long-term effects of the programme on the students' knowledge and understanding of HIV/AIDS; attitude towards people with AIDS; self-efficacy beliefs with respect to both avoiding and reducing the risk of sexual transmission of HIV; beliefs about the social norms relating to HIV/AIDS preventive behaviour; and beliefs about the HIV threat; over a period of six-and-a-half weeks. The secondary aim of the investigation was to elicit qualitative and quantitative feedback from experimental subjects with respect to their perceptions of the quality, content and presentation of the ten hour HIV/AIDS prevention programme. This information, together with the empirical findings, would be used to make recommendations for adolescent HIV/AIDS programmes in the future.

1.2 THE CONTEXT OF THE STUDY PROBLEM

A recent editorial in the American Journal of Public Health said *"The human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) face us with epidemic drama of a kind and an order not seen for 4 centuries, since the emergence of syphilis in Europe."* (American Journal of Public Health, February 1994). This statement raises the question: "just what are the global dimensions of this epidemic?"

1.2.1 The Global Dimensions of the HIV/AIDS Pandemic

In their most recently published report the World Health Organisation (WHO) estimated that in the year to 30 June 1994, the global number of AIDS cases had risen by 60 percent to four million. Asia's share had grown the fastest in the past year - from one percent to six percent, and WHO predicted an *"explosive increase"* in this region. However,

to date, the largest number of AIDS cases had occurred in sub-Saharan Africa (The Argus, Cape Town, 1 July 1994). There is, however, a relatively long interval between initial HIV infection and the onset of AIDS (five to ten years). Therefore the estimated number of HIV infections is believed to provide a more accurate picture of the pandemic (WHO Global Programme on AIDS, 4 January 1993, cited in AIDS Scan, June 1993).

WHO's most recent estimate put the total number of HIV infected people worldwide, since the start of the pandemic in 1980, at 17 million. One million of these people are believed to be children. Among the 3 million new adult HIV infections that were estimated to have occurred in the past year almost half have been in women (The Argus, Cape Town, 1 July 1994). The largest number of HIV infected people were in sub-Saharan Africa (The Argus, Cape Town, 1 July 1994).

The Geneva-based United Nations agency predicted that by the turn of the century 30 to 40 million people would be infected with HIV (The Argus, Cape Town, 1 July 1994).

1.2.2 The HIV/AIDS Epidemic in Sub-Saharan Africa

Accounting for more than 62% of the global total to date, the number of AIDS cases in sub-Saharan Africa is estimated at more than 2,5 million. It is estimated that this region also has more than 10 million adults infected with HIV which accounts for almost 60% of the estimated global number of HIV infections.

In 1990 is was estimated that a dozen countries in central Africa harboured 80% of those infected (Time, 23 July 1990). Since 1990 the prevalence of the disease has grown, and continues to grow alarmingly in these regions, as well as in southern African countries including Malawi and Zimbabwe (Cuddington 1994). Speaking to the press recently, Dr James McIntyre, National vice-chairman of the Planned Parenthood Association in South Africa, said that in Africa one in forty adults is infected with HIV, and that in many areas of central Africa, one in every two or three women is infected with HIV (Sunday Times Cape Metro, 3 July 1994). Reporting on Dr Clive Evian's feedback from the recent African AIDS Congress held in Marrakesh in December 1993, AIDS Scan (March 1994a) noted the following facts:

- In Uganda 1.5 million people were estimated to be infected with HIV (which has approximately half the population of South Africa).

- In Malawi 25 new HIV infections and six deaths from AIDS were estimated to occur every hour.

- No new cures or vaccines were announced, although there were a number of vaccine trials being continued.

- The general migration of people, a common aspect in modern Africa, had been identified as an important co-factor.

- Extremely high HIV prevalence rates were being recorded among teenage girls in many African countries.

- Some epidemiological statistics were shown to indicate that the average male may be taking much younger female sex partners (cases cited from Zimbabwe and Malawi).

- The importance of sexually transmitted diseases was reconfirmed (as indicators of sexual behaviour, in terms of enhanced physical reception to HIV, in increasing infectiousness).

What are the dimensions of the epidemic in South Africa?

1.2.3 The HIV/AIDS Epidemic in South Africa

A recent front page newspaper article reported that *"AIDS has hit South Africa with a vengeance, with about 500 people being infected with HIV every day"* (The *Argus*, Cape Town, 15 June 1994). Whilst the HIV/AIDS epidemic in South Africa has not yet reached the same proportions as those in Zimbabwe and Malawi, it is rapidly following the inevitable upward curve that has characterised the epidemic in the rest of Sub-Saharan Africa. For instance, the figure mentioned in the newspaper report represents over 20 people becoming infected with HIV every hour in South Africa - not far below the figure quoted for Malawi's estimate of 25 per hour.

In 1993 the total number of reported[1] AIDS cases was 2 927, representing a 76% increase in the number of AIDS cases reported in 1992[2]. The predominant mode of transmission reported by the South African AIDS patients in 1993 was heterosexual contact (62.7%) (AIDS Scan, March 1994b). The highest incidence of AIDS cases reported since the start of the epidemic in 1982 until December 1993 was among the 20 to 24, and 25 to 29 year old groups representing 15.1% and 18.2% of the total reported AIDS cases respectively (Epidemiological Comments, March 1994). Although the recorded incidence of adolescent AIDS patients (i.e. 15 to 19 year age group) is relatively low, representing 3.9% of the total number of AIDS cases reported since 1982 (Epidemiological Comments, March 1994), their sexual behaviour has direct relevance for HIV transmission because many HIV infected adolescents will be diagnosed with AIDS only in their twenties.

As of December 1993 the estimated[3] number of HIV infected people in South Africa (excluding the TBVC[4]) was between 389 000 and 812 786 (Epidemiological Comments, April 1994). The prevalence of HIV infection countrywide was estimated to be 4.69% (AIDS Scan, June 1994). In all strata, a consistent rise in HIV prevalence rate was found; it doubled every 13.07 months (Epidemiological Comments, April 1994). However, the prevalence rate was found to vary widely geographically: Natal/Kwazulu formed the spearhead of the epidemic with a 9.62% rate of HIV infection in 1993 (up from 4.77% in 1992). The Cape Province has the lowest rate of HIV infection, namely 1.33% (Epidemiological Comments, April 1994). However the position in the Western Cape should not make us complacent - this was the position in Kwazulu only four years ago (Sunday Times Cape Metro, 3 July 1994).

Amongst pregnant teenagers sampled in the October/November 1993 national HIV survey[3], the HIV infection level was 4.57%, rising to 6.06% in the 20 to 24 year age

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[1]To date HIV infection and AIDS have never been notifiable (Küstner *et al.* 1994).

[2]In late 1993 Tjaart Esterhuyse and Peter Doyle, actuarists who have developed computer models for projecting the spread of HIV and AIDS, expressed their concern at the lack of emerging AIDS cases. They attributed this phenomenon to the breakdown in unofficial reporting (The Argus, November 30 1993).

[3]During October and November of each year since 1990, national surveys among women attending antenatal clinics in South Africa have been conducted to determine the point prevalence of HIV infection. These annual surveys form the basis of the national HIV surveillance programme.

[4]Transkei, Bophuthatswana, Venda and the Ciskei (the previously so-called "independent states").

group, and declining slightly to 5.22% in the 25 to 29 year age group (*Epidemiological Comments*, April 1994).

Clearly, the HIV/AIDS pandemic is an unprecedented threat to the health of humanity. It respects no boundaries, social classes or ranks, but it is especially active among the most productive members of society - those in the 15 to 49 age group. Recently, President Nelson Mandela speaking after a meeting with World Health Organisation officials said that AIDS is an economic disaster of major proportions for South Africa. He said this was because most of those infected were economically active and had dependents (*Cape Times*, 24 June 1994). Thus, should the HIV epidemic remain unchecked in South Africa, the socio-economic effects could be disastrous (Whiteside 1993, Cross and Whiteside 1993, Van der Merwe 1993) and eventually destroy the fabric of society (*Sunday Times Cape Metro*, 3 July 1994).

AIDS is fatal. Although treatment for those already infected is available, it does not cure, is very costly, and is beyond the means of most. Thus, the short-to-medium term prognosis for those already afflicted is dismal.

What about those who are currently not infected, but remain at risk? It was reported late in 1993 that the first large-scale trial of an AIDS vaccine was due to begin in Thailand. However, the article goes on to say that a safe and effective vaccine remains many years away (The *Argus*, Cape Town, 30 November 1993). In the absence of an effective and safe vaccine or cure for AIDS, the only way to limit the spread of HIV is to break its transmission routes. It is known that the HIV is spread mainly through readily identifiable and mostly voluntary human behaviours. In Africa the vast majority of HIV infections are heterosexually transmitted. In principle then, educating people about risky sexual behaviours should help to reduce the spread of HIV.

Adolescents continue to be perceived as a particularly important group to educate. Having reached puberty some will already be sexually active and others will become sexually active[5] at some stage. In the process these adolescents will establish sexual behaviour patterns. As has been well documented in related health fields where there are

[5]During the development and implementation of this study, no published data were available on the sexual behaviour of South African adolescents. Subsequently, however, a large cross-sectional study conducted by Flisher *et al.* (1993) surveyed risk-taking behaviour among Cape Peninsula high school students attending government schools. This showed that among 79,7% of the 7 340 students who answered the section dealing with sexual behaviour, 17,4% indicated a previous episode of heterosexual intercourse. Among male Standard 9 students this percentage was 27%, and among male English-speakers 18%.

behavioural risks associated with a person's health status, it is much more difficult to change well established high-risk health behaviour patterns (habits) than it is to develop healthy behaviour patterns *ab initio*. Thus, a well-timed HIV/AIDS intervention for adolescents could be efficacious in helping adolescents develop healthy sexual behaviour patterns; hence the particular importance of this type of study.

Whilst many HIV/AIDS education programmes have been implemented world-wide - at great expense of time and resources - their efficacy is unknown because few have been rigorously evaluated. At the time of conceptualising this study, the paucity of published intervention studies was striking. Among adolescents, only two controlled HIV/AIDS interventions had been implemented and empirically evaluated. Both had been conducted among adolescents in the United States.

While conducting preliminary research for this investigation, the South African Government made a decision to launch a national AIDS prevention programme in schools by mid-1992[6] (*Weekend Argus*, Cape Town, 13 April 1991). It therefore appeared timeous to implement and evaluate, rigorously and empirically, the impacts of a specially designed ten hour HIV/AIDS prevention programme among a group of adolescents. The results of this investigation could then inform other researchers and educators in the planning, implementation, and evaluation of future HIV/AIDS prevention programmes.

1.2.4 Brief Overview of Health Education

In critically reviewing the health education literature, it was found that many health education programmes appeared to have been based on previous research findings rather than on any explicitly stated theoretical framework(s). Support thus existed for the statement made by Mattarazzo in 1981 that *"health education has developed somewhat untraditionally with problem solving and application preceding theory"* (cited by French and Adams 1986). Most studies did not state what health education model they had employed in implementing their interventions, although it appeared that most had employed a behavioural change model. Finally, several empirical investigations had used inappropriate scales to measure their attitude constructs; several failed to provide operational definitions of the outcome variables they purported to measure; several gave

[6]To date consensus has not been reached on a national HIV/AIDS prevention programme for South African schools. This programme is only expected to be ready in 1995/6. The Cape Provincial Administration has developed a programme for Standards 5, 6 and 7 entitled "Puberty: Time for Facts" which is being implemented in some schools in the Cape Province (personal communication).

no indication of the type of scale employed, and/or its properties (such as number of items, score range, scoring procedures, reliability or validity coefficients). Such inadequacies compromise the validity of their reported findings.

Previous research findings in health education fields, where there are behavioural factors associated with a person's health status, indicated that programmes which focused on knowledge acquisition were not particularly successful in promoting healthy behaviour. On the other hand programmes that had incorporated life-skills components together with knowledge and understanding seemed to have met with greater success.

The primary aim of HIV/AIDS education programmes is to reduce or prevent the development of so-called "high risk behaviours" - for example, by teaching participants the requisite knowledge and skills which would enable them either to reduce the risk of HIV contagion, or to help them avoid any risk of HIV contagion. In order to assess the effectiveness of such an intervention, a necessary component of the evaluation must therefore be some measure of either the change in an individual's actual practice of high risk behaviours or HIV preventive behaviours; or, at the very least, some measure of the change in an individual's attitudes, beliefs or behavioural intentions related to HIV/AIDS. However, because the study population's Life Styles teacher believed that only about 10 percent of these students had ever been sexually active, the first option did not appear to be tenable, particularly as small groups were to be used. Consequently, in this study, it was decided to measure the effects of the ten hour HIV/AIDS prevention programme on the students' HIV/AIDS-related knowledge, attitudes and beliefs. Specifically the following outcome variables were measured: knowledge and understanding of HIV/AIDS; attitude towards people with AIDS; and beliefs about self-efficacy related to carrying out behaviours which would either reduce or avoid the sexual contagion of HIV; personal perceptions of the HIV threat; and social norms relating to HIV preventive behaviours.

1.3 THE OBJECTIVES AND HYPOTHESES OF THE STUDY

1.3.1 Objectives

There were seven major objectives in this investigation:

(a) To design and develop an age-, gender-, and culturally-appropriate ten hour HIV/AIDS prevention programme for the chosen study population which was

based upon sound theoretical frameworks, used strategies consonant with the self-empowerment approach to health education, and was feasible to implement over a period of two consecutive school days.

(b) To develop and refine appropriate valid and reliable scales to measure the HIV-related knowledge, attitudes and beliefs of the students. Collectively these scales would form part of a Comprehensive Questionnaire used as a repeated measures instrument in the investigation.

The scales developed for inclusion in the Comprehensive Questionnaire measured both outcome variables and possible explanatory variables. Scales to measure the following outcome variables were developed: knowledge and understanding of HIV/AIDS instrument (KI); attitude towards people with AIDS (APWA Scale); self-efficacy with respect to carrying out behaviours which would avoid and reduce the sexual transmission of HIV (SE1 and SE2 Scales respectively); beliefs about social norms relating to HIV preventive behaviours (PSN Scale); and beliefs about the personal threat of HIV (PT Scale). Possible explanatory variables investigated were: drinking habits; attitude towards alcohol use (ATAU Scale); and attitude towards the self (Rosenberg's Self-Esteem Scale).

(c) To obtain subsidiary data on the Comprehensive Questionnaire from a Standard 9 group enrolled at a similar school in Johannesburg which could be used in the refinement of the Comprehensive Questionnaire measures, and to possibly support the generalisability of the study's findings to similar groups.

(d) To implement the investigation using an extended Solomon four-group design. In this design, one experimental and one control group would be pretested two weeks prior to implementation of the programme, but both experimental groups and both control groups would be post-tested immediately after completion of the intervention, and all four groups would be retested again six-and-a-half weeks later (follow-up-test).

(e) To gather quantitative and qualitative feedback from experimental students with respect to their perceptions of the quality, content and processes of the ten hour HIV/AIDS prevention programme. This feedback would be elicited by means of a

Supplementary Questionnaire administered to experimental subjects following their completion of the Comprehensive Questionnaire at follow-up-testing.

(f) To conduct a rigorous empirically-based statistical analysis of the data generated by relevant measures within the refined Comprehensive Questionnaire in order to test the five null hypotheses of the investigation with respect to the effectiveness of the HIV/AIDS prevention programme implemented.

(g) To use the empirical findings and student feedback pertaining to the ten hour HIV/AIDS prevention programme to make recommendations for future adolescent HIV/AIDS prevention programmes.

1.3.2 Hypotheses

Five null hypotheses were tested in this study. These hypotheses addressed the short-term, pretest, interaction, drop-off, and long-term effects of the ten hour HIV/AIDS prevention programme on the experimental subjects' knowledge and understanding of HIV and AIDS; their attitudes towards people with AIDS; their self-efficacy with respect to carrying out behaviours which would avoid or reduce the risk of sexual transmission of HIV; their beliefs about the social norms relating to HIV preventive behaviour; and their beliefs about the perceived threat of HIV. The five specific null hypotheses tested are explicitly worded and presented in detail in Chapters 5 and 6.

1.4 THE LIMITATIONS OF THE STUDY

An experimentally convenient and accessible population in Cape Town was used, rather than one comprehensively representing the target population of all Standard 9 students. Thus the validity of the findings might possibly be generalisable only to similar populations of boys - that is to Standard 9 (i.e. school year 11) male students enrolled at private boys schools in South Africa.

The choice and use of a self-empowerment health model in the design and implementation of the ten hour HIV/AIDS prevention programme limited the group sizes to small numbers (n=15) with a total of 60 students involved in two experimental and two control groups altogether. Ideally, it would have been better to implement the programme among two or more sets of four groups so that collectively the participant numbers would

allow for more powerful statistical analyses. However, financial constraints did not permit this.

1.5 THE ASSUMPTIONS OF THE STUDY

This study has assumed that students know with reasonable accuracy how they might behave or react in a given social situation. The study further assumed that students would be willing and able to answer anonymously all questions posed in the Comprehensive and Supplementary Questionnaires with both frankness and honesty, and would participate with commitment and interest throughout the two day implementation of the intervention programme, with the known approval and support of their parents. Finally, it was assumed that where two instructors/facilitators concurrently implemented the programme among two separate groups, they could hold their teaching effectiveness constant and be equally effective in their presentations.

1.6 DEFINITIONS OF TERMS

AIDS: AIDS is the acronym for Acquired Immune Deficiency Syndrome. AIDS is defined as a *"reliably diagnosed opportunistic disease or infection that is predictive of cellular immune deficiency and occurs in a person with no known pre-existing illnesses or therapies that would produce immunosuppression"* (cited by Kelly and St Lawrence 1988).

ATTITUDE: Anderson (1988c:423) defines an attitude as *"a moderately intense emotion that prepares or predisposes an individual to respond consistently in a favorable or unfavorable manner when confronted with a particular object"*. In this study, attitude towards people with AIDS, attitude towards alcohol use, and attitude towards self (i.e. self-esteem) will be defined in terms of: two valid and reliable Likert scales developed to measure students' attitude towards people with AIDS (the APWA Scale) and attitude towards alcohol use (the ATAU Scale); and an already validated and reliable scale of the Guttman type, Rosenberg's Self-Esteem Scale (RSE Scale) used to define and measure students' self-esteem.

BELIEFS: Beliefs refer to the cognitive aspect or dimension of attitudes linking the attitude object to a positively or negatively valued attribute or outcome. A belief is something that one accepts as the truth regardless of whether or not it is actually true in objective terms. Three HIV/AIDS-related belief systems will be investigated in this

study: beliefs about peer/reference group norms pertaining to HIV preventive behaviours; beliefs about self-efficacy; and beliefs about the personal relevance of HIV infection (which explore perceptions of personal vulnerability and seriousness of HIV and AIDS).

> The following Likert scales were developed to define and operationalise these belief systems: the PSN Scale, the SE1 and SE2 Scales, and the PT Scale respectively. On refining these scales prior to statistical analysis of the data generated by them during the investigation, the PT Scale was found to be invalid and unreliable, and therefore was not used in evaluating the effectiveness of the HIV/AIDS prevention programme.

HIV: HIV is the acronym for Human Immunodeficiency Virus. HIV is the virus which is responsible for the development of AIDS.

HIV TRANSMISSION: refers to spreading or passing on HIV from an infected to a non-infected person.

KNOWLEDGE OF HIV/AIDS: This refers to the theoretical and practical understanding of various aspects of AIDS and HIV infection such as the relationship of HIV infection to AIDS, latency between HIV exposure and onset of illness, transmission routes, carrier status, HIV-testing, fatality, high-, low- and no-risk behaviours, effective and ineffective prevention strategies and so forth. The Knowledge Instrument (KI) was used to measure this cognitive domain.

SELF-EFFICACY: Bandura (1986) defines self-efficacy as beliefs about one's ability to carry out a particular behaviour in a particular situation or context. These beliefs or perceptions relate to how confident one would feel in carrying out a particular behaviour and not necessarily a person's true capabilities. Two self-efficacy domains are investigated in this study: self-efficacy with respect to carrying out behaviours required to avoid sexual transmission of HIV; and self-efficacy with respect to behaviours required to reduce the likelihood of sexual transmission of HIV.

SELF-ESTEEM: Rosenberg (1965) defines self-esteem as *"a positive or negative attitude towards a particular object, namely, the Self"*. Self-esteem refers to the extent to which people feel a sense of worth, respecting themselves for what they are, and not condemning themselves for what they are not.

1.7 OUTLINE OF THE REMAINDER OF THE DISSERTATION

Chapter 2 reviews the relevant theories, principles and concepts underpinning health education, together with previous research findings in health education generally, and HIV/AIDS education specifically, which informed and guided: (a) the design of the ten hour HIV/AIDS prevention programme; (b) the choice of appropriate outcome variables whose measured changes could be used to evaluate empirically the programme's effectiveness; and (c) the choice of independent variables whose measurement might lead to explanations of any outcome differences between groups.

Chapter 3 presents a detailed description of the investigative procedures employed in the research design, as well as the actual implementation of the investigation. Investigative procedures include a description and discussion of the experimental research strategy; selection of population, subjects and samples; treatments; measures; and organisation and co-ordination of treatments. The actual implementation of the two day programme provides details pertaining to questionnaire administration, student attrition, coding of data, and data capture, verification, and transformation.

Chapter 4 describes the development, modification and refinement of all the measures comprising the Comprehensive Questionnaire.

Chapter 5, setting out the findings, presents a detailed account of the statistical tests performed on the quantitative data generated by the Comprehensive and Supplementary Questionnaires, and the results of these tests. In addition, a qualitative analysis of the data generated by both questionnaires is presented.

Chapter 6 is devoted to an evaluation and interpretation of the data analysis findings in terms of the five null hypotheses, the formulation of conclusions, a discussion of the weaknesses and limitations of the study, and the implications of the findings for further research and for future HIV/AIDS prevention programmes for adolescents.

CHAPTER 2

THEORETICAL FRAMEWORKS AND PREVIOUS RESEARCH FINDINGS

CHAPTER 2

THEORETICAL FRAMEWORKS AND PREVIOUS RESEARCH FINDINGS

2.1 INTRODUCTION

Chapter 1 presented an introduction to the investigation by stating the nature, relevance and importance of the problem; the research aims, objectives and hypotheses; definitions of terms; and the study's assumptions and limitations. The purpose of this second chapter is twofold: to review the relevant theories, principles and concepts underpinning health education; and to present, critically, where necessary, those research findings in health education generally, and HIV/AIDS education specifically[1], which informed and guided both the design of the ten hour HIV/AIDS prevention programme (APP)[2] for the chosen study population of Standard 9 adolescent boys, and the choice of outcome and possible explanatory variables used to evaluate empirically the programme's impact.

All theories embody assumptions, and hence philosophical positions and values. Consequently, this chapter will begin by identifying the ideological stance taken in the investigation and then move on to discuss the behavioural theories underpinning the investigation.

At the present time no single theory exists which satisfactorily explains or predicts the wide variety of behaviours that are linked to health status (Leviton 1989). Most health prevention specialists agree that health behaviour is complex and multifaceted. Accordingly, most suggest that educators apply more than one theoretical perspective in the design of any health education programme (Eiser and van der Pligt 1988, Leviton *op.cit.*).

Consequently, the body of this chapter incorporates a discussion of the five basic "families" of theories relating to human behaviour, which informed the design of the APP for this investigation. These five "families" are:

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[1]Previous research findings in the field of HIV/AIDS will concentrate on those conducted among young adults and adolescents. Those findings relating to homo/bisexuals and intravenous drug users will be mentioned only where similar research had not yet been conducted among adolescents.

[2]A list of abbreviations is provided in the dissertation's preliminaries. However, a more accessible list of abbreviations is provided in the form of a pull-out sheet at the end of Appendix E.

- Cognitive decision-making theories, including the Health Belief Model, and the Theory of Reasoned Action (§2.3)
- Social Cognitive Theory (§2.4)
- Motivation theories, specifically the emotions of fear and affection (§2.5)
- Social influence theories, specifically normative and informative social influence (§2.6)
- Attitude theories, including attitude formation and change (§2.7)

Some of these behavioural theories emerged specifically to explain health behaviour whilst others have been adapted from clinical, social or cognitive psychology and apply to a wide range of human behaviours including health behaviour.

Because a multifaceted theoretical approach has been employed by many previous health researchers, the research evidence cited in this chapter - in support of or refuting a particular theoretical approach - is likely to be referred to more than once. Because this strategy has the potential of fragmenting a particular piece of research, a series of pull-out tables are presented in Appendix E - which provide a detailed, holistic overview of the more pertinent of these investigations. These tables will be referred to at relevant points in the discussion.

The HIV/AIDS pandemic has generated a prodigious quantity of published research. Much of the earlier research focused on the then so-called "high risk groups" - particularly homo- and bisexual men and intravenous drug-users - as initially these populations appeared to be most at risk of HIV infection. However, by the time the research proposal for this study was drawn up, although a considerable number of surveys had been conducted among adolescents and young adults, only two controlled HIV/AIDS interventions had been implemented, evaluated and published (DiClemente *et al.* 1989, Huszti *et al.* 1989). Subsequent to the development and implementation of the APP in this study, however, several similar programmes have been implemented, evaluated and published and these are presented in the final pull-out table (Table 2.6) in Appendix E. Further mention of them will not be made in this chapter, but reference will be made to these other recently evaluated HIV/AIDS programmes in Chapter 6 when the results of the current investigation are discussed.

2.2 PHILOSOPHY AND VALUES

Several analyses of contemporary health education models have been produced in recent times (Draper *et al.* 1980, French and Adams 1986, Tones *et al.* 1990). They all envisage three basic models: the behavioural change model; the self-empowerment model; and the collective action model (French and Adams' (*op.cit.*) terminology).

The behavioural change model aims to improve health by changing people's behaviour. Education is viewed as an assimilative process geared to the acceptance of predefined knowledge, values and standards. On the other hand, the self-empowerment model aims to improve health by developing people's ability to understand and control their health status to whatever extent is possible within their environmental circumstances. It views education as primarily about discovery and experience through which growth is attained. Finally, the collective action model aims to improve health by changing environmental, social, and economic factors through community involvement and action.

In the context of this investigation only two possible models could be applied: the behavioural change or self-empowerment model. The self-empowerment model was chosen for this investigation (Tones *et. al., op.cit.*) because its approach was deemed to be lead to deeper, more meaningful learning which would empower individuals rather than being superficial, coercive and prescriptive.

The primary goal of the self-empowerment model is the fostering of informed choice with respect to health behaviour. This model *"incorporates a fundamental tenet that in a democratic society social change can occur only by empowering individuals or groups of individuals to modify their environment"* (Tones *et. al., op.cit.*). That is, to facilitate informed choices one needs to provide not only information and practice in decision-making but also to teach people how to be assertive, to communicate effectively and to be positive about themselves. The major elements of a self-empowerment model, as applied in this investigation, are shown in Figure 2.1.

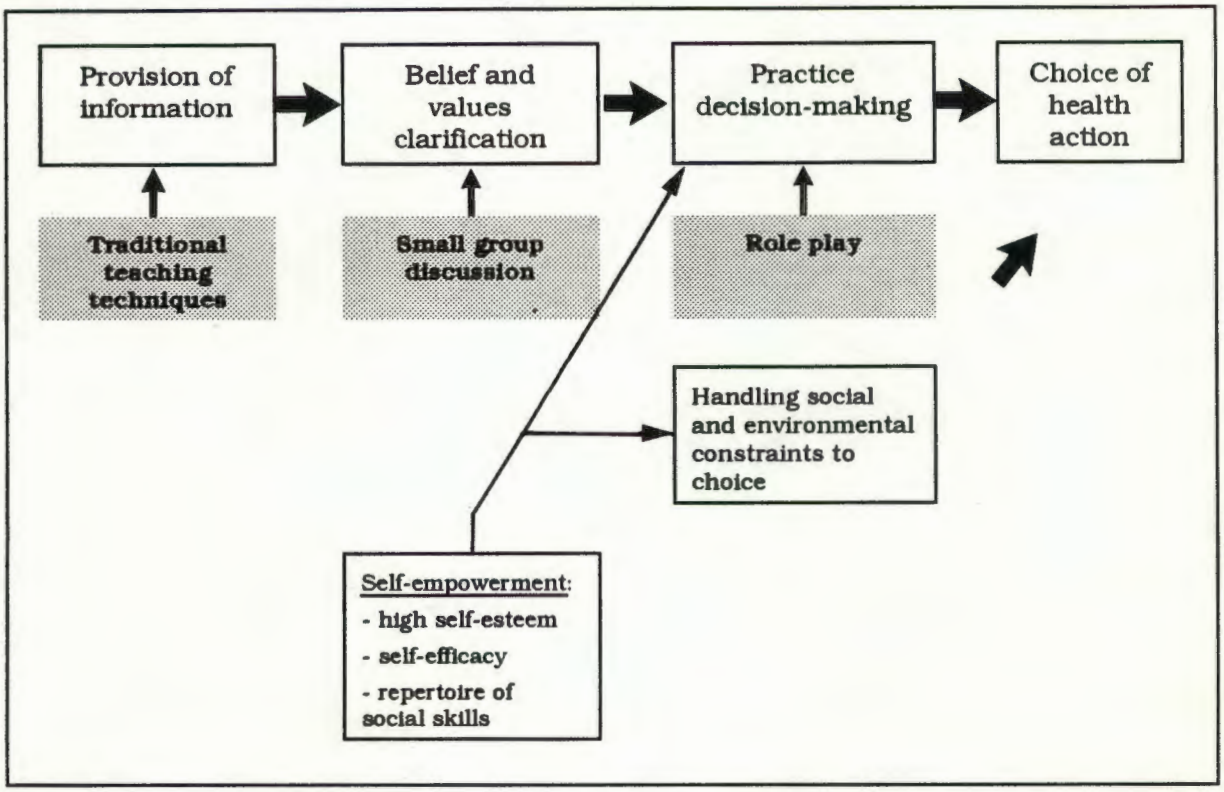

Figure 2.1: Major elements of the self-empowerment model and associated methodology as applied in this investigation (after Tones et al. 1990:12-13)

Thus, the traditional didactic chalk-talk teaching techniques employed in the provision of information would be supplemented by non-traditional teaching methods such as small group discussion and role-playing.

The research literature indicates that small group discussion is an effective teaching strategy which may be employed: to provoke students into applying their knowledge to the interpretation of fresh information - so helping to 'bridge the gap' between inert knowledge and genuine comprehension; and to provide the feedback essential to a student's growth (Bligh 1986). Additionally, small group discussions have a number of benefits. These are, *inter alia*: the acquisition of reasoning power and judgement (Duckworth cited by Rudduck 1978); the discovery by a student of his own strengths and weaknesses as he sees his behaviour in the light of others, and as he modifies his attitude or strategies as he sees that there are as many alternatives to them as there are members of the group (Abercrombie 1979); the promotion of deeper insights (Cawood and Gibbon 1985); improvement of a student's motivation (Sharan and Sharan 1975); intellectual benefits as well as social value as a spin-off (Rudduck *op.cit.*); the development of positive attitudes (Byrne and Johnson 1988); and the promotion of a

positive self-concept as well as independent, divergent and convergent thinking (Cawood and Gibbon *op.cit.*).

2.3 COGNITIVE DECISION-MAKING THEORIES

The general assumption underlying the normative models of cognitive decision-making theories is that people are rational, unemotional processors of information. Faced with having to make a decision they will estimate the seriousness of risk, evaluate the costs and benefits of action, and choose a course of action that will maximize their expected outcome (Leviton *op.cit.*). Applied in the context of health education the implicit assumption behind these theories is that educating people about their health risks will result in more self-protective behaviour.

However, research findings have indicated there is often a discrepancy between the normative models of decision-making and actual decision-making. More recent research has focused on apparent biases in human judgments - arising from the use of heuristics (simplifying shortcuts) -which appear to result from human cognitive limitations. Humans do not handle probabilistic information very effectively. For example, people often view high risk behaviour (HRB) as a series of gambles and not as a cumulative probability (Warner 1983). They also do not view safety as a continuum - they tend to view health behaviour as safe or unsafe (Fischhoff cited by Leviton *op.cit.*:49). Additionally, humans have a tendency to judge an event as more probable to the extent that it is more easily imagined or recalled - a possible consequence of this phenomenon is that people may view themselves as more personally immune to a health hazard when it is not perceptually salient for them (Slovic *et al.* 1987). Some evidence supporting this hypothesis was found in an American longitudinal time-series study conducted among homosexuals (McKusick *et al.* 1985). Subjects who had a *"visual image of AIDS deterioration"* were more likely to have fewer partners (cited by Becker and Joseph 1988:402). Similar findings were reported in a longitudinal trend study among adolescents where those adopting condom use were significantly more likely to know someone with AIDS (Hingson *et al.* 1990b).

The decision-making process for adolescents may be hampered further because of the possible constraints imposed by their cognitive and moral development.

In Piaget's initial conceptualization of cognitive development (1954) he posited that 12- to 15-year-old adolescents would have moved on from the purely concrete stage of cognitive development to the formal operational stage. In the concrete stage of cognitive development problem-solving is based on a trial-and-error approach. On the other hand, formal reasoning is more systematic - individuals are able to think in more abstract terms. They are therefore able to consider multiple possibilities; foresee the possible consequences of a particular behaviour; and are able to detect inconsistencies in an argument (Meier 1969). Piaget's theory was later revised as research indicated that, due to limited ability and/or social and cultural limitations, some adolescents take longer to reach formal operational thinking, and some may never reach this formal operational stage (Conger 1973).

With respect to moral development Kohlberg (1987) posited that until formal operational thinking begins, children do not move on from an egocentric moral stage to a higher moral stage - when they are able to deal with questions of ought and should. Therefore it is only at a higher moral stage that an individual becomes future-oriented and able to appreciate and consider the mutuality of interpersonal relationships. The research findings of Brown *et al.* (1990) and Robinson (1991) corroborate these developmental limitations of adolescents.

In their HIV/AIDS survey of 5th, 7th and 10th grade American students Brown *et al.* (*op.cit.*) found that grade level was a significant variable on more than half the knowledge and attitude items. Cognitive and emotional factors related to adolescent development were postulated to account for these differences. In their review of adolescent development with respect to HIV/AIDS prevention programmes, Walsh and Bibace (1990) suggest that the focus of HIV/AIDS education in older adolescents could involve the articulation of strategies for AIDS (*sic*) prevention. These findings were taken into account in choosing the study population for this investigation.

Implication

Older, more privileged, adolescents were chosen as the study population since they were more likely to have reached the formal operational stage of cognitive thinking and would therefore benefit most from the planned APP.

Several well known models of health behaviour, based on cognitive decision-making theories, have been applied to preventive behaviour. Perhaps the two most frequently

cited of these models are the Health Belief Model (HBM) and the Theory of Reasoned Action (TRA).

The Health Belief Model (HBM)

The HBM was developed by Becker, Hochbaum, Rosenstock, Kirscht, Leventhal and others (Becker, Kaback, Rosenstock and Ruth 1975, Becker and Maiman 1975, Hochbaum 1958, Leventhal, Hochbaum and Rosenstock 1960, Rosenstock 1960, 1966, 1974, Rosenstock and Kirscht 1979 (all cited by Cleary 1987); and Becker 1974). The HBM focuses on behaviours that are under an individual's control. It is primarily concerned with conscious decisions about the utility of specific actions. It derives from a gestalt viewpoint contending that real things and events have no direct influence on our decisions - it is rather our perceptions of these things and events that are important. It therefore stresses beliefs (i.e. something that one accepts as the truth regardless of whether or not it is actually true in objective terms).

The HBM emphasises four major categories of beliefs which may affect an individual's willingness to take preventive action: (a) perceived susceptibility to a health threat; (b) perceived severity of the consequences of a disease or health threat; (c) perceived benefits of possible protective action; and (d) perceived costs or barriers to possible protective actions. Additionally, two other factors thought to play a supportive role in preventive health behaviour are: cues to action such as mass media communications or emotional arousal; and demographic, structural, and social psychological factors that act as enabling factors. Perceptions of susceptibility and severity are hypothesised to be the major determinants of the personal relevance of a health threat, and are therefore the prime motivators for taking preventive action.

The Theory of Reasoned Action (TRA)

In the TRA Fishbein and Ajzen have postulated that a person's intention to perform a particular behaviour is the immediate determinant of the action (1975). This behavioural intention is hypothesized to be a function of two basic factors:

a) the individual's *attitude toward the behaviour* - determined by salient beliefs about the possible consequences or outcomes of the specific behaviour and by an evaluation of these outcomes i.e. by behavioural beliefs (arrow 1 in Figure 2.2); and

b) *subjective norms* - the individual's perception of social pressure to perform, or not to perform, the specific behaviour - determined by a person's belief that specific individuals or groups approve or disapprove of performing the behaviour, and his/her motivation to comply with the individual/group's norms i.e. by normative beliefs (arrow 2 in Figure 2.2).

In the final analysis, the TRA posits that people's behaviour can be explained by considering the strength of their salient beliefs regarding the particular behaviour and social norms. Since people's beliefs represent the information (be it correct or incorrect) they have about themselves, and about the world around them, it follows that their behaviour is ultimately partly determined by this information (Ajzen 1988).

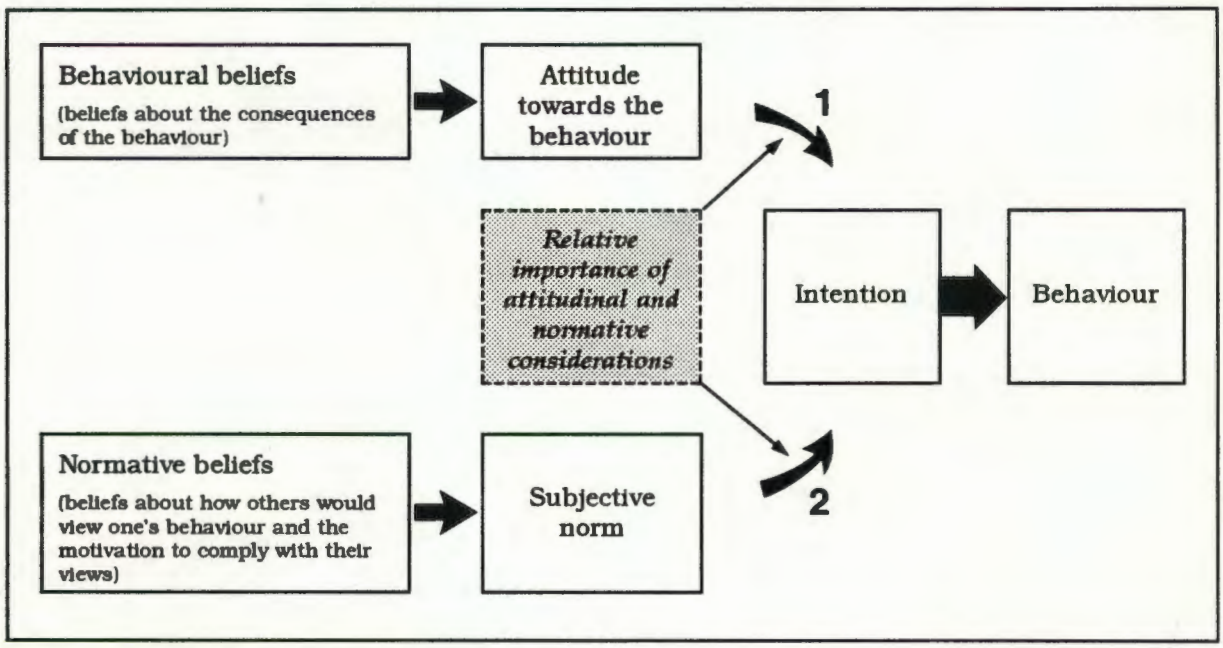

Figure 2.2: The Theory of Reasoned Action (after Ajzen and Fishbein (1980) cited by Eiser and van der Pligt 1988:27).

The HBM and the TRA share similarities: both deal with volitional behaviour; both are premised on the value-expectancy theory of behaviour; and both are based on beliefs. Indeed, Kirscht (1983) and others have pointed out that elements of the HBM can be mapped onto the TRA (Cleary *op.cit.*:123).

The main differences between the HBM and the TRA are that the latter theory incorporates subjective norms and specifies several additional, useful, explanatory constructs and the relations among these constructs. For instance, the linkages between

knowledge, beliefs, attitudes and behaviours. In general, we assume that simply providing information will change beliefs, attitudes, and, ultimately, behaviour (Leviton *op.cit.*). In order to determine the strengths and/or weaknesses of these theories and models, one needs to examine the previous research findings.

PREVIOUS RESEARCH FINDINGS

A brief overview of relevant research findings in health fields related to HIV/AIDS, where there are behavioural risk factors associated with a person's health status, will be presented first. Subsequently, the major findings relating to HIV/AIDS education will be discussed at greater length.

Knowledge and Behaviour:

Research in related health fields where there are behavioural risk factors for disease indicates that merely acquiring more knowledge about risky behaviour may be inadequate to change behaviour in many individuals. This lack of a simple relationship between knowledge acquisition and behaviour change has been shown in efforts to encourage smoking cessation McAlister *et al.* 1979, Leventhal and Cleary 1980, Perry *et al.* 1980, McAlister *et al.* 1982; nutrition education St. Pierre *et al.* 1981, Byrd-Bredbenner *et al.* 1984 (cited by Brown and Fritz 1988); dental habits Schwartz 1975 (cited by Brown and Fritz *op.cit.*); seat belt use Ware *et al.* 1984; breast self-examination Parkinson *et al.* 1982; sex education and the use of effective birth control methods Chilman 1979, Kirby 1984, McCormick, Folcik, and Izzo 1985, Pope, Westerfield and Walker 1985 (all cited by Brown and Fritz *op.cit.*).

The evidence provided by these findings suggests that health education programmes which concentrate on imparting knowledge are not effective in changing the behaviour of many individuals. Although provision of information is a necessary part of health education, by itself it appears to be inadequate for effecting major changes in health behaviour.

Knowledge and Attitudes

Sex Education:

Two sex education studies are examined - those of Hoch (1971) and Finkel and Finkel (1985) (Appendix E, Table 2.2 refers).

Using a quasi-experimental design Finkel and Finkel (*op.cit.*) investigated the effects of a one-semester Family Living/Sex Education course on a group of adolescents (n=416). They report significant changes (*p* values not reported) on all the knowledge measures, and on some of the attitude measures. Specifically participants reported *"feeling more responsible for their behaviour"* and *"less traditionally gender-role oriented"* after the study. However, a major limitation of this research is that it lacks internal validity. Any differences found between pre- and post-test could be due to pretest effects, maturation, or other extraneous variables and not due to the treatment. Furthermore, because they do not report any reliability or validity coefficients for any of their instruments, the validity of their research findings is questionable; and, even assuming their results are valid, having not conducted any follow-up-testing the stability of the reported changes over time cannot be assumed.

Hoch (*op.cit.*) however, used a classical experimental design to investigate the effects of a non-judgmental sex education programme (ten fifty minute periods over two weeks) on adolescent knowledge and attitudes (n=100). He observed that significant positive changes (at the 1% level) had occurred within the treatment group for the following variables: knowledge; attitude towards population control, family planning, birth control, and sexual deviates (*sic*) (Appendix E, Table 2.2). Furthermore, a significant change occurred in the experimental group between pretest and post-test ($p<0.05$) showing increased confidence in their ability to make proper decisions regarding sexual behaviour in the future. However, because Hoch did not report the sampling technique used, nor the age/grade or gender of respondents, allocation of subjects to experimental and control groups, or details about the scales' properties such as their score range, reliability and validity coefficients, the rigour of the research methodology, is questionable - as is the validity of the study's findings. Furthermore, as no follow-up-testing was done, the sustainability of the programme's effects was not established.

HIV/AIDS Education:

Two quasi-experimental studies evaluating HIV/AIDS prevention programmes conducted among adolescents in the United States reported that the knowledge levels of participants had significantly improved (Johnson *et al.* 1988, Ruder *et al.* 1990).

However, as Table 2.3 in Appendix E indicates, at the time of designing the APP for this investigation, only two studies evaluating controlled HIV/AIDS interventions among adolescents had been published. Both explored changes in knowledge and attitudes.

In the first study, using a classical design DiClemente *et al.* (*op.cit.*) evaluated the effects of a three-day school-based AIDS Education Curricula on middle (n=385) and high school adolescents (n=254) in San Francisco, using a repeated measures instrument which measured HIV/AIDS knowledge and attitude towards people with HIV/AIDS.

The curricula were reportedly age-appropriate and focused on the cause, treatment and prevention of AIDS and other sexually transmitted diseases (STD). A variety of instructional techniques was employed in the implementation of the curricula, such as video, and class exercises focusing on decision-making skills, response rehearsal and group discussion. Teachers who had completed a four-day inservice course focusing upon the AIDS Curricula were randomly selected to implement the three-day experimental programme.

They found significant programme effects for improved HIV/AIDS knowledge and more positive attitudes towards classmates with HIV/AIDS.

However, as they point out, their study has several methodological limitations: possible contamination effects created by not having control over interactions between the experimental and control subjects during the three-day programme; an absence of long-term follow-up to establish whether or not the programme effects were stable over time; and the lack of behavioural assessment to determine whether or not improved knowledge levels had resulted in effective behavioural changes. Their research has three other short-comings: their use of true/false items to measure their attitude construct; their failure to provide any test-retest reliability coefficients for their measuring instruments; and their failure to furnish details of the internal consistency of their attitude scale.

In the second controlled HIV/AIDS intervention study, Huszti *et al.* (*op.cit.*) used a two-experimental-group empirical design to evaluate the impact of two different presentations (lecture and film) of the same 45 minute AIDS education programme on 488 10th grade students' knowledge; and attitudes towards people with AIDS (PWA) and towards HIV/AIDS preventive behaviours (APB). The instruments had alpha coefficients of 0.75 and 0.60 respectively. The instruments were used as repeated measures: at pretest (a week prior to the treatment); post-test (immediately after the treatment); and follow-up (one month later). Intact classes of students, enrolled at two suburban schools in the Oklahoma City area, were randomly assigned to treatments. Age range among the students was 14 to 17 years (mean age 15.6 years).

They found that students who received the lecture form of treatment demonstrated significantly greater knowledge gains ($p<0.0001$), than either of the other two groups (film and no treatment control). This effect was maintained at the one month follow-up, despite the fact that the knowledge scores for all three groups showed a decline between post-test and follow-up.

With respect to changes in attitude towards AIDS patients, they found that both AIDS presentations significantly increased students' positive attitudes. For condition and time ANOVA the respective p values were found to be 0.005 and 0.0001 respectively. Although they report some recidivism between post-test and follow-up, their attitude towards AIDS patients remained significantly more positive than their pretest scores.

Similarly, at post-test, students in both experimental treatments showed a significant positive improvement in their attitude towards practising APB. However, their attitude towards APB was found to be unsustained over time - at follow-up-testing their attitude scores on APB had returned to baseline levels.

One short-coming in this research was the lack of any indication that the instruments were dependable over time - no test-retest coefficients were reported. Additionally, the research design chosen for this investigation lacks external validity because no provision was made to test whether any interaction occurred between the pretest and experimental treatment. Since two of the measures were attitudinal, the effects of pretesting could very well have sensitized the students to the treatment in such a way that their research findings may be unrepresentative of the actual effects of the treatment on the respondents.

Implications

The results and shortcomings of these empirical research findings therefore informed the design and investigative procedures adopted in this study. Specifically, there was a need to use a research design which would allow one to test for interaction effects between treatment and pretesting, and to develop valid and reliable measures to evaluate the effectiveness of the APP.

Knowledge, Attitudes and Behavioural Intentions (TRA)

Research in Related Health Fields:

Eiser and van der Pligt (*op.cit.*:26) report that Fishbein and Ajzen's TRA (*op.cit.*) approach led to successful predictions of behaviour across a range of health areas such as smoking (Fishbein 1982), alcohol use (Budd and Spencer 1984, 1985), contraception (Davidson and Jacquard 1975, 1979, Pagel and Davidson 1984), and mother's choice of bottle or breast-feeding (Manstead, Proffitt and Smart 1983).

HIV/AIDS Research:

A time-series longitudinal study among gay men in the USA found that the single attitudinal predictor of behaviour change towards APB was the perception that peers approved APB (Joseph *et al.* 1987 cited by Becker and Joseph *op.cit.*[3]). A cross-sectional survey conducted among university students in South Africa reported similar findings: students who thought their friends had changed their sexual behaviour were more likely to have changed their behaviour (Strebel and Perkel 1991).

Knowledge, Health Beliefs and Behaviours (HBM)

HIV/AIDS Survey Research:

The fourth pull-out table in Appendix E (Table 2.4) summarizes a selection of the previous HIV/AIDS survey research, conducted among adolescents and young adults, which investigated the linkages between knowledge, beliefs, and reported behaviour. Surveys conducted in North America are presented first, and then the studies conducted in South Africa. Both sets are presented in chronological order, by survey type and date of publication. With the exception of the Strunin and Hingson (1987) and Hingson *et al.* (1990b) studies the questions asked were not standardised. It is therefore possible to distinguish only some trends or patterns and not to draw any definitive conclusions from these survey research findings.

In general, with respect to knowledge, the North American findings indicate that, over time, the HIV/AIDS knowledge levels of adolescents and young adults seem to have improved, and misconceptions to have been reduced. However, knowledge was not found to be significantly related to behaviour change (Baldwin and Baldwin 1988). On the other

[3]It is not clear whether the Joseph *et al.* study measured subjective norms in the context of the theory of reasoned action - that is, beliefs about how others would view one's behaviour **and** the motivation of a respondent to comply with their views - or whether it simply measured respondents' perceptions of their group norms.

hand, there was some disparity in the knowledge levels of South African adolescents and young adults. Those students attending private schools, who were predominantly so-called "whites" appeared to be the most well informed (Robinson *op.cit.*), closely followed by the multiracial students at the University of the Western Cape (Strebel and Perkel *op.cit.*). However, the knowledge levels of the so-called "black" students attending Department of Education and Training schools in Cape Town were found to be disturbingly poor, with many confused about how AIDS is transmitted; and many misconceptions apparent (Mathews *et al.* 1990). Corresponding to the North American findings, knowledge levels were not predictors of behaviour change (Strebel and Perkel *op.cit.*).

The North American findings indicated that, over time, the personal relevance of the HIV/AIDS threat had increased and become a predictor of reported behaviour change - albeit in a cross-sectional study where inference for causal relationships can be problematic (Allard 1989, Baldwin and Baldwin *op.cit.*). In the South African findings there were disparities between the perceived personal relevance of the HIV threat. For example, many of the black school children did not perceive themselves to be at risk (Mathews *et al.*, *op.cit.*), whereas a much higher percentage of the university students believed AIDS to represent a potential threat to them (Strebel and Perkel *op.cit.*). Corresponding to the North American findings, the Strebel and Perkel study (*op.cit.*) found that personal relevance was associated with condom use. Among all adolescents and young adults surveyed in both continents however, many were still employing ineffective methods to reduce the risk of HIV infection; and/or were employing effective APB inconsistently.

Some of these research findings indicate that several factors described by the HBM do appear to be related to HIV prevention. For example, personal relevance (when operationalised as "worried about AIDS" or "likely to become infected") appeared to be related to APB (Baldwin and Baldwin *op.cit.*, Hingson *et al.* 1990a, 1990b, Strebel and Perkel *op.cit.*), as did perceived vulnerability (Allard *op.cit.*), and perceived benefits of APB (e.g. the effectiveness of condoms) (Hingson *et al.* 1990a). Nevertheless, the HBM appears to have several specific weaknesses:

(a) perceived severity does not appear to predict APB very well (Hingson *et al.* 1990a);

(b) although the threat of HIV infection is personally relevant to many adolescents and young adults, many fail to behave in harmony with these beliefs (Hoffmann 1989); and

(c) the beliefs contained in the HBM explain only a modest amount of the statistical variance in behaviour (Hingson *et al.* 1990a).

Implications

*In the context of the cognitive and decision-making theories and related research findings above, four phases included in the APP were: knowledge of HIV/AIDS (Phase I); understanding of HIV/AIDS together with the facilitation of realistic assessment of personal HIV risk (Phase II); talk by, and discussion with a person with AIDS (**PWA**) to help students accept the personal relevance of HIV infection (Phase III); and life style options in the "era of AIDS" would stress the efficacy of the recommended APB (Phase IV). An outline of the ten hour HIV/AIDS prevention programme is presented in Appendix A.*

Two outcome measures would therefore be used to assess changes in respondents': knowledge and understanding of HIV/AIDS (the Knowledge Instrument); and perceptions of the threat of HIV infection with respect to the health beliefs outlined by the HBM (the Perceived Threat Scale).

Cognitive and decision-making theories view risk behaviour as essentially decontextualized acts performed by an individual which are entirely under his/her volitional control. However, HIV risk-related behaviour is primarily concerned with dyadic acts (sexual intercourse), and therefore needs to be considered as behaviour tied to the immediate constraints involved in dyadic social encounters. After all, mutual agreement is necessary for the implementation of an APB. The finding of Hingson *et al.*(1990a) that barriers to condom use (such as perceptions that condoms are difficult or embarrassing to obtain and reduce pleasure), were the strongest predictor of their non-use; and Joseph *et al.* (*op.cit.*) that perceived peer support for APB was the only attitudinal predictor of reduced HRB, provides some support for these contentions. Learning theories as exemplified by Bandura's social cognitive theory (SCT) will be considered next because it stresses the identification of the social/environmental conditions which lead to the acquisition and maintenance of behaviour.

2.4 SOCIAL COGNITIVE THEORY (SCT)

Bandura (1986) developed his social cognitive theory (SCT) from the theoretical approach usually termed social learning theory. The SCT represents the merging of two distinct theoretical perspectives: (a) behaviourism which is represented by the two learning theories termed classical conditioning and operant learning; and (b) social psychology.

In the original theory of classical conditioning behaviour was viewed as an automatic reflexive response to an antecedent stimulus without internal cognitive mediation processes being involved. However, in Bandura's view, conditioned responses are viewed as self-activated on the basis of learned expectations. This concept forms the basis of behavioural self-management used in clinical psychology. An HIV/AIDS intervention, designed for gays with a history of HRB, reports utilizing this strategy with some success.

The empirical study by Kelly *et al.* (1989) investigated the effect of a 12-session comprehensive HIV/AIDS intervention - which, *inter alia*, incorporated three sessions on behavioural self-management training - on a sample of 104 specially selected gay men with a history of frequent HRB (Appendix E, Table 2.5). Experimental participants, *inter alia*, significantly reduced the frequency of HRB. This change was reportedly maintained at an 8-month follow-up.

Implication

Thus, with respect to the APP, teaching students to identify the antecedent situational influences which may increase the probability of HRB occurring, could help them manage their own behaviour better (Phase VI).

Research evidence indicates that drinking alcohol and/or injecting drugs are possible antecedent factors that may influence whether or not APB are followed[4]. Flora and Thoresen (1988) report some research evidence that suggests that initial sexual experiences are highly associated with the consumption of alcohol. Furthermore, in their cross-sectional survey conducted among adolescents, Hingson *et al.* (1990a) found that

[4]During the development and implementation of this study no recent statistics were available on drug use or drinking habits among South African adolescents. Subsequently, however, a large cross-sectional study of risk-taking behaviour among Cape Peninsula high school students attending government schools was published (Flisher *et al.* 1993). Among the risk behaviours investigated were alcohol and drug use. With respect to drug use, data indicated that most drug use was of an experimental and temporary nature and confined almost exclusively to cannabis and solvents. However, with respect to alcohol drinking, the data indicated that among 97.8% of the 7 340 students who answered the section dealing with alcohol use, 53.2% reported ever having used alcohol. Among male Standard 9 students this percentage was 70.4%, and among male English-speakers 71,7%.

16% of those reporting having had sex after drinking, used condoms less often after drinking, than when not drinking. Similar findings have been reported from a cross-sectional survey of homosexuals by Stall *et al.* 1986 (cited by Stall *et al.* 1988). Subjects who combined drinking alcohol (or injecting drugs) with sex were more likely to engage in HRB. This finding was later substantiated in a time-series longitudinal survey of homosexuals, conducted by Communication Technologies Inc., 1987 (cited by Stall *et al.* 1988).

Implication

Thus, in the context of this investigation it was believed relevant to explore the drinking habits and attitudes towards alcohol use of the study population, as these might be variables which differentially explain any outcome differences between the groups.

In contrast to classical conditioning, the original theory of operant learning posited that learning occurs because of the consequences which followed behaviour on a previous occasion - again, like classical conditioning, internal cognitive mediating processes were assumed not to be involved. It sought to discover the environmental reinforcing factors that maintained the behaviour, as positive reinforcement was viewed as an automatic strengthener of behaviour and vice versa. However, in Bandura's SCT view reinforcement is seen as a source of information and incentives (motivation) that govern an individual's decisional behaviour.

Thus, the SCT synthesises these two traditions (behaviourism and social psychology), by advancing a theory in which behaviourist principles of antecedent and consequent external events operate in social learning situations through the mediation of simple internal symbolic and cognitive processes. It claims that internal cognitive processes do not replace external events as the causal explanation of behaviour. Rather, internal cognitive processes and external events are interactive causes of behaviour, with persons seen as active agents exercising some influence over their own motivations and actions.

In the SCT view behaviour is seen as a function of the ways incentives are perceived and understood by an individual. McAlister (1987) suggests that priorities among competing incentives can be explained in terms of a hierarchy of needs such as that proposed by Maslow (1959). The motivating power of basic physiological needs (such as food) is obvious, but in SCT the emphasis is placed on social reinforcement. This concept is discussed further in §2.6 which discusses the effect of social influence on behaviour.

Additionally, the SCT extends operative learning by positing that the major learning principle for human beings is social learning from observation of the behaviour and rewards (or punishment) of others - what is termed modelling. The reinforcement (or punishment) that is actively delivered to one person, but which has an effect on an observer, is called vicarious reinforcement (or vicarious punishment). An observer's potential for enacting a certain behaviour is said to be strengthened by vicarious reinforcement and suppressed by vicarious punishment. Such observational learning offers an individual a way of acquiring complex behavioural patterns efficiently without having to form them gradually by tedious trial and error. Thus, among persons for whom information is insufficient to induce behavioural change, specific skills dealing with how to change, and experiences that reinforce successful change, may be essential.

Support for this hypothesis is found in the literature that describes diabetes education (Steiner and Lawrence 1981), smoking cessation and the prevention of smoking onset (Leventhal and Cleary 1980), and occupational safety training (Samways 1983).

A controlled intervention conducted by Gilchrist and Schinke (1983) evaluated cognitive and behavioural skills-training methods in an adolescent contraceptive programme implemented with two groups (each (n=27)). The programme consisted of ten fifty-minute training sessions, conducted daily over two weeks. It integrated information and understanding of conception and contraception with explicit skills training which focused on problem solving and interpersonal communication. Results showed that not only did students' knowledge about conception and contraception increase, but their attitudes towards birth control, and intentions to practice birth control, became more favourable. In addition, they were observed to behave more effectively in video-taped simulations, such as talking to possible partners about sex and the use of contraceptives (Appendix E, Table 2.2 refers).

Flora and Thoresen (*op.cit.*:967) cite Botvin's review (1986) of recent developments in substance abuse prevention research, which indicated that many prevention programmes had included assertiveness training, anxiety and stress management training in them, with excellent results.

Two HIV/AIDS education programmes report the successful use of modelling to effect positive behaviour changes in respondents: Solomon and DeJong (1989) and Kelly *et al.* (*op.cit*) (Appendix E, Table 2.5). In the first study, conducted among predominantly Black

males, use was made of a soap-style video on condom use. In the video condom use was portrayed as socially acceptable, normative behaviour; and effective interpersonal communication styles and conflict resolution were modelled (for example, negotiating safer sex with a partner). Furthermore, the video was culturally relevant and stressed the positive outcomes of using condoms. In the second study, conducted among self-selected homosexuals, assertiveness training was taught in three contexts: pro-active negotiation with a partner about safer sex; how to refuse pressures to engage in HRB, and declining to have sex with a person whom one has just met. Group leaders in the controlled intervention of Kelly *et al.* (*op.cit.*) modelled the effective social skills required to be assertive in these types of situations.

Implication

Hence, in the context of the APP, Phase VII includes two sections relating to skills training: (A) the proper use of condoms; and (B) assertiveness training. In the context of assertiveness training role playing was used to model the interpersonal communication skills required to be assertive in a relationship e.g. how to negotiate safer sex with a partner.

One of the ways we learn so much from observing others' reinforcement or punishment is through language. "That could happen to me", for example is an instruction to yourself to attend to and remember what you see happening. Because we use language this way, we can go beyond direct observation, learning from another person's description of reinforcing or punishing events (Ruch 1984).

Implication

Therefore, in the APP, an address by, and discussion with, a PWA was included (Phase III). Having a PWA relate his own story could, inter alia, help programme participants "own" the problem of HIV/AIDS i.e. make the problem of HIV infection more salient for them.

Commenting on psychological research, Bandura (*op.cit.*) maintains that often researchers focus on things such as knowledge acquisition and skill development under the assumption that if people know what to do, and how to do it, they will take the appropriate action. He argues that there is a marked difference between the possession of knowledge and skills and being able and willing to translate this information into appropriate action in diverse situations. For this reason, different people with similar skills, or the same person on different occasions, may perform differently. The missing

link is the appreciation of a mediating variable which he termed self-efficacy. Perceived self-efficacy is defined as people's judgements of their capabilities to organise and execute courses of action required to enact specific behaviours. It is concerned not with the knowledge or skills one has but with judgements of what one can do with whatever skills one possesses (Bandura *op.cit.*:391). As Bandura notes:

> *People act on their judgements of what they can do, as well as on their beliefs about the likely effects of various actions. There are many activities which, if done well, guarantee cherished outcomes, but they are not pursued by persons who doubt they can do what is needed to succeed. Self-perceived inefficacy can nullify the most enticing outcome expectations. Conversely a strong sense of personal efficacy can strengthen and sustain efforts in the face of uncertain outcomes.*
>
> Bandura (1986:231)

Interestingly, Ajzen recently revised the TRA to address the problem of incomplete volitional control in decision-making. His resulting theory of planned behaviour (1985) includes an additional factor - perceived behavioural control - which is somewhat analogous to Bandura's self-efficacy construct (Ajzen *op.cit.*).

Bandura reports that there is a good deal of evidence provided by research to indicate that perceived self-efficacy mediates health behaviour. Documentation supporting this hypothesis is to be found in the studies investigating smoking cessation, the control of tension headaches, the resumption of an active life by cardiac patients, and the self-management of pain (Bandura *op.cit.*:438). Similarly, Schifter and Ajzen (1985) applied the theory of planned behaviour to the prediction of weight loss intentions, and actual weight reduction, among female college students and found that although intentions and perceived behavioural control both correlated significantly with actual weight loss, perceived behavioural control was a better predictor of the two (Ajzen *op.cit.*).

In the context of HIV/AIDS, a cross-sectional study among high-, medium- and low-risk gay men conducted by Charles (1985) found that personal efficacy emerged as the strongest correlate of APB (cited by Stall 1988). Furthermore, it was the only significant factor, in an explanatory model, to behave in a linear fashion, namely, low-risk gay men scored the highest efficacy scores, medium-risk gay men obtained medium scores, and high-risk gay men the lowest scores. Further analysis revealed significant interaction effects between personal efficacy and belief in APB guidelines. The strength of personal efficacy as a predictor of HRB has subsequently been replicated in a longitudinal study

by Joseph *et al.* (*op.cit.*). It was the only factor found to have a significant effect on HRB over time (cited by Stall *et al.* 1988).

The Self-Efficacy Construct and Behaviour Change

Bandura (*op.cit.*) stresses that one's self-efficacy is neither a personality characteristic nor necessarily a stable characteristic, and it does not operate independently of contextual factors. Positive self-efficacy beliefs originate through four basic processes, most of which operate in normal behaviour change situations. These four processes are: (a) personal experiences; (b) vicarious experiences; (c) verbal persuasion; and (d) emotional arousal (because one's state of emotional arousal can provide cues for action).

Implication

In the context of the APP, the potential of three of these processes ((b) through (d)) was utilised. Firstly, vicarious experiences (Phases III and VII) which have already been mentioned were employed. Secondly, verbal persuasion was used in all phases of the APP (Phases I through VII - see informational approach in §2.7); and thirdly, emotional arousal (which is discussed next). In addition, three outcome measures would be used to assess the effectiveness of the APP with respect to: subjects' self-efficacy beliefs - one to measure self-efficacy beliefs with respect to APB required to avoid the sexual transmission of HIV, and one to measure self-efficacy beliefs with respect to APB required to reduce the sexual transmission of HIV; and the third to measure attitude towards PWA.

2.5 MOTIVATION THEORIES

Classic motivation theories differ greatly from cognitive and decision-making theories in that they assume that a variety of internal emotional processes - such as fear, anger, and helplessness - impact on behaviour. Most health research has focused on the effect of fear appeals on health behaviour. A major rationale for the use of fear appeals in health education is that they have the potential to eliminate an inappropriate sense of invulnerability (Averill 1987).

Two conceptions of fear are currently prevalent: fear as a drive (Hovland 1953); and fear as a repertoire of potential responses that an individual manifests when in a fearful state (Averill *op.cit.*). Those theorists who view fear as a drive say that fear explains the reasons for behaviour. Contrastingly, theorists who view fear as a repertoire of potential responses contend that to interpret emotions as efficient causes of behaviour deflects

attention from the personal, situational, and social variables that actually control behaviour. The latter conception of fear therefore posits that social learning and norms of behaviour determine the ways in which people express fear (Leviton *op.cit.*).

Research findings indicate, however, that the manifestations of fear do not necessarily facilitate self-protective behaviours. Leventhal (1970) contends fear may have either a facilitating or inhibiting effect on health behaviour - producing either self-protective behaviour or possibly dysfunctional effects such as denial. However, the issue is even more complicated. The probability that a person will take preventive action is determined partially by self-efficacy. On the other hand, if fear reduces self-esteem, the fear appeal may disrupt effective coping behaviour (Cleary *op.cit.*:139). Research findings provide some evidence to support these contentions.

In the Strebel and Perkel (*op.cit.*) cross-sectional study, poor sexual self-image and an external locus of control seemed to be significantly related to HRB; and poor sexual self-image, external locus of control and uses of defenses of rationalisation and repression were linked to less knowledge. Furthermore, denial seemed to have strong connections with certain behaviours and attitudes deemed relevant to AIDS (such as believing that using a condom is embarrassing; or meant that you did not trust your partner).

Irregular contraceptive use has been found to be associated with low self-esteem (Colletta *et al.* 1980, Morrison 1985, Lancaster and Hamburg 1986 (all cited by Kelly and St Lawrence 1988); Rosenberg 1965; Saravalli 1989; McKaig 1989). Similarly Kaplan, 1980 (cited by Kelly and St Lawrence *op.cit.*) and Held (1989) found that susceptibility to serious drug use patterns was related to poor self-esteem.

In the Christopher and Roosa (1991) review of pre-marital sexual decision-making among adolescents they report that self-esteem has been found to be an associated factor. However, they contend that research to date has produced inconsistent findings and that its influence is likely to be complex and that it may interact with other variables such as age, gender and attitudes.

In the Finkel and Finkel quasi-experimental study already cited self-esteem was another outcome variable investigated. They found that, although there was some evidence showing that the intervention had improved the self-esteem of participants, it failed to reach statistical significance. As self-esteem is regarded as a relatively stable personality

trait this finding is not surprising - notwithstanding the fact that the quasi-experimental design of their research meant that their findings lacked internal validity because no comparison group was included (Appendix E, Table 2.2).

Fisher (1988) says that the argument that high self-esteem could be associated with more constructive behaviours is corroborated by consistency theories in social psychology (Festinger 1957) and more recent research in this field (Steele 1988).

Rosenberg (1965:Chapter 9) reports that Caron used his self-esteem scale with a group of 1 300 high school students. Caron selected out 18 students with low self-esteem (those scoring 5/6) and 18 with high self-esteem (those scoring 0) for an intensive interview lasting sixty to seventy-five minutes. Those with low self-esteem were much more likely than those with high self-esteem to be hypersensitive to criticism from others, experience awkwardness and inhibition in their relationships with others, and to say that they tend to put up a facade to others in order to mask their real feelings. In addition, those with low self-esteem were much more likely than those with high self-esteem to be less assertive and more docile and describe themselves as: easily led, too easily influenced, lacking in self-confidence, and usually gave in and let others make decisions for them. Caron says this low self-esteem group are to be seen as docile and yielding. On the other hand, those with low self-esteem are less likely than those with high self-esteem to feel that others like them very much, or to have faith in others. He contends that self-esteem has important implications for social and sexual behaviour because a person operates on the assumptions of what they are like - these are the feelings and thoughts that guide their actions and these have characteristic consequences for their lives in society.

Implication

Hence, in the context of this study, it was believed relevant to explore students' self-esteem, as it could be a variable which differentially explained any outcome differences between the groups.

Kelly and St. Lawrence (*op.cit.*) maintain that whilst specific linkages of self-esteem with promiscuity, ability to resist sexual coercion and resistance to drug use patterns may be indirect, it is logical to assume that HIV/AIDS prevention programmes will be most effective when they foster a sense of pride and responsibility for the health of oneself and others - regardless of what target group is undergoing the intervention.

In a similar vein, Averill (*op.cit.*) contends that if a programme to encourage the adoption of healthy self-protective behaviour is to have lasting effects, it must touch on higher mediating processes, especially those related to an individual's sense of self. Such a programme requires a mixture of strategies. He argues that it is sometimes easier to shame people into action than to frighten them into action; many people will do things out of affection for others that they would not do out of fear for themselves; and if their pride is at stake, some people may face almost any danger. Unfortunately, such emotions as shame, affection, pride, and anger have been little investigated in the context of health behaviour (Averill *op.cit.*:75).

Implication

Hence, in the context of the APP, a unit on caring relationships (versus casual relationships) was included (Phase V).

2.6 SOCIAL INFLUENCE THEORIES

The social influence of others in an individual's environment on both attitudes and behaviour is one of the oldest and most prominent themes explored by social psychologists. Historically, social influence has included research on group norms, conformity, modelling, social comparison and attitude formation and change. However attitudes will be discussed separately, in the section which follows. Deutsch and Gerard (1955) identified two sources of social influence: normative and informative (cited by Fisher *op.cit.*:69).

Normative Social Influence

Normative social influence consists of belief, attitude and behaviour change motivated by a person's wish to gain group approval.

Although the effect of normative social influence has, to date, only been explored and found to be a determinant of HIV-preventive behaviour among homosexual men (Joseph *et al.*, *op.cit.*), in the light of adolescent psychosocial development theory, this phenomenon may be a factor which deserves some attention.

Adolescence is often viewed as stage of development marked by a movement away from the central values of a family towards the development of an adolescent's own unique identity which incorporates the adolescent's own set of values, beliefs and behaviours

(Erikson 1968). For many adolescents a close circle of friends often provides the testing ground for these emerging values, beliefs and behaviours (Brown and Fritz *op.cit.*).

Amongst some adolescents then, peer group approval is believed to be an extremely powerful motivator - particularly if an individual believes his/her behaviour will be approved by his/her friends. Normative beliefs are generally conservative and aimed at maintaining and protecting the status quo in terms of the norms and values of the reference group. Adolescents' motivation to be accepted and liked by significant others often requires them to avoid appearing dissimilar to others. For example, in the context of APB in adolescents, if the typical script for sexual relations is to have such relations without a pre-sex discussion regarding APB, people will fear sanctions for failing to conform to this script (Fisher *op.cit.*). Thus, condom use may not be broached for fear of rejection by a partner. Furthermore, broaching the subject of APB might be considered inconsistent with a group's "macho" values (Vazquez-Nuttall *et al.* 1984). Kreipe (1985) maintains that some norms are associated with a particular age group. For instance, he contends that it is normative for people in their late teens to feel invulnerable and believe themselves to be impervious to negative life events (cited by Fisher *op.cit.*). Thus, if risk is viewed as a value (Levinger and Schneider 1969, Wallach and Wing 1968) adolescents may not practice APB for fear of appearing less risky than their peers. Many apparently self-destructive and irrational behaviours become understandable once the underlying patterns of social reinforcement in the form of reference group norms are recognised.

In their comprehensive review of adolescent sexual decision-making, Christopher and Roosa (*op.cit.*) report that social influences, such as beliefs of peers, shape adolescent, particularly male, sexual attitudes. For example, Christopher and Cate (1984) found that males, more than females, report that feelings of obligation and pressure play a salient role in their decision to first engage in sexual intercourse in a new relationship. Furthermore, this sense of pressure appears to originate, in part, because friends are seen engaging in coitus. Carns (1973) and Muehlenhard and Cook (1988) report that males feel that their friends pressure them to engage in coitus and that they gain in social status by experiencing coitus and telling their friends about it. Christopher and Roosa (*op.cit.*) suggest that these findings indicate that a modelling effect occurs when males perceive their friends' sexual expression, and that males are additionally motivated to engage in sexual intercourse by social network status gains.

On the other hand Urdy and Billy (1987) found that the only peer influence that appeared to increase the risk for males' becoming sexually active seemed to be popularity with members of the opposite sex. However, longitudinal research by Billy *et al.* (1988) suggests that caution is needed when interpreting the causal direction of peer influences because they found that white adolescents chose sexually active friends after they had become sexually active themselves.

Some interesting results were obtained by Smith *et al.* (1985) who conducted a study investigating both social and biological influences on adolescent sexual decision making. Social influences were assessed using best friends' reports of sexual behaviour whereas biological influences were assessed by asking questions about androgen development (e.g. body hair) in males and females. It was found that, for males, these social and biological factors accounted for less than 19% and 13% respectively, of the variance in sexual activity. However, in combination they accounted for almost 25%. Furthermore, in a model combining biological factors, friends' sexual behaviour, and an interaction between androgen development and best friends' sexual behaviour explained over 34% of the variance.

In the Finkel and Finkel (*op.cit.*) quasi-experimental study, peer pressure was another outcome variable investigated (no operational definition reported). They found that although less peer pressure was evident after the intervention, it failed to reach statistical significance (Appendix E, Table 2.2). Interestingly however, the male respondents (n=154) showed a *"greater movement away from peer pressure"* than the female respondents (n=307).

These research findings therefore indicate that social influences may indeed contribute to the environmental factors which impact on sexual behaviour.

Informative Social Influence

Informative social influence is change that is motivated by a person's belief that group consensus reflects objective reality (Leviton *op.cit.*).

The literature on informative social influence suggests that similar individuals may serve as especially effective models - particularly if they represent a valid source of information with respect to behaviours or behavioural outcomes to others (Fisher *op.cit.*).

In a controlled intervention, Valdiserri *et al.* (1987) used an informational social influence approach in their design of a 60-75 minute HIV/AIDS educational intervention for a group of bisexual and gay men (Appendix E, Table 2.5). The intervention was led by a gay health worker and implemented among small groups comprising 5-10 participants. Attitudes towards HRB, low-risk behaviours, condom use, perceived vulnerability, and perceived acceptance of APB by peers, all improved significantly among experimental subjects.

Research in other areas of health promotion has documented that a programme's context may be just as important as content in terms of inducing health-related behavioural change (Worden *et al.* 1983). Support for this hypothesis is found in the literature describing diabetes education (Steiner and Lawrence 1981) and alcoholism (Diesenhaus 1982) (cited by Valdiserri *et al.*, *op.cit.*).

Fisher (*op.cit.*:918) suggests that a strategy which could be used to cause APB to become consistent with group norms is to reframe APB so it appears to be consistent with group norms. For example, *"for groups that subscribe to machismo norms, APB could be represented as the masculine thing to do"*. Solomon and DeJong (*op.cit.*) also employed the concept of social influence in their successful intervention by portraying condom use as socially acceptable, normative behaviour within the context of the participants' cultural group.

Implication

Thus, seen in the context of this investigation, by implementing the APP among small groups an individual and his social network would be responding to the same information in the same environment. Furthermore, by employing workshop and small group discussion strategies, the development of new normative beliefs and behaviours - in that shared context - could be facilitated. Additionally, an outcome measure would be used to assess the effect of the APP on respondents' perception of peer support for APB.

2.7 ATTITUDE THEORIES

The Attitude Construct

An attitude may be defined as *"a moderately intense emotion that prepares or predisposes an individual to respond consistently in a favorable or unfavorable manner when confronted with a particular object"* (Anderson 1988c:423). Most theorists recognise attitudes as having three

components: cognitive beliefs about a person or object; affective or evaluative feelings about that person or object; and a conative component, indicating how a person does or would behave with respect to the person or object. This tri-componential analysis is now used routinely (Bagozzi 1978, Hilgard 1980 cited by McGuire 1985). Although formal definitions vary, most contemporary social psychologists seem to agree that the characteristic attribute of an attitude is its evaluative nature.

Attitudes cannot be observed, since they are not part of a person's physical characteristics, nor does one have direct access to a person's thoughts and feelings. Attitudes are latent, hypothetical characteristics that can only be inferred from a variety of observable responses such as self-reports, reports from friends and acquaintances, or from direct observation.

Attitude Formation

There are four types of non-communication forces that initially establish attitudes. These are genetic determinants, transient physiological factors (e.g. drugs), social institutions, and direct experience with the attitude object (McGuire *op.cit.*). However, most attitude theorists agree that people's attitudes are acquired through experiences, rather than being genetically determined (McGuire *op.cit.*). Hence, Eiser and van der Pligt (*op.cit.*) describe attitudes as both a social product and intrinsic part of social action.

With respect to the effects of social institutions on attitude formation in adolescents McGuire (*op.cit.*:255) reports that Andrews and Kendel (1979) and Cherlin (1981, 1983) found that non-kin groups such as schools, peer groups, and the mass media are probably reducing the family's influence on ideology as modernization reduces parental control and prescriptiveness. Furthermore, increased urbanisation, population growth and mass media technology are bringing a large number of homogeneously-aged children into contact and exposing them to common experiences which have produced *"a distinctive centripetal youth culture as regards art forms, values and life-styles"* (Reismann 1980, Conger 1981, Veroff, Douvan and Kulka 1981, Yankelovich 1981, Caplon *et al.* 1982).

Attitude Change

Most psychosocial researchers investigating attitude change have ignored the four classes of determinants in attitude formation, as already outlined, in favour of theories

which are either motivational or informational in format (Ruch *op.cit.*). This discussion will focus on (a) the motivational and (b) the informational approaches to attitude change.

(a) Motivational Approaches

Dynamic or motivational approaches assume that people's attitudes have a cognitive component which they are motivated to keep balanced or consistent.

Most behavioural scientists make the assumption that maintaining consistent behaviour is essential for a person's effective functioning in the world (Ajzen *op.cit.*). Other consistency theorists, cited by Marcus and Zajonc (1985), have posited that consistency serves the need for coherence (Kelly 1955, Epstein 1980); and effective action (Rosenberg 1965); and that consistency is inherent in nature as a result of neuro-physiological processes (Eysenck 1947, 1967) and the capacity for logical reasoning (McGuire 1960).

Most theorists maintain the position that consistency is a fundamental property of human thoughts, feelings and actions (cited by Marcus and Zajonc *op.cit.*, Ajzen *op.cit.*). However, Ajzen (*op.cit.*) reports that other theorists claim that consistency in human behaviour is more apparent than real: that we attribute to ourselves attitudes and personality traits consistent with our actions (Bem 1965); that consistency *"is in the eye of the beholder"* rather than in observed behaviour (e.g. Mischel 1969, Shweder 1975, Nisbett and Ross 1980, Mischel and Peake 1982); and that we express attitudes and values consistent with our actions in order to make a favourable impression on others (e.g. Tedeschi *et al.* 1971, Schlenker 1980). On the other hand, Elser and van der Pligt (*op.cit.*) contend that consistency is a social product - we learn that others expect consistency from us. Through the process of socialization we internalise other people's expectation that we should be reasonably predictable (though not inflexible) in our feelings and actions, and that we may expect be held accountable when there is a mismatch between our attitudes and behaviours.

Attitudes have traditionally been viewed as the causative agents of behaviour. However, years of empirical research have failed to provide strong support for either the predictive validity or the behavioural consistency of attitudes. For instance: Miller and Olsen (1988) reported that attitudes towards pre-marital sex explained 25% of the variance in the virginity status of adolescents. Furthermore, startling inconsistencies were found between adolescent sexual attitudes and behaviours: in one study as many as 25% of

premaritally sexually active teenagers reported that they believed that pre-marital sex is wrong, and 83% reported that the best age for first intercourse was older than their personal experience (cited by Christopher and Roosa *op.cit.*). That is, people were found not to act in accordance with their measured attitudes. Wicker's (1969) review of the literature pertaining to the attitude concept reached the following conclusion:

> *Taken as a whole, these studies suggest that it is considerably more likely that attitudes will be unrelated or only slightly related to overt behaviors than that attitudes will be closely related to actions. Product-moment correlation coefficients relating the two kinds of responses are rarely above .30, and are often near zero (p65).*
>
> (cited by Ajzen 1988:42)

Eiser and van der Pligt (*op.cit.*) contend that the association between attitudes and behaviours is not as close as this assumption suggests because other factors intervene that also influence behaviour.

They propose an alternative view, namely that attitudes and behaviours are alternative response systems and are therefore unlikely to be systematically related unless either (a) they share common learning histories; or (b) a person considers what kind of attitudes and behaviours go together with one another in terms of some higher order category system (for example, feelings of "friendship" go together with "friendly behaviour"). They posit that such a system of categorization must be learned and will most certainly be reflected in language. As they say:

> *It is a commonplace to observe that people can sometimes express quite extreme negative reactions towards social groups of whom they have never known a single member. Similarly how we think we might react, emotionally and behaviourally, to a new or challenging situation we have not yet encountered may sometimes leave us unprepared for the reality of the experience ...*
>
> Eiser and van der Pligt (1988:42)

A number of consistency theories have been suggested among which, perhaps, the best known are Heider's balance theory (1946), Osgood and Tannenbaum's congruency theory (1955), and Festinger's cognitive dissonance theory (1957). For the purposes of this investigation, however, McGuire's (1960, 1981) probabilogical model of cognitive consistency will be the focus of the discussion, notwithstanding the tendency for sexual behaviour, at times, to be impulsive and irrational.

The Probabilogical Model of Cognitive Dissonance

This model postulates that attitude systems function in accordance with the axioms of logic and probability theory. However, because this depiction hardly fits the often observed contorted belief systems of people, it includes an additional postulate - that of salience. The principle of salience asserts that one's attitude on a given target issue is affected by attitudes towards other related issues only to the extent that they are momentarily salient - a principle embodied in the Socratic method of self-generated persuasion. The Socratic effect has been shown to be sizable enough to have allowed Wyer (1974b cited by McGuire 1985) to demonstrate that his and McGuire's model of cognitive consistency fits the obtained results better than do any of the previous consistency theories already mentioned. The probabilogical and salience principles imply that attitudes can be changed not only by presenting new information from an outside source, but also by enhancing the salience of information already possessed by a person by asking questions or using other methods. Dozens of research findings have confirmed this Socratic effect (McGuire 1986).

Implication

With respect to the APP, Phase III, the "emotional/affective element" was introduced in order to make the problem of HIV infection salient for the experimental treatment participants. Furthermore, by using small group discussions, it was hoped that participants would become involved in the issues because they were perceived as personally relevant or important to them.

(b) Informational Approach

There are many types of persuasive communication situations in which attitude change occurs. However perhaps the persuasive communication method of Hovland *et al.* (1953) forms the major approach (Ruch *op.cit.*). Persuasive communication situations are researched by separating out and examining the effect(s) of important aspects of the communication. For example, examining the independent variables associated with the communication's input (i.e. the source, message, recipient, channel and target of the communication). These five independent variables are believed to influence such mediational processes as paying attention, comprehending the message, retaining the changed attitude and yielding to persuasion. An effective message would change a respondent's attitude and would probably also change his/her beliefs and behaviours related to the attitude.

The first three and last of these five input factors have direct relevance for this investigation, and will therefore be examined.

The source

It was found that, in general, people are more likely to accept a message from a high, rather from a low, credibility source. Recipients are likely to perceive a communicator to be credible if he/she is regarded as an expert/professional, or is perceived to be trustworthy, or for other reasons.

The message

Both the structural features and style of the presentation are important factors in persuasive communication. The emotional tone of the message, the messages' comprehensibility, and the type and quality of the message's arguments all have impacts on the success of the communication. Similarly, the use of humour and/or fear arousal has an impact on the style of the communication. Research suggests that fear arousal will be effective if strong arguments are presented for (a) the negative consequences of a behaviour; (b) the likelihood of negative consequences if the recommendations are not accepted; and (c) that strong assurances are made that accepting the recommendations will eliminate the negative consequences (Rogers 1983, McGuire 1985). It might be noted that these three factors are those emphasised in the HBM and the TRA.

The recipient

It has been found that intelligence interacts with the complexity of the message such that the more intelligent recipients will comprehend the message more easily but may be more likely to resist it (Hovland, Lumsdaine and Sheffield 1949 cited in McGuire *op.cit.*). Self-esteem enhances or reduces persuadability in predictable ways, depending on the type of argument used (Katz 1960, Ghiglione and Beauvois 1983) and on the issue involved (Leventhal and Perloe 1962 cited by McGuire *op.cit.*). Males have generally been found to be less persuadable than females (McGuire 1968 cited by McGuire *op.cit.*). People with little prior interest in or knowledge of the topic are more easily persuaded (Ruch *op.cit.*).

More recently Petty and Cacioppo (1981) have developed an approach which complements the study of Hovland *et al.* (*op.cit.*), called the cognitive response approach. It posits that respondents generate cognitive arguments for or against a message

depending on aspects of both the message and the respondent. Anything that forewarns a recipient that someone is trying to change his/her mind, they say, will generate a rehearsal of counter-arguments that will allow them to resist the message. They suggest that a blending of self-persuasion and other approaches holds the most promise of success (cited by Ruch *op.cit.*).

Implication

This cognitive response approach was the one taken in the APP as it best fitted in with the self-empowerment model of health education.

Target

A target variable which requires some mention, because of its applied importance, is the persistence of the induced attitude change. Attitude changes may decay over time or, conversely, attitude change may show a delayed impact (McGuire *op.cit.*).

Implications

The self-empowerment model of health education, with its goal of informed choice, implies that a health education intervention must employ completely ethical methods. Thus, such a programme must provide participants with the facts and then supply them with the conditions necessary to facilitate their genuine understanding without the use of indoctrination attempts or emotional manipulation - thus leaving them with total awareness of the range of behavioural options open to them without attempting to bias their choice.

Thus the guidelines suggested by the research findings in persuasive communication approaches have been used in the current study only insofar as they related to the effective design of the message, the use of professionals for implementation of the intervention, and the design of the programme.

Experienced professionals were employed to implement the various phases of the ten hour HIV/AIDS programme. Each professional was supplied with a copy of the entire programme. The general introduction and briefing prior to implementation of the APP provided them with details concerning the neutral, unbiased role they were expected to adopt in implementing the intervention and in facilitating group discussion (Appendix A).

The structural content of the intervention was arranged in a logical fashion to facilitate maximum comprehension. Group discussions were planned to enhance meaningful learning and to provide opportunities for self-persuasion.

Finally, a follow-up test was arranged to determine the effects of time on the programme's initial impacts.

2.8 SUMMARY

Chapter 2 has provided an outline of the theoretical frameworks and previous research findings which underpinned the development of the APP for this investigation within the context of a self-empowerment approach to health education. Table 2.1 lists the theories discussed, the APP Phases that incorporated aspects of these theories, and the outcome and possible explanatory measures which were either used or developed in order to evaluate the impact of the APP on participants. Furthermore, the results and shortcomings of previous controlled HIV/AIDS intervention studies informed the design and investigative procedures adopted in this study. Specifically, there was a need to use a research design which would allow one to test for interaction effects between treatment and pretesting, and to develop valid and reliable measures to evaluate the effectiveness of the APP.

Table 2.1: Application of behaviour theories in the APP designed for the current investigation

Theories	Phases of the APP	Possible Explanatory Measures	Outcome Measures
Cognitive and Decision-making Theories	I: Knowledge (of HIV/AIDS) II: Understanding (of HIV/AIDS) - personal risk evaluation III: Emotional/Affective Element IV: Life Style Options in the "Era of AIDS"		Knowledge Instrument (**KI**) Perceived Threat Scale (**PT**)
Social Cognitive Theory	III: Emotional/Affective Element VI: Behavioural Self-Management VII: Life Skills for Coping in a Responsible Manner (A) Proper use of condoms (B) Assertiveness training	Drinking Habits; and Attitudes towards Alcohol Use Scale (**ATAU**)	Attitudes towards PWA (**APWA**) Self-Efficacy Scales (**SE1** & **SE2**)
Motivation Theories	III: Emotional/Affective Element V: Caring Relationships (versus casual relationships)	Self-esteem Scale (**RSE**)	
Social Influence Theories	Programme's context: small group discussion and workshop sessions		Perceived Social Norms Scale (**PSN**)
Attitudes	III: Emotional/Affective Element plus programme's context: small group discussion and workshop sessions. Post- and follow-up-assessment.		

The next chapter provides a detailed description of the investigative procedures and actual implementation of the current investigation.

CHAPTER 3

INVESTIGATIVE PROCEDURES AND IMPLEMENTATION OF THE INVESTIGATION

CHAPTER 3

INVESTIGATIVE PROCEDURES AND IMPLEMENTATION OF THE INVESTIGATION

3.1 INTRODUCTION

The previous chapter reviewed the theoretical frameworks underpinning health education, and presented, critically, where necessary, the research findings in health education generally, and HIV/AIDS education specifically, which informed and guided both the design of the experimental intervention and the choice of measures used to evaluate the experimental programme's effectiveness. This chapter describes the investigative procedures employed in this investigation, as well as the actual implementation of the study.

An overview of the on-going evaluation of the ten hour HIV/AIDS prevention programme (APP) is first presented. The experimental research design chosen for empirically evaluating the impact of the APP is described together with the treatments, fixed/explanatory and outcome/dependent variables chosen for study. Subsequently, the selection of the population, subjects and samples for the investigation is reported. The development and organisation of the experimental and control programmes are presented. The actual implementation of the experimental and control programmes, administration of the Comprehensive Questionnaire (CQ) and Supplementary Questionnaire (SQ) and student attrition during the study are then reported. The chapter concludes with a description of the coding, collection, verification and transformation of CQ data generated during the study.

3.2 ON-GOING PROGRAMME EVALUATION

Fetro (1988) contends that, although it is not always possible in educational settings, comprehensive programme evaluations should include three major classes of evaluations: (a) an evaluation of educational needs; (b) formative evaluation; and (c) summative evaluation (Figure 3.1).

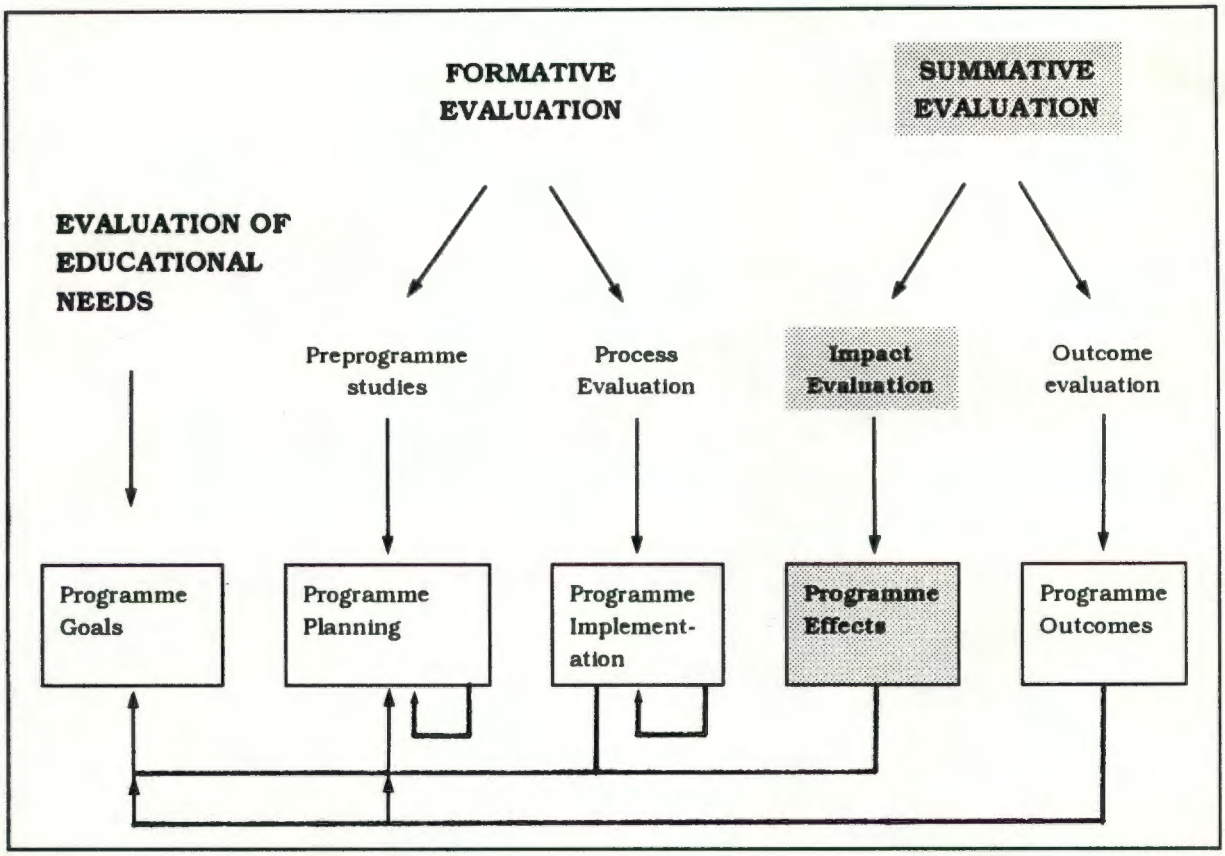

Figure 3.1: Comprehensive programme evaluation as applied to this investigation (after Fetro 1988:131)

3.2.1 *Evaluation of Educational Needs*

An evaluation of educational needs includes the establishment of a programme's goals and objectives (Fetro *op.cit.*). Once programme goals and objectives are set, effective programme development may take place.

Programme Goals

The Life-Styles teacher of the study population at Diocesan College (DC) believed that only about ten percent of the study population had ever been, or were currently, sexually active (§1.2.4, para.3; and §4.6.2 *item phrasing* refer). Two goals were therefore set for the experimental intervention (APP): (a) primary prevention (i.e. teaching students who were not yet sexually active how to delay the onset of sexual activity) and (b) secondary prevention (i.e. teaching those students who were already sexually active the strategies which need to be employed to reduce their risk of infection with HIV).

Programme Objectives

The objectives of the APP are incorporated comprehensively in the programme outline (Appendix A). These objectives may be presented in point form as follows:

- to improve subjects' knowledge and understanding of HIV/AIDS;
- to help students to assess realistically the risks for HIV contagion inherent in any particular situation or activity;
- to sensitize students to the reality of AIDS at more than a cognitive/intellectual level, and thus
- to foster increased understanding, compassion, concern and support from students towards HIV/AIDS sufferers;
- to improve students' tolerance and reduce discrimination towards people with AIDS;
- to help students reduce, if not avoid, the use of projection and scapegoating;
- to help students to "own" the problem of HIV/AIDS individually in the sense of feeling that they, personally, are vulnerable to the infection - HIV infections could be their reality sometime in the future - and therefore provide them with a reason and/or motivation for making an emotional commitment to protect both themselves and those whom they love from contracting HIV;
- to help students develop effective behavioural skills which: (a) avoid HIV contagion; and (b) reduce the risk for HIV contagion; and thereby
- to increase students' self-confidence with respect to implementing behaviours that would (a) avoid, and (b) reduce the risk for HIV contagion;
- to influence positively the group's attitudinal norms with respect to HIV preventive behaviour.

3.2.2 *Formative Evaluation*

Both aspects of formative programme evaluation (Fetro *op.cit.*) are covered in the study: preprogramme studies and process evaluation.

Pre-programme studies

Table 3.1 summarizes the preprogramme studies undertaken in this investigation, together with the references indicating where these aspects are discussed.

Table 3.1: Summary of pre-programme studies

Pre-Programme Studies	Chapter/ Section
Receptivity of HIV/AIDS programme at proposed site:	
- compatibility with existing programme?	3.4.1 (a)
- staff response?	3.4.1 (b)
- parental response?	3.4.1 (c)
- parental consent?	3.4.2
Development of ten hour HIV/AIDS prevention programme (APP):	
- theoretical frameworks underpinning health education:	Chapter 2
- research findings in health education:	Chapter 2
- consensus on programme's appropriateness	
• among students?	3.5.2
• among professional implementers of the programme?	3.5.2
- consensus on programme's time allocation	
• for entire programme?	3.5.2
• for phases of the programme?	3.5.2 and 3.9.2
- consensus on programme's implementation dates:	3.5.3
Development, modification and refinement of the Comprehensive Questionnaire:	Chapter 4

Process evaluation

Two aspects of the evaluation process were considered: (a) the actual implementation of the intervention (§3.9); and (b) student evaluation of the programme (§§5.6 and 5.7). The

findings of these aspects of the process evaluation are discussed under implications in Chapter 6.

3.2.3 Summative Evaluation

The *raison d'être* of this study was to investigate the effects of the APP on adolescents by using repeated measures in the form of a Comprehensive Questionnaire (CQ).

In Fetro's evaluation terminology *op.cit.* this investigation therefore constitutes one aspect of summative evaluation[1], that is an impact evaluation, implying as it does, an evaluation of the probable short-term effects of a programme. Section 3.3 which follows, deals with the experimental research design employed in the impact evaluation of the APP.

3.3 THE EXPERIMENTAL DESIGN

3.3.1 Research Design

An experimental design for empirical research was used. The Solomon four-group design (1949) which employs two control groups and two experimental groups formed the basic design of the investigation (Campbell and Stanley 1963:194). Only one experimental and one control group are given pretests, but all four groups are post-tested (Table 3.2).

The design was chosen because one of its strengths is that one can make several comparisons to study the short-term effects of an experimental treatment. Since only half of the groups are pretested:

(a) one can ascertain the probable effects of the pretest;

(b) one can determine the probable effects of the treatment in both the pretest and non-pretest situations;

(c) one can assess the probable interaction effect of pretest and experimental treatment.

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[1]The other aspect of summative evaluation, the so-called outcome evaluation, is a much longer-term evaluation - seldom measured in an educational setting. In an educational setting it would have involved conducting a longitudinal time-series study over a number of years. In an epidemiological study it would have involved tracking respondents' health-status (i.e. HIV-seroprevalence) over a number of years. Neither option was practical in this investigation.

This basic Solomon four-group design was extended to include a follow-up-test (Table 3.2, column 5) so that the drop-off and long-term effects of the APP could be determined.

On the one hand, the drop-off effects could be measured by determining the statistically significant changes that occurred between post- and follow-up-testing. That is, the stability of the short-term effects of the experimental programme could be determined. On the other hand, the long-term effects could be measured by determining the statistically significant changes occurring between pretesting and follow-up-testing.

Table 3.2: The extended Solomon four-group design as applied in the investigation in 1991

Group	Pretest 11.09.91	Treatment 24 & 25.09.91	Post-Test 25.09.91	Follow-up-Test 11.11.91
A	Yes	Experimental Programme	Yes	Yes
B	No	Experimental Programme	Yes	Yes
C	Yes	Control Programme	Yes	Yes
D	No	Control Programme	Yes	Yes

3.3.2 *Treatments*

Two treatments were developed for the investigation: an experimental treatment comprising a APP/intervention; and a control (placebo) treatment comprising a ten hour Life Styles programme/intervention[2].

3.3.3 *Fixed/Explanatory Variables*

Among the variables investigated, four were assumed to be constant (stable) within individuals during the time of the investigation: namely: demographic characteristics; drinking habits; attitude towards alcohol use; and self-esteem. These variables were

[2]In order to avoid a possible "Hawthorne Effect" - which can pose a threat to the validity of an educational experiment, the control groups were given a (placebo) treatment rather than just attending regular classes during the two-day (ten hours) of the experiment.

The Hawthorne effect is a reactive effect which refers to changes in the behaviour of experimental subjects that occurs when the subjects are aware that they are being studied. This awareness is confounded with the independent variable being studied; so any positive effect noted in the experimental group after the intervention could either be attributed to the treatment or to the subjects' awareness (Ball 1988).

measured in order to examine any possible explanatory associations between them and the dependent/outcome variables of interest.

3.3.4 *Outcome/Dependent Variables*

Six variables were investigated as outcome variables: knowledge and understanding of HIV/AIDS; attitudes towards people with AIDS; self-efficacy with respect to avoiding the sexual contagion of HIV; self-efficacy with respect to reducing the risk for sexual contagion of HIV; perceived social norms with respect to HIV preventive behaviours; and perceived threat of HIV infection.

3.3.5 *Selection of Group Size and Programme Length*

Selection of the self-empowerment approach to the APP limited the group sizes to small numbers (n=15).

By 1991 the Planned Parenthood Association of the Western Cape (PPA) had been running HIV/AIDS programmes for three years, with numerous different groups and organisations. After the APP had been developed and finalised an outline of its goals, objectives, content and teaching strategies was presented to the PPA. Based on their experience and expertise, the PPA believed the programme could be implemented effectively in ten hours, using small groups of 15 students.

3.4 SELECTION OF POPULATION, SUBJECTS AND SAMPLES

3.4.1 *Selection of Population*

The Diocesan College (DC) in Rondebosch, Cape Town, was the school chosen for the investigation. It is a private, multiracial, fee-paying, Anglican, boys secondary school catering to a predominantly upper-middle income socio-economic group. In 1991, its enrolment was 620 students. Students attend as either day-scholars or boarders.

DC was selected for the investigation for several reasons:

(a) DC has operated a "Life Styles Programme" as part of its curriculum since 1987. Its curriculum includes sex education, substance abuse, adolescent development, and relationships. The personnel responsible for HIV/AIDS education at the PPA, as well as the literature pertaining to HIV/AIDS education, indicate that in order

for instruction to be effective, subjects ought to be *"in touch with their own sexuality"*. As the DC students had been participants in this unique Life Styles programme, it was felt that they would be most likely to benefit from the planned APP.

(b) The Headmaster and "Life Skills" staff expressed enthusiasm for the research programme, thus ensuring wholehearted support.

(c) On 6 June, 1991, a large number of parents and staff had met at the school to hear Mrs Patricia van der Velde, the Director of AIDS Training, Information and Counselling Centre (ATICC) in Cape Town, talk about HIV and AIDS. A lively discussion followed her presentation, and it appeared obvious to the author, and to the staff running the Life-Styles Programme at DC, that those parents present would welcome the school providing further HIV/AIDS education. Brown and Fritz (1988:315) suggest that students whose parents are concerned about AIDS, or who are more communicative in general, may be more open to AIDS education than students whose parents are uncommunicative and unconcerned.

(d) The school is situated close to the University of Cape Town (UCT). As the research design required the experimental and control groups to operate concurrently, but geographically separately (i.e. at UCT and DC), the time disruption and cost of transportation could be kept to a minimum.

(e) The APP developed for this investigation required students with formal reasoning abilities. According to Piaget (1972) most individuals have the potential to reach the stage of formal reasoning but the social environment influences its rate of actualization. Thus, an adolescent from a culturally and educationally enriched environment probably has a greater chance of reaching the formal reasoning stage sooner than a culturally and educationally deprived adolescent (Berzonsky 1981:236).

3.4.2 Selection of Subjects / Study Population

The subjects chosen as the DC study population for the investigation were the 130 Standard 9 students enrolled at DC in 1991. This decision was based on a number of factors:

(a) Those Standard 9 students who were enrolled at DC in 1987 were in Standard 5. They had formed the initial group for the implementation of the school's "Life Styles Programme". Thus, they were the Standard which already had received the maximum input from the DC Life Styles Programme.

(b) Those Standard 9 students studying Biology would have just completed the section of work on human reproduction by the time this investigation commenced. Thus the "novelty" of the experimental programme would be reduced - that is, the possible "Hawthorne Effect" - since the APP and the control programme could be presented as logical or natural extensions of the lesson content.

(c) The APP which had been developed for this investigation required formal reasoning skills of its participants (§2.3 refers). Adolescent development theory indicates that late adolescents (youth) are more likely to have developed formal reasoning skills (Berzonsky *op.cit.*:225).

(d) The research findings of Brown *et al.* (*op.cit.*) and Robinson (*op.cit.*) both substantiated the cognitive and emotional developmental limitations of adolescents (§2.3 refers).

Parental Consent

One of the conditions of acceptance of a place at the DC states *"All boys, unless specific objections are made, attend classes on sex education and alcohol- and drug-abuse."* Parental agreement is sought for these conditions.

Because the programme also involved subjects answering a sensitive questionnaire, the Headmaster at DC decided that parental consent ought to be sought for their son's participation in this "Special Life Styles Programme" - despite the existence of the conditional parental agreements.

Consequently, at the end of the second quarter, 1991, the Headmaster sent a letter to all Standard 9 parents informing them of the "Special Life Styles Programme", its implementation dates and possible content. The letter did not make a distinction between the Life Styles (control/placebo) programme and the APP (experimental) programme. Parents were simply informed of the possible topics that would be covered

in the "Special Life Styles Programme" and HIV/AIDS was one of the topics mentioned. Parents were informed that unless they specifically requested that their son be exempted from participating in the programme by the first week of the third quarter, his name would be left on the list of those who might be called upon to participate in the programme.

No objections were received from the parents of any of the 130 students comprising the Standard 9 population at DC in 1991. Accordingly, this group comprised the study population from which samples were randomly drawn for the investigation.

3.4.3 *Selection of Samples*

The planned number of students in each of the four groups was fifteen. However, as sampling was done three weeks prior to programme implementation, eighty students were randomly selected from the study population, and randomly assigned to the four groups (n=20x4). An extra five students were selected per group, as a contingency measure against possible absenteeism at pretesting or commencement of the two-day intervention.

The sampling frame comprised all Standard 9 students enrolled at the DC in September 1991 (n=130). The sampling for the groups was done by random selection and assignment as follows:

(a) each Standard 9 student was assigned a number from 001 through to 130;

(b) using a table of random numbers (Earle *et al.* 1987) three figure numbers were selected in sequence from the list; the first student's number drawn was assigned to Group A, the second to Group B, the third to Group C and the fourth to Group D in turn - until twenty students had been assigned to each of the four groups.

Figure 3.2 on page 57 represents the planned extended Solomon four-group design.

Group E (n=50) consists of the subset of students who were not selected and assigned to Groups A through D. These Group E students were <u>not</u> included in the experimental design - they were simply tested together with Groups A and C in order to examine the comparability of subjects on the measured variables at pretesting.

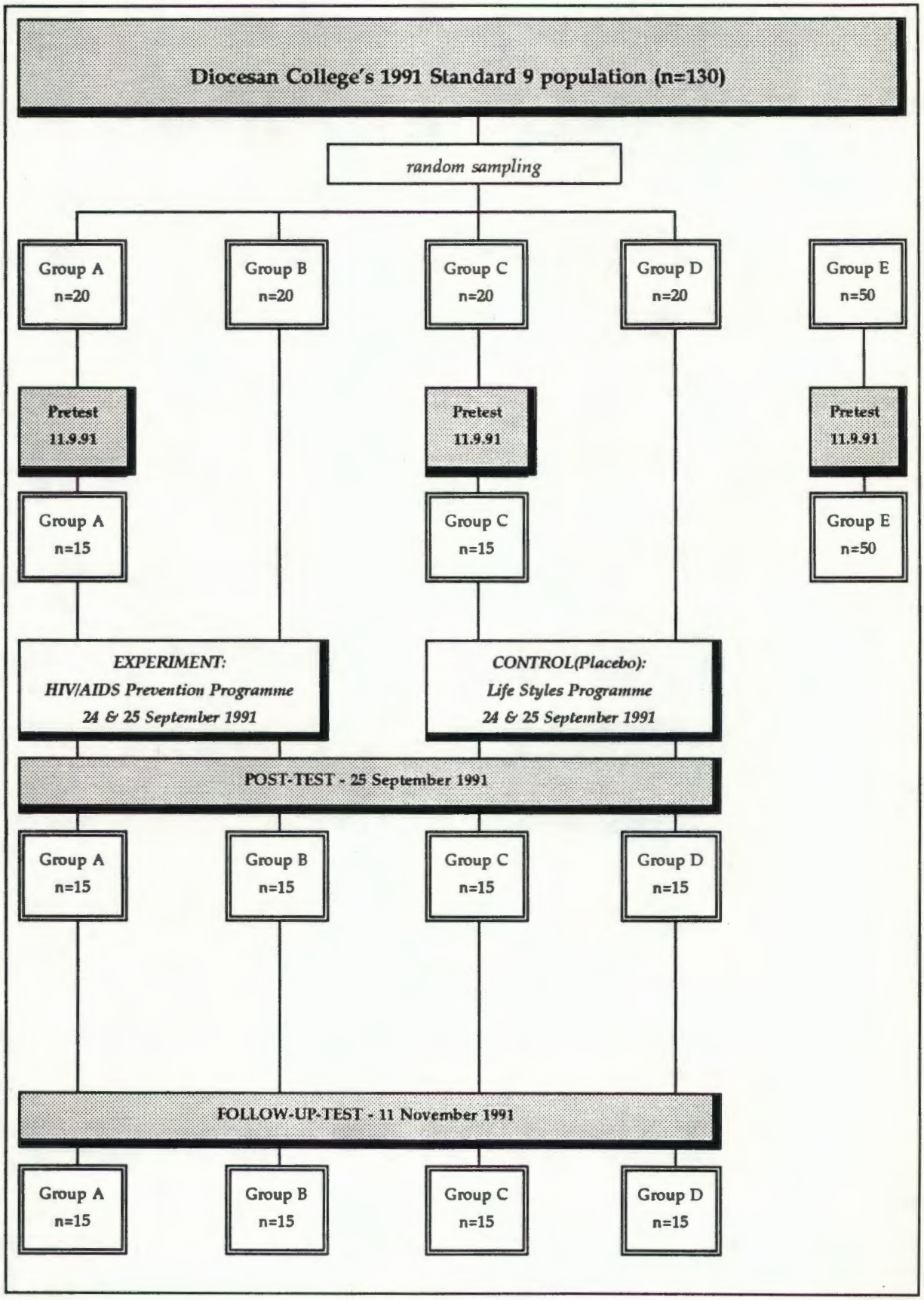

Figure 3.2: Diagrammatic representation of the planned extended Solomon four-group research design

3.5 EXPERIMENTAL TREATMENT

3.5.1 Development of the APP

Guided by the goals and objectives set for the APP (§3.2.1), and informed by the theoretical frameworks underpinning health education programmes and the research findings in health education generally, and HIV/AIDS education specifically (Chapter 2), the APP was developed and refined over a period of four months in 1991.

In addition to the sources mentioned in Chapter 2, the general suggestions offered by health education practitioners for the effective design of health education programmes were also used to inform the design and organisation of the APP. These included Niven (1989); Winett *et al.* (1989); Edelman and Mandle (1986); Creswell *et al.* (1985); Greene and Simons-Morton (1984); Levine (1982); Davidson and Davidson (1980); O'Connor (1980); and Sutherland (1979); as well as the specific recommendations made by for HIV/AIDS prevention programmes in: AIDS Education - a Beginning (1989); the National Academy of Sciences (1986, 1988); Brooks-Gunn *et al.* (1988); Van Dam (1989); Hein (1987) and Remafedi (1988).

Once the APP had been finalised, copies (Appendix A:1-8) were sent to all the professional staff who had been chosen to implement the various phases of the programme (Table 3.3).

The two PPA facilitators, who were asked to implement Phases I through IV and VII(A), chose to work in accordance with the outline provided. The Sexologist used the outline provided by Phase V of the outline as a basis for developing his presentation on "Caring Relationships (versus Casual Relationships)" within a Christian context. The two Clinical Psychologists who had been asked to implement Phases VI and VII(B) designed and developed their own applied presentation using the framework supplied. Appendix A:9-10 provides an outline of their presentation.

Table 3.3: Phases of the ten hour HIV/AIDS prevention programme and corresponding instructors/facilitators

Phase of HIV/AIDS Prevention Programme	Phase Content	Instructors/ Facilitators of Programme Phase(s) (*gender*)
Phase I:	Knowledge (Appendix A:2)	Two PPA Staff Members *(both females)*
Phase II:	Understanding (Appendix A:2-3)	
Phase III:	Emotional/Affective Element (Appendix A:4)	
Phase IV:	Life Style Options in the "Era of AIDS" (Appendix A:4-5)	
Phase VII(A):	Life Skills for Coping in a Responsible Manner: The Proper Use of Condoms / Lubricants / Spermicides (Appendix A:7)	
Phase V:	Caring Relationships (versus Casual Relationships) (Appendix A:5-6)	A Sexologist *(a male)*
Phase VI:	Behavioural Self-Management (Appendix A:6-7)	Two Clinical Psychologists *(both males)* (Appendix A:9-10)
Phase VII(B):	Life Skills for Coping in a Responsible Manner: Assertiveness Training (Appendix A:7-8)	

3.5.2 *Consensus on Content, Processes and Time Allocation*

During the development of the experimental programme DC staff members in charge of the school's Life Styles programme were consulted about the appropriateness of the programmes' content and processes for the Standard 9 study population.

Additionally, both clinical psychologists and one of the two PPA staff members - who were to be involved in the implementation of various phases of the programme - were consulted with respect to the appropriateness of the programme's content, processes and time allocation for the various phases.

3.5.3 *Scheduling of "Special Life Styles Programme"*

In consultation with the DC Headmaster, the DC staff responsible for their Life Styles Programme, and the PPA, it was decided most convenient to implement the programme on 24 and 25 September - the last two days of the school's third quarter in 1991.

3.6 CONTROL TREATMENT

Development of the Life Styles control (placebo) programme was handled in consultation with the Life Styles staff members at DC. During the two-day programme a number of issues relating to human reproduction and behaviour were addressed. Table 3.4 indicates, *inter alia*, the macro-organisation of the control programme and Table 3.7 on page 64 provides details of the topics covered in the control programme during the two days and their organisation.

All the guest speakers/workshop presenters of topics in the control programme were briefed about the experimental design - and therefore the necessity of tactfully postponing the answering of any questions about HIV/AIDS which control students might pose during the programme.

3.7 ORGANISATION AND CO-ORDINATION OF THE TREATMENTS

3.7.1 *Macro-Organisation*

The experimental and control programmes were organised so that they operated at different geographical venues on alternate days in order to minimize: (a) instructional contamination of content between programmes; and (b) the effect of context on the experimental and control groups. Table 3.4 summarizes the macro-organisation of the experimental and control programmes.

Table 3.4: Macro-organisation of the experimental and control programmes

Programme:	HIV/AIDS Prevention Programme (APP)	Life Styles Programme (issues relating to human behaviour and reproduction)
Groups:	A and B (experimental)	C and D (control)
Duration:	10 hours	10 hours
Implementation time:	24 and 25 September 1991	24 and 25 September 1991
Venue: Day 1 Day 2	 DC UCT	 UCT DC
Instructors/ Facilitators:	Refer to Tables 3.3, 3.5 and 3.6	Refer to Table 3.7

3.7.2 *Detailed Organisation*

In the experimental programme wherever two instructors were involved in executing the programme to Groups A and B separately, but concurrently, an attempt was made to make the execution of the programme as homogeneous as possible. Tables 3.5 and 3.6 on pages 62-63 provide a detailed summary of Days 1 and 2 respectively of the APP.

Table 3.7 on page 64 provides a detailed summary of the content and organisation of the two-day life styles (control/placebo) programme.

Table 3.5: Detailed organisation of Day 1 of the experimental programme

EXPERIMENTAL PROGRAMME **HIV/AIDS Programme - Day 1 - Diocesan College**		
Timetable	**Topic(s)**	**Presentation Mode**
08h00 - 09h30	I. Knowledge of HIV/AIDS Programme from 08h00 to 14h45 run by 2 *female* instructors from the Planned Parenthood Association of the Western Cape.	Workshop (n=2x15)
10 minute break		
09h40 - 11h10	II. Understanding	Workshop (n=2x15)
20 minute break		
11h30 - 13h00	III. Emotional / Affective Element	Interaction with a Person (*male*) with AIDS Workshop (n=30)
30 minute lunch break		
13h30 - 14h45	IV. Life-Style Options in the "Era of AIDS" VII. A. Proper Use of Condoms	Workshop (n=2x15)

Table 3.6: Detailed organisation of Day 2 of the experimental programme

EXPERIMENTAL PROGRAMME **HIV/AIDS Programme - Day 2 - UCT**		
Timetable	**Topic(s)**	**Presentation Mode**
08h00 - 09h30 *08h20 - 09h30*	Caring Relationships Presented by a Sexologist (*male*)	Lecture followed by a discussion (One group n=30)
10 minute break		
09h40 - 11h10 *10h00 - 11h30*	1. Exploring Self-Concept and Peer Pressure 2. Toxicity 3. Summary Two Clinical Psychologists (*both males*) presented this programme from 09h40 to 14h20	Workshop (Two groups n=15x2)
10 minute break		
11h20 - 12h00 *11h40 - 12h45*	Reframing	Workshop (n=15x2)
30 minute lunch break		
12h30 - 13h45 *13h15 - 13h45*	Condoms	Workshop (n=15x2)
13h45 - 14h20	Assertiveness training	Workshop (n=15x2)
14h20 - 15h00	Comprehensive questionnaire (CQ) administered to respondents in Groups A and B	

Times in italics indicate the actual (versus intended) implementation times (§3.9.6 refers)

Table 3.7: Detailed organisation of Days 1 and 2 of the control programme

CONTROL PROGRAMME		
Life Styles Programme - Day 1 - UCT		
Timetable	**Topic**	**Presentation Mode**
08h00 - 09h30 *08h20 - 09h50*	Interpersonal Conflict Resolution Presented by a practising Educational Psychologist	Workshop (n=30)
10 min. break		
09h40 - 11h10 *10h00 - 11h30*		
20 minute break		
11h30 - 13h00 *11h45 - 13h15*	Substance Abuse (alcohol and drugs) Jointly presented by two SANCA Instructors	Workshop (n=30)
30 minute lunch break		
13h30 - 14h45 *13h45 - 15h00*	Women's Perspectives Jointly presented by two UCT Post-Graduate Women	Workshop (n=30)
Life Styles Programme - Day 2 - Diocesan College		
08h00 - 09h30	Media and Values Presented by a professional communicator/educator in film and video	Workshop (n=30)
10 minute break		
09h40 - 11h10	Marriage, Divorce and Remarriage Presented by a specialist in marriage preparation and counselling - from the Anglican Church	Workshop (n=30)
10 minute break		
11h20 - 12h50	Medical Genetics and Mankind Presented by a Professor of Genetics from UCT'S Dept. of Human Genetics	Lecture followed by questions (n=30)
30 minute lunch break		
13h20 - 13h50	Teenage Pregnancy - Options Presented by the Life Styles Specialist at Diocesan College	Lecture followed by questions (n=30)
13h50 - 14h30	Comprehensive questionnaire (CQ) administered to respondents in Groups C and D	

Times in italics indicate the actual (versus intended) implementation times (§3.9.5 refers)
SANCA = South African National Council on Alcoholism and Drug Dependence (Western Cape Society)

3.8 MEASURING INSTRUMENTS

3.8.1 The Comprehensive Questionnaire (CQ)

The instrument used to measure the four fixed/explanatory and six outcome variables investigated in this study took the form of a Comprehensive Questionnaire (CQ). The CQ was used as a repeated measures instrument at pre-, post-, and follow-up-testing.

The CQ comprised ten measures as shown in Table 3.8. Of the ten measures nine were developed specifically for this investigation. Most were piloted and modified prior to use. However, in order to improve the quality of the research results, seven of the nine CQ measures subsequently underwent refinement - that is, after the programmes had been implemented and the CQ utilised at pre-, post- and follow-up-testing - as a preliminary part of the statistical analysis of data generated by the CQ measures during the study. Amendments made to measures as a result of this additional refinement process involved only the elimination of certain items from a measure. With respect to the refined measures the data analyzed in Chapter 5 was that generated only by items remaining in the refined measures. Chapter 4 presents a detailed description of the development, modification, and refinement of the CQ.

The tenth measure, the RSE Scale (Rosenberg's Self-Esteem Scale 1965), having been established as a valid and reliable measure of this construct, was incorporated into the CQ without any changes.

3.8.2 The Supplementary Questionnaire (SQ)

An auxiliary instrument, in the form of a Supplementary Questionnaire (SQ), was also employed in the investigation (Appendix D). It was administered to students in experimental Groups A and B only, immediately following their completion of the CQ at follow-up-testing, six-and-a-half weeks after the conclusion of the APP intervention (Table 3.8).

The SQ was employed in order to (a) gauge student satisfaction with the APP; and (b) provide some qualitative feedback which might inform HIV/AIDS programmes in the future.

Table 3.8: Details of instruments used in the investigation

Comprehensive Questionnaire (CQ)	Measure	Time I Pre	Time II Post-	Time III Follow-up-	Final Versions
		Groups	Groups	Groups	
Fixed (Explanatory)	Drinking Habits	A,C,E	A,B,C,D	A,B,C,D	O
	Attitude towards alcohol use (**ATAU** Scale)	A,C,E	A,B,C,D	A,B,C,D	■
	Rosenberg's Self-Esteem (**RSE** Scale)	A,C,E	A,B,C,D	A,B,C,D	O
	Demographic characteristics	A,C,E	A,B,C,D	A,B,C,D	O
Outcome (Dependent)	Knowledge and understanding of HIV/AIDS (**KI**)	A,C,E	A,B,C,D	A,B,C,D	■
	Attitude towards people with AIDS (**APWA** Scale)	A,C,E	A,B,C,D	A,B,C,D	■
	Self-efficacy with respect to avoiding sexual HIV transmission (**SE1** Scale)	A,C,E	A,B,C,D	A,B,C,D	O
	Self-efficacy with respect to reducing risk of sexual HIV transmission (**SE2** Scale)	A,C,E	A,B,C,D	A,B,C,D	■
	Perceived Social Norms (**PSN** Scale)	A,C,E	A,B,C,D	A,B,C,D	■
	Perceived threat (**PT** Scale)	A,C,E	A,B,C,D	A,B,C,D	scale discarded
Supplementary Questionnaire (**SQ**)	Section A	-	-	A,B	n/a
	Section B	-	-	A,B	n/a
	Section C	-	-	A,B	n/a

■ *refined* O *not refined*

The SQ comprised three sections:

- Section A: requested subjects to give a rating to each of the five phases of the APP, on a ten-point scale;
- Section B: requested subjects to give a rating to the APP as a whole, on a ten-point scale; and
- Section C: subjects were told to assume that they were being asked to design an HIV/AIDS programme for their peers. They were requested to give a written critical evaluation of the APP by answering the following three structured, but open questions:

(a) what phases of the APP would they exclude? (with reasons)

(b) what phases could be improved upon? (with suggestions)

(c) what, if any, other sections would they include? (with an outline of its content(s) and reason(s) for inclusion(s)).

3.9 IMPLEMENTATION OF THE INVESTIGATION

3.9.1 Pretesting Day - 11 September 1991

Briefing of DC Students

All the Standard 9 DC students were assembled in the DC Memorial Theatre. The Senior Master-in-Charge of the Life Styles Programme addressed the group, in the presence of the author.

In essence the Senior-Master's address incorporated the following:

- Introduction of the author as one of the organisers of the "Special Life Styles Programme".

- Students who were chosen to participate in the two day programme would be required from 07h40 to 15h00 on both days (i.e. Tuesday 24 and Wednesday 25 September 1991).

- It was essential that students selected should commit themselves fully and genuinely to the programme - therefore, if anyone either felt, or knew, that he was unable, for any reason, to make the commitment, he should let us know before he left the meeting, so that we could remove his name from the ballot.

- Students were told the topics that would be included the "Special Life Styles Programme".

- Students were told that because the "Special Life Styles Programme" would be over and above the school's normal Life Styles Programme, we were keen to obtain their reactions to it. Accordingly, in order to assess its effectiveness, they would be asked to complete questionnaires which would assess their levels of knowledge

and their attitudes. Students could expect some of the questions to be very direct and explicit - but that by now it was believed that such questions would neither offend nor threaten them. Most importantly we needed to assure them that we were not interested in knowing "who" said "what". However, for the purposes of follow-through we needed to be able to match one set of answers to the next. Therefore we would assign each of them a three-digit computer code which would protect their identity and the confidentiality of their responses.

Pretesting of Groups A, C and E

Students whose names had been randomly selected from the study population and allocated to Groups B and D were told they could leave the Memorial Theatre. The pretest CQ was then administered to the remaining students (i.e. Groups A, C and E) under examination conditions (Appendix B:8-11).

Absentees

One student from Group A, two students from Group C, and three students from Group E were absent from school on pre-testing day (column 2, Table 3.9).

Students unable to participate in the programme

One student from each of Groups A and B indicated that they would be unable to participate in the two-day Life Styles programme owing to prior school commitments (column 3, Table 3.9).

3.9.2 *Briefing of APP Presenters*

A final briefing of the professional staff who were to be involved in implementing the APP was conducted on Monday 14 September 1991. Due to other commitments, the part-time PPA staff member and the sexologist were unable to attend this final briefing.

3.9.3 *Provisional List of Programme Participants*

From the original four samples of twenty students each, and excluding those students who had either been absent on pretesting day, or who had indicated that they were unable to participate in the programme, a provisional list of participants (and reserves) was drawn up and posted on the school's notice boards (column 4, Table 3.9) on Friday 20 September 1991.

Table 3.9: Details of student attrition from pretest day to the start of the two-day intervention (11 - 23 September 1991)

Original Group and Numbers	Pretesting 11.9.91		20.9.91	23.9.91	23.9.91
	# present	# indicating they could not participate	Provisional list of participants	# absent on day before programme due to begin	Final list of participants
A 20	19	1*	15 [+ 3 reserves]	3*	15 [+ **2** reserves from Group E]
B 20	n/a	1	15 [+ 4 reserves]	1	15 [+ 3 reserves]
C 20	18	0	15 [+ 3 reserves]	2*	15 [+ 1 reserve + **1** from Group E]
D 20	n/a	0	15 [+ 5 reserves]	1	15 [+ 4 reserves]
E 20	47	n/a	n/a	n/a	n/a

* *these students' pretest CQs were added to those of Group E - refer to §3.9.9*

3.9.4 *Final List of Programme Participants*

On Monday 23 September 1991 the final list of participants (and reserves) was drawn up (column 6, Table 3.9) and posted on the school's notice boards. Three Group A students and two Group C students were absent from school on this Monday prior to the start of the two day intervention (column 5, Table 3.9). Their names were removed from the provisional list as it was assumed that they probably would not be present the next day. In order to provide reserves for Groups A and C three students were drawn from Group E (bold numerals, column 6, Table 3.9).

3.9.5 *Implementation (Day 1) - 24 September 1991*

The start of the control programme, at UCT, was delayed by 20 minutes (Table 3.7 on page 64 indicates the actual implementation times in *italics*). An unanticipated traffic jam held up the prompt arrival of participants on campus. Striking UCT workers barricaded the two entrances to campus (West 1992:9), causing extensive traffic jams in the area during peak-hour traffic.

Student attrition

Column 3 in Table 3.10 indicates the number of participants in each group absent from school on Day 1 of the intervention.

Table 3.10: Details of student attrition from the start of the two-day programme to post-testing (24 - 25 September 1991)

Group	# on final list	# absent on Day 1 only	# absent on Day 2 only	# absent on Day 1 and 2	# absent for post-test only	Instances of absenteeism	# completing post-test
A	17	2	2	0	1	5*	12
B	18	0	1	3	0	4	14
C	17	1	1	1	0	3*	14
D	19	2	5	2	1	10	9

* *these student's pretest CQs were added to those of Group E - refer to §3.9.9*

3.9.6 *Implementation (Day 2) - 25 September 1991.*

At midday on Tuesday 24 September 1991, UCT had obtained a Supreme Court interdict prohibiting workers' presence on campus until the strike had been settled. However, on Wednesday 25 September 1991 UCT students barricaded the campus entrances for two hours in the morning (West *op.cit.*).

Consequently, despite leaving DC much earlier, to obviate another possibly late start, the commencement of the experimental programme was delayed by 20 minutes. Furthermore, during the sexologist's lecture, Dr S. Saunders, the Vice-Chancellor of UCT, closed the university after warnings of possible violence (West *op.cit.*). As a result, a further thirty minutes had to be trimmed from the remaining section of the APP owing to the delay caused by:

(a) returning the participants to DC;

(b) organising suitable venues at DC;

(c) advising the two Clinical Psychologists of the last-minute change of venue; and

(d) organising staggered lunch and tea breaks for participants in the experimental and control programmes so that they did not have an opportunity to meet and discuss their respective programmes.

Table 3.6 on page 63 shows the revised implementation times in *italics*.

Student attrition

Column 4 (Table 3.10) records the number of students in each group absent from school on Day 2 of the programme.

Post-testing Groups A, B, C and D

At the end of the second day of the intervention the CQ was administered to all four groups. One student was absent from Group A and one from Group D (column 6, Table 3.10).

3.9.7 Follow-up-test and Supplementary Questionnaire

The CQ was administered to all students who had participated in the entire two-day programme, who had completed the post-test CQ, and who were present at DC on 11 November 1991.

Following completion of the follow-up-test CQ all students who had participated in the experimental APP were asked to complete the SQ. No time strictures were given for its completion, and, unlike the CQ, it protected students' anonymity totally as no computer-coded identity numbers were used. Participants were specifically requested not to put their names on the questionnaire.

Student attrition

At follow-up-testing two Group A students, one Group B student, three Group C students and one Group D student were absent from school (column 5, Table 3.11).

3.9.8 Student Attrition during the Study

Table 3.11 summarizes student attrition which occurred between pretesting and post-testing, as well as between post- and follow-up-testing.

Assuming that random assignment of subjects to groups and treatment conditions had resulted in groups which were initially comparable with respect to variables measured in the investigation, attrition of subjects during the investigation could have resulted in groups which were no longer comparable - at either pretesting or post-testing or follow-up-testing. Any such non-equivalence might be the cause of any outcome differences. It was therefore considered important to determine the reason for each subject's absence

during the investigation, to establish whether those reasons might be associated with treatment differences.

Table 3.11: Student attrition (%) between pre- and post-testing and between post- and follow-up-testing

Group	Pretest (n)	Post-test (n)	Student Attrition (%) between Pretesting and Post-testing	Follow-up-test (n)	Student Attrition (%) between Post-testing and Follow-up-testing
A	15	12	3 (20)	10	2 (17)
B	n/a	14	n/a	13	1 (7)
C	15	14	1 (7)	11	3 (21)
D	n/a	9	n/a	8	1 (11)

Each student was approached in a non-threatening manner and asked for the reason for his absence. It appeared that half the absences related to seeking medical attention for sports injuries. Although not a generally acceptable practice at DC, at the end of an academic term it is condoned. With respect to the other absences, although students had been requested to commit themselves to participating in the programme in a wholehearted fashion, the fact that each group had more than the fifteen names listed was not clearly understood by students - some had felt that if they were not going to be present and another person could replace them, then it was acceptable to be absent. Thus it appeared that student attrition was not treatment-related.

Nevertheless, before analysing the data, group comparability on the CQ measures was checked in the pretested groups (Chapter 5).

3.9.9 *Final Composition of Group E*

With respect to the neutral, additional group of DC students who were pretested - that is Group E - forty-seven students completed the pretest CQ. One student in Group A (see asterisk, column 3, Table 3.9) completed the pretest CQ but indicated that he was unable to participate in the programme - because of a commitment in the music department. His CQ was added to Group E (n=48). In constructing the final list of participants for the programmes, three students were drawn from Group E to provide reserves for Groups A and C (bold numerals, column 6, Table 3.9). Thus, only 45 students remained in Group E at the start of the programme. However, three and two students respectively were absent from Groups A and C on the day prior to the

programmes' implementation (see asterisks, column 5, Table 3.9) and their pretest CQ's were added to the 45 records already in Group E (n=50). Additionally, five and three students respectively, from the entire set of students (i.e. participants and reserves) in Groups A and C were absent on either Day 1 and/or Day 2 of the programme or absent for the post-test CQ (asterisks, column 7, Table 3.10 refer). The pretest CQ data of these 8 students were also added to the data from Group E. Therefore the total number of records (i.e. number of CQ) in Group E was fifty-eight.

Figure 3.3 illustrates diagrammatically the actual (versus intended) implementation of the extended Solomon four-group experimental design.

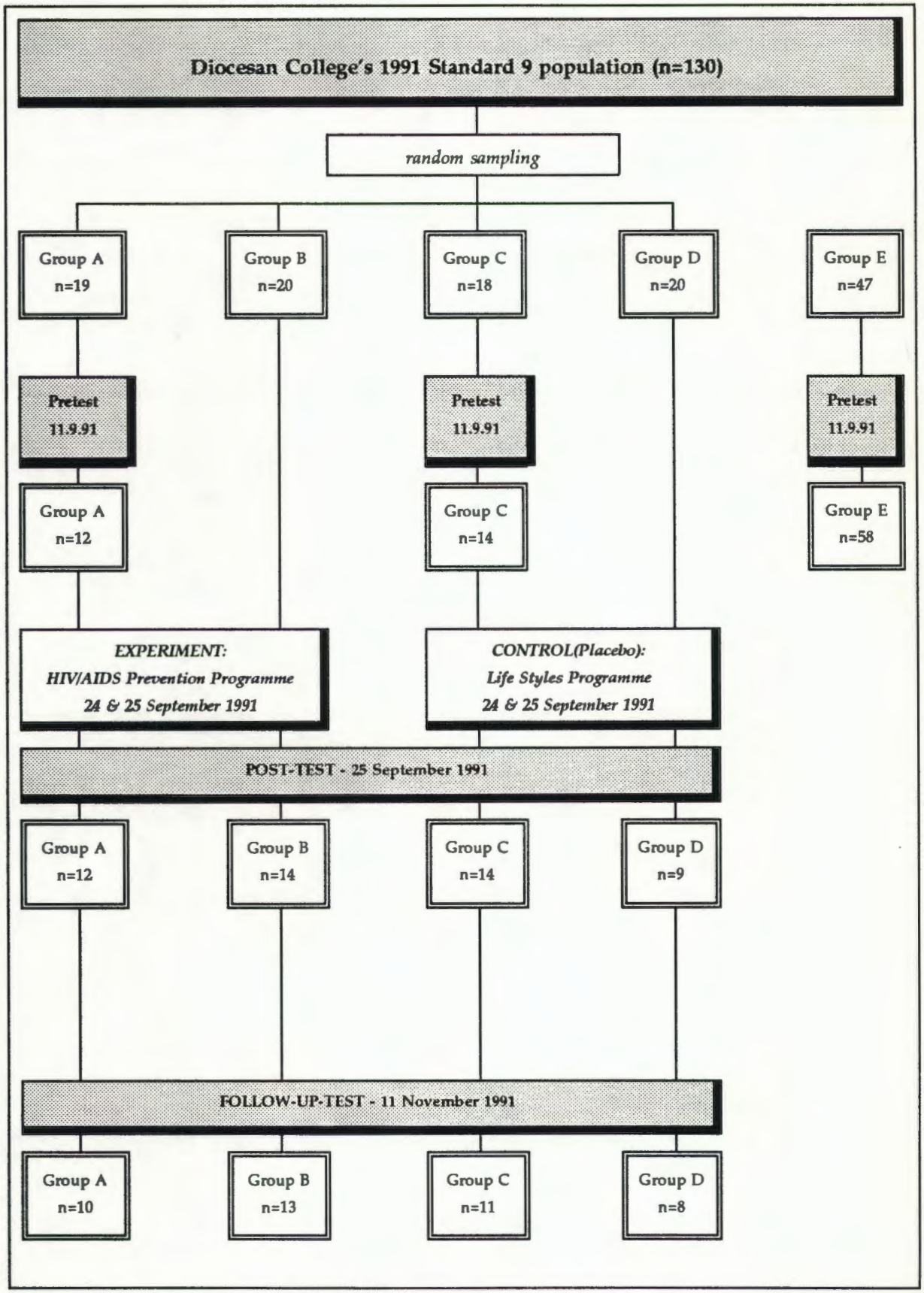

Figure 3.3: Diagrammatic representation of the actual implementation of the extended Solomon four-group research design

3.10 CODING OF CQ

Each student's responses to items in the CQ was coded by the author in the following manner:

- Responses to items in §§ A, B, C, D, E, F and H were coded in such a way that if the student responded to the first option offered, it was coded 1, if the second response option offered was checked it was coded 2, and so on (Appendix B:12-14; 28; 32; and 35). Code numbers were entered into the numbered box in the column printed on the extreme right hand side of the page opposite the item in the printed CQ (Appendix C).

- Responses to § G (Rosenberg's Self-Esteem Scale) of the CQ were coded and scored at the same time by using a cardboard cut-out marking key as shown in Appendix B:71, Table 4.51.

- Where more than one response was made to an item, the item was coded as a 7.

- Where no response was given to an particular item the non-response was coded as 0.

3.11 DATA CAPTURE AND VERIFICATION

The coded CQs were arranged into eleven sets according to their groups and testing times as indicated in Table 3.12. Within each group's data set, the CQs were arranged in numerical order according to the three digit computer identification codes corresponding to individual respondents.

These eleven sets of pre-coded and pre-sequenced CQs were submitted to the Information Systems section of the Information Technology Services at UCT for data capture and verification. The coded data was captured, verified and stored in the form of an ASCII file which was subsequently copied onto the VAX machine.

Table 3.12: Arrangement of eleven CQ data sets for data capture and verification

Pretest Data Sets	Post-Test Data Sets	Follow-up-Test Data Sets
A_1 C_1 and E	A_2 B_2 C_2 and D_2	A_3 B_3 C_3 and D_3

3.12 DATA TRANSFORMATION

3.12.1 Scoring of Items in CQ Measures

The scoring of items in the refined CQ was performed by writing a program into the BMDP[3] package using the item scoring memoranda shown in Appendix B:12-14, 28, 32, and 35, Tables 4.13-4.16, 4.22, 4.23, 4.27, 4.28, 4.30, 4.31 respectively.

3.12.2 Composite Scores on CQ Measures

Composite scores were computed for each of the following measures: KI; APWA, SE1, SE2, PSN, PT, ATAU and RSE Scales. Frequency tables were computed for group responses to each response category of every item in: § F (Q1) drinking habits, and § G demographic characteristics.

3.12.3 Composite Scores on Refined CQ Measures

For each of the CQ measures which had undergone refinement after the completion of the data collection (i.e. KI, APWA, SE2, PSN and ATAU Scales) only the scores for items retained in the refined measure were used in computing composite scores on these measures, for each student, in each of the eleven data sets.

Tables 3.13 and 3.14 indicate the time structure and use of the eleven data sets generated by the five DC groups during the investigation, with respect to the four fixed/explanatory and five outcome measures, respectively, of the refined CQ. Analysis of these data sets in discussed in detail in Chapter 5.

[3]BMDP is the acronym for the Bio-Medical Data Processing. It is the registered trademark of BMDP Statistical Software, Inc.

Table 3.13: Time structure and use of four fixed / explanatory measures in the five DC Groups: A through E

Possible Fixed /Explanatory Variables	Pre-tested Group	Pretested Groups (subscript 1)		Post-tested Groups (subscript 2)		Follow-up-tested Groups (subscript 3)	
	Neutral (n=58)	Experimental (n=12)	Control (n=14)	Experimental A(n=12) B(n=14)	Control C(n=14) D (n=9)	Experimental A(n=10) B(n=13)	Control C(n=11) D (n=8)
Demographic characteristics	E	A_1	C_1	[A_2] and B_2	[C_2] and D_2	[A_3] and [B_3]	[C_3] and [D_3]
Drinking habits	E	A_1	C_1	[A_2] and B_2	[C_2] and D_2	[A_3] and [B_3]	[C_3] and [D_3]
ATAU Scale	E	A_1	C_1	[A_2] and B_2	[C_2] and D_2	[A_3] and [B_3]	[C_3] and [D_3]
RSE Scale	E	A_1	C_1	[A_2] and B_2	[C_2] and D_2	[A_3] and [B_3]	[C_3] and [D_3]

[ ] *Data used only in transformations*

Table 3.14: Time structure and use of five outcome/dependent measures in the five DC Groups: A through E

Outcome Measures	Pre-tested Group	Pretested Groups (subscript 1)		Post-tested Groups (subscript 2)		Follow-up-tested Groups (subscript 3)	
	Neutral (n=58)	Experimental (n=12)	Control (n=14)	Experimental A(n=12) B(n=14)	Control C(n=14) D(n=9)	Experimental A(n=10) B(n=13)	Control C(n=11) D(n=8)
KI	E	A_1	C_1	A_2 and B_2	C_2 and D_2	A_3 and [B_3]	C_3 and [D_3]
APWA	E	A_1	C_1	A_2 and B_2	C_2 and D_2	A_3 and [B_3]	C_3 and [D_3]
SE1	E	A_1	C_1	A_2 and B_2	C_2 and D_2	A_3 and [B_3]	C_3 and [D_3]
SE2	E	A_1	C_1	A_2 and B_2	C_2 and D_2	A_3 and [B_3]	C_3 and [D_3]
PSN	E	A_1	C_1	A_2 and B_2	C_2 and D_2	A_3 and [B_3]	C_3 and [D_3]

[ ] *Data used only in transformations*

3.13 SUMMARY

Chapter 3 began by explaining the ongoing evaluation of the APP, the experimental design, and the selection of population, subjects and samples. Subsequently the development of the experimental and control programmes, organisation and co-ordination of the treatments, and the measuring instruments have been described. Finally, the implementation of the investigation, coding of the CQ, data capture and verification, and data transformation details have been explained.

Chapter 4 will provide a detailed account of the development, modification, and refinement of the Comprehensive Questionnaire which was used as a repeated measures instrument in the investigation.

CHAPTER 4

DEVELOPMENT, MODIFICATION AND REFINEMENT OF THE COMPREHENSIVE QUESTIONNAIRE

CHAPTER 4

DEVELOPMENT, MODIFICATION AND REFINEMENT OF THE COMPREHENSIVE QUESTIONNAIRE

4.1 INTRODUCTION

Chapter 3 explained the research design, organisation and development of the experimental and control programmes, implementation of the interventions and administration of the Comprehensive Questionnaire (CQ) and Supplementary Questionnaire (SQ). It also presented details of student attrition, coding of the CQ, data collection and verification, and the scoring and data transformation of all quantitative measures contained in the SQ and refined CQ.

This chapter gives the rationale for the CQ design; the objectives of each measure; a description, where relevant, of how an already existing measure was used or how the measure was developed; where relevant, the methodology employed in (a) modifying the measure, and (b) refining the measure; the final properties and parameters of each measure; and, finally, the rationale used in the assembly of the CQ.

The CQ developed for this investigation includes eight sections, §A through §H, designed to measure the four explanatory variables and six outcome variables (marked *) investigated in the study. That is:

§ A - knowledge of HIV and AIDS* (KI);
§ B - attitude towards people with AIDS* (APWA Scale);
§ C - self-efficacy with respect to avoiding the sexual transmission of HIV* (SE1 Scale); and self-efficacy with respect to reducing the sexual transmission of HIV* (SE2 Scale);
§ D - perception of social norms with respect to AIDS preventive behaviour* (PSN Scale);
§ E - perception of personal vulnerability to HIV infection* (PT Scale);
§ F - alcohol habits; and attitude towards alcohol use (ATAU Scale);
§ G - self-esteem (Rosenberg's Self-Esteem Scale (1965) RSE Scale); and
§ H - demographic characteristics.

4.2 CQ DESIGN AND DEVELOPMENT

Because the CQ was to be administered to groups of students for self-completion, it was decided to use closed items with fixed response options. The following rationale guided this decision. Firstly, with a time constraint of one hour and the need to measure ten variables, the closed method would be most economical with respect to ease and speed of answering, and would therefore increase the number of questions which could be asked. Secondly, answers to closed questions are easier to code and process. Thirdly, data processing would be less expensive and time-consuming. Fourthly, scoring would be objective. Fifthly, analysis of data is easier in this form (Churchill 1979, Henerson *et al.* 1978). Sixthly, the questions asked, their response options and sequencing are predetermined and the same for all respondents, and this structure helps to increase the chance that each item will have the same meaning for all respondents (Backstrom and Hursh-César 1981). Equivalently, respondents will not be subject to interviewer bias (Churchill *op.cit.*). Finally, fixed format responses are generally considered to be less threatening to respondents (Churchill *op.cit.*) and tend to encourage more candid responses, particularly on sensitive issues (Babbie 1973).

In 1991 the CQ was designed and developed over three months prior to the commencement of the investigation using the technical directives and checks and balances offered by questionnaire practitioners such as Oppenheim (1966), Babbie (*op.cit.*), Henerson et al. (*op.cit.*), Orlich (1978), Churchill (*op.cit.*), Belson (1981), Backstrom and Hursh-César (*op.cit.*), Wolf (1988), Youngman (1978) and Sudman and Bradburn (1982).

Following implementation of the intervention, and prior to the final statistical analysis of the investigation's data, additional refinement of seven measures in the CQ was performed using more structured criteria (§§4.3.8 to 4.3.10, and §4.8 and §4.9 refer). Refinement of these measures was considered necessary in order to improve the quality of the research results.

4.3 § A - KNOWLEDGE INSTRUMENT (KI)

4.3.1 Objective

§ A of the CQ, the KI, was used to measure what effects, if any, the ten hour HIV/AIDS prevention programme (APP) had on respondents' cognitive knowledge and understanding of AIDS and HIV infection.

4.3.2 *Selection of Objective Test Items*

Both true-false and multiple-choice items can be used to measure the cognitive domain objectively. True-false items are relatively easier to construct and have the advantage of being efficient. Ebel (1979:78) says that test constructors may assume that true-false items can be answered by even the slower students at a rate of two per minute. For this reason it was decided to make the majority of the objective items of the true-false type, and a minority of the multiple-choice type. To encourage honest responses and to discourage blind guessing, an additional response choice was included for all items in this section - a "do not know, not sure" response option.

4.3.3 *Number of Items*

Since the reliability of a test is in part determined by the number of items it contains (Marshall and Hales 1971:207) it was decided to examine the cognitive domain relating to HIV and AIDS in depth and not rely on a superficial sampling of questions from the universe. However, because knowledge is not the only variable to be measured by the CQ, its length was seen to be a critical determinant. That is, the CQ ought not to be so long that respondents become fatigued and lose interest - factors which might prevent them from completing the questionnaire (Orlich *op.cit.*:36). Since the scheduled testing period at the end of the intervention in 1991 was three quarters of an hour, and the knowledge section of the intervention was to take half the scheduled intervention time, it was decided that the final KI should contain about half the number of items in the CQ i.e. the number of items contained in the instrument would be in proportion to its emphasis in the planned intervention. Using Ebel's guideline for test length, this meant that Section A would contain approximately sixty objective items.

4.3.4 *Assembly of Item Pool*

Objective items were assembled in 1991 from a variety of sources: some were drawn from other researchers' measures - for example extensive use was made of the Revised AIDS Knowledge Assessment Questionnaire developed and used by Huszti *et al.* (*op.cit.*), and the World Health Organisation's (WHO) standardised questionnaire on knowledge on AIDS (February 1989); some items arose from suggestions in the research literature studied (e.g. Aggleton *et al.* 1989); some stemmed directly from medical facts about the syndrome; still others were included for reasons based on discussions with Standard 9 students known personally by the author. The guidelines for writing effective true-false questions, as expounded by Herman (1988:359), Ebel (*op.cit.*:121-131), and Marshall and Hales (*op.cit.*:114-122), were followed in assembling and/or constructing these items.

Ebel (*op.cit.*:129) reports that false statements often have been found to be more discriminating than true statements and he therefore recommends that in the development of a test one should attempt to have more false than true statements. The author was unable to implement this guideline fully (prior to refinement of the KI there were 21 false items and 27 true items; after refinement the KI had 9 false items and 10 true items).

Initially 100 knowledge items were assembled. These were scrutinized for respondent understanding among seven available undergraduate and postgraduate students living in the same university residence as the author. Seventy-four of these 100 items, appearing to be free from major errors or ambiguities, were selected for initial piloting.

4.3.5 *Initial Piloting of Items*

In accordance with Belson's (*op.cit.*) advice that piloting should uncover any misunderstanding of items, the 74 items (which appeared free from major errors or ambiguities) were further piloted with a group of 18 Biology Method students, reading for a Higher Diploma in Education at the University of Cape Town (UCT) in 1991. Immediately after participating in an interactive lecture on writing good objective test items, the students were presented with the HIV/AIDS items. Initially they were instructed to answer all the questions and note down the period of time it took to complete them. They were then asked to work in pairs on sets of items, using the information to which they had just been exposed in the lecture, to apply the criteria to the set of items. They were encouraged to be highly critical and to discuss perceived shortcomings - such as grammatical errors and ambiguities - with the author, and to write down their comments in the half-page left blank opposite the items. The author then used the verbal and written feedback provided by the students to modify the wording and/or phrasing of those items found lacking in clarity and conciseness. Appendix B:1-6, Table 4.11 illustrates the modifications made to the piloted items before their use at pretesting. In order to uncover any remaining misunderstandings, omissions, distortions and ambiguities in the items, this revised set of questions was then given to a Standard 9 student to complete. The author then interviewed this respondent intensively, following Belson's question-testing method (*op.cit.*:390-395) to determine how each item had been interpreted and understood. A few minor modifications were made, based on recommendations emerging from this interview.

4.3.6 *Valid Sampling of Items*

For a test to be valid, the items chosen for inclusion should sample adequately the content and cognitive processes and be in proportion to their emphasis in the intervention programme (Marshall and Hales *op.cit.*:30).

The APP was designed so that the basic facts, concepts and principles relating to HIV transmission were presented first. Discussion was then opened, and the participants were encouraged to use the information they had just received to evaluate realistically the risk(s) inherent in any particular activity or situation (refer to Appendix A:3). Thus it was felt that the only level of thinking, according to Bloom's taxonomy (1956), which would be tested would be "knowledge". Therefore the classification of each item's cognitive process was not considered relevant in the context of this APP.

To meet the two remaining criteria, a Table of Specifications was constructed showing the content outline of the APP intervention (in terms of the phases of the APP), the time devoted to instruction in each phase, and the item numbers and number of items included in each content area/phase (refer to Appendix B:7, Table 4.12). The KI section of the CQ used in the investigation comprised 63 items (see Appendix C:1-7). Following the refinement of this instrument (refer to §4.3.8 through §4.3.11) the number of items included in each content area was approximately proportional to the amount of time devoted to instruction in each content area (Appendix B:7, Table 4.12, column 5 refers).

4.3.7 *Sequencing of Items*

In sequencing the items within the KI, items that dealt with the same area of subject matter were grouped together. Within this framework items were arranged in order of their perceived difficulty - from least to most difficult (Ebel *op.cit.*:90).

4.3.8 *Refinement of the KI*

Ebel (*op.cit.*:258) claims that a test composed of items selected on the basis of item analysis is almost sure to be more reliable than a test composed of an equal number of untested items. Anderson (1972) contends that, in addition to performing an item analysis, an empirical test development procedure ought to remove items which failed to discriminate between instructed and uninstructed groups, and control for pre-experimental knowledge (Hastings and Stewart 1983).

Insufficient time was available to refine the KI, by carrying out these three procedures, prior to implementation of the programme in September 1991. Consequently, refinement of the KI was carried out after the intervention. Any items eliminated as a result of these refining procedures were removed from the composite data generated during the investigation prior to statistical analysis of the data generated during the investigation, in order to improve the quality of the research findings.

Nunnally (1972:194) cautions that statistical results arising from item analysis can be taken seriously only *"if they are based on at least forty, and preferably one hundred students"*, otherwise the results are quite erratic and depend greatly on chance. As only twenty-six Diocesan College (DC) students participated in the APP the data generated from their responses at post-testing was insufficient for use in an item analysis.

In order to carry out an item analysis, additional data was required. Accordingly, it was arranged for a group of 96 Standard 9 boys at St Stithians College - a school in the Transvaal similar to that used in the investigation - to undergo a test-retest of these same items in January and February 1992. Because the sources of error operating in the test-retest method include, *inter alia*, administrative variations, variations in the test environment and the length of time between testings, procedural directives, related to minimizing these effects, were sent along with copies of the CQ to St Stithians College for the test-retest study (Appendix B:8-11 refers).

The set of data obtained from pretesting at DC in September 1991 (Groups: A (n=12), C (n=14) and E (n=58)) was used together with the data obtained from St Stithians College respondents at first testing (Group SSF (n=96)) in January 1992, to further explore sources of error in the KI (n_{total}=180).

(a) Item Analysis

To execute an item analysis one needs to calculate a difficulty index and a discrimination index for each item. The findings arising from item analysis are then used to select out valid items. Those items found to be too easy or too difficult and those items failing to discriminate between high- and low-scorers are eliminated from the measure (Marshall and Hales *op.cit.*:222).

(i) Data transformation

The data generated by the group of 180 students (see §4.3.8, para.5) in the KI section of the CQ was transformed as follows:

- for each student each item in the KI section of the CQ was scored by giving a correct answer a score of +1; an incorrect answer a score of -1; and a "do not know, not sure" response a score of 0 (Appendix B:12-14, Tables 4.13 through 4.16 show the item scoring memoranda for the five questions comprising Section A of the CQ);

- a total knowledge score for each of the 180 students was computed;

- the 180 total knowledge scores were rank-ordered; and then only the data from the top-scorers and from the bottom-scorers were used for further analysis. Ebel (*op.cit.*:262) reports Truman Kelly demonstrating that, when two extreme groups, consisting of the lowest-scoring 27 percent and the highest-scoring 27 percent of the entire set of subjects are used as criterion groups for item analysis, one can say with greatest confidence that those in the upper group are superior in the ability measured by the test to those in the lower group. Ebel goes on to say that, although the optimal sizes of the top- and bottom-scoring groups is 27 percent, these sizes are not significantly better than sizes between 25 and 33 percent. As several students shared the same total scores, the sizes of criterion groups were chosen within the 25-33 percent range - to have as close as possible two groups of equal size. Appendix B:15, Table 4.17, first row, shows the cutoff scores that define the top- and bottom-scoring groups used for the item analysis of the KI.

- for each knowledge item the frequencies of the chosen responses within the top- and bottom-scoring groups were computed and summarized using the data grid shown in Table 4.1.

(ii) Item Difficulty Index (D)

When everybody, in the top- and bottom-scoring groups, obtains the correct answer to an item, the item has a difficulty index of 1. When no-one, in either top- or bottom-scoring groups, obtains the correct answer to an item, it has a difficulty index of zero. Using the data summarised in the grids, the difficulty index of each item was calculated by applying the following formula:

$$D = \frac{1}{2}\left(\frac{R_U}{n_1} + \frac{R_L}{n_2}\right)$$

where: R_U represents the total number of top-scoring students who obtained the correct answer; and R_L represents the total number of bottom-scoring students who obtained the correct answer; n_1 represents the number of students in the top-scoring group who responded to the item; and n_2 represents the total number of students in the bottom-scoring group who responded to the item.

Table 4.1: Data grid for knowledge items

Item # _____	Correct (+1)	Incorrect (-1)	Do not know, not sure (0)	Total # of Students (n)
# of responses from top-scoring students	R_U			n_1
# of responses from bottom-scoring students	R_L			n_2
Index of difficulty (D)				
Index of discrimination (V)				

Bynner *et al.* (1979:117) report that the most discriminating items are those with an item difficulty level of 0.50. Usual limits set for an achievement test are between 0.75 and 0.25 - although some researchers prefer 0.80 and 0.20. Because the data used for item analysis was that gathered prior to the intervention, the author deemed it judicious to be conservative in eliminating items. Therefore the limits were set at 0.80 and 0.20 -with the proviso that any item found to have a difficulty index outside these limits would only be rejected if (a) it was found to be ambiguous; and/or (b) it failed to discriminate between those who were subjected to the APP and those who were subjected to the control programme.

(iii) Index of Discrimination, Item Validity (V)

The only assumption for this index is that those who possess greater knowledge will receive a higher total score on a knowledge test than will those who possess less

knowledge (Marshall and Hales *op.cit.*:227). Thus the internal measure of total score is used as the criterion against which to validate the items (Marshall and Hales *op.cit.*:226).

Using the data in the grids the discrimination index of each item was derived by applying the following equation:

$$V = \frac{R_U}{n_1} - \frac{R_L}{n_2}$$

where R_U = number of top-scoring students who obtained the correct answer; R_L = number of bottom-scoring students who obtained the correct answer; n_1 = total number of top-scoring students who answered the item; and n_2 = total number of bottom-scoring students who answered the item.

Appendix B:16-19, Tables 4.18 through 4.21, Columns 5 and 6 list the calculated difficulty and discrimination indices of the 63 items in the KI.

The literature indicates that an item which fails to discriminate between the top-scoring and the bottom-scoring groups may indicate ambiguous wording or pertain to an important, but rather isolated or little-known fact or aspect.

Marshall and Hales (*op.cit.*:232), in discussing the interpretation of discrimination indices, suggest the following guidelines:

- when above 0.60 they are unusually good;
- when between 0.40 and 0.60 they are good discriminators;
- when between 0.20 and 0.40 they are of some value in discriminating between examinees;
- when less than 0.20 the discriminatory power is so small as to be considered negligible;
- when negative, the item exhibits negative discrimination; thus, it reduces the discrimination of the test.

On the other hand Ebel (*op.cit.*:267) suggests the following guidelines for the use of the indices of discrimination:

0.40 and up	Very good items
0.30 to 0.39	Reasonably good but possibly subject to improvement
0.20 to 0.29	Marginal items, usually needing and being subject to improvement
Below 0.19	Poor items, to be rejected or improved by revision

In the interests of keeping the numbers of items in each content area proportional to the amount of time spent on them in the intervention, and also to have a reasonably large

number of items remaining in the instrument, it was necessary to apply the rule less rigorously by using a *V* value of ≥ 0.20. As the data used in the item analysis was from that generated by students who had not received the APP (i.e. pretest data) this criterion was applied with the proviso that particular caution was placed on rejecting items found to have discrimination values of ≤0.20 at pretesting, as these could be the very items which discriminated best between the instructed and uninstructed groups at post-testing.

(b) Pretest Comparison of Groups

The pretested DC groups were small (i.e. Group A (n=12) and Group C (n=14)). To obviate possible consequences of these samples being small it was decided to use a non-parametric statistical test to examine the differences between Groups A and C at pretesting. Consequently a Mann-Whitney U-test for sets of two independent samples was used to compare group responses to each item in the KI.

A Kruskal-Wallis test for independent samples was applied to two further sets of pretest data: Groups A, C, E and SSF ($k = 4$ independent samples); and Groups A, C and E ($k = 3$ independent samples).

The null hypothesis in each of the above cases is that no location shift exists between the distributions of the populations from which the samples were drawn.

If no location shift is found between the relevant groups at pretesting, ($p \geq 0.05$ for the item), one may infer that the groups were equivalent at pretesting on that item.

Appendix B:16-19, Tables 4.18 through 4.21, Columns 2, 3, and 4 show the *p* values obtained by applying these statistical tests to each item in each of the three sets of independent pretest data investigated.

(c) Post-test Comparison of Instructed and Uninstructed Groups

In order to determine whether individual knowledge items discriminated between those who underwent the experimental APP (instructed Groups A and B), and those who underwent the control programme (uninstructed Groups C and D), it was necessary to examine the post-test data sets and compare these groups with respect to the numbers of students obtaining the correct answer to the item. Again, owing to the small size of the

groups, a non-parametric statistical test, the Mann-Whitney U-test, was applied in order to compare the following post-test data sets:

(i) Group A (instructed) versus Group C (uninstructed) - as both groups were pretested;

(ii) Group B (instructed) versus Group D (uninstructed) - as both groups were not pretested;

(iii) Groups A and B (instructed) versus Groups C and D (uninstructed).

If a location shift is found between the relevant groups at post-testing ($p \leq 0.05$) on that item, one infers that the item did discriminate between the instructed and uninstructed groups.

The *p* values obtained by applying these statistical tests to the data as explained in the previous paragraph are shown in Appendix B:16-19, Tables 4.18 through 4.21, columns 7 through 9.

(d) Interpretation of Data Obtained from Refinement Procedures

Tables 4.18 through 4.21 in Appendix B:16-19 summarize the results obtained from all three of the preceding procedures, that is (a) item analysis; (b) pretest comparison of groups; and (c) post-test comparison of instructed and uninstructed groups. Items are tabulated in four sets - following the four major content areas covered by the APP as shown in the Table of Specifications (Appendix B:7, Table 4.12).

The data sets derived for each item were examined sequentially as follows:

(i) if the DC groups were found to be non-equivalent on an item at pretesting ($p \leq 0.05$) the item was eliminated; if the groups were found to be equivalent on an item at pretesting ($p \geq 0.05$), then

(ii) the item's difficulty and item discrimination values were assessed in the light of whether or not the post-test comparison showed that the item was discriminating between the instructed and uninstructed groups. That is, if any of the three groups of compared post-test data indicated that the item was discriminating between the instructed and uninstructed groups ($p \leq 0.05$) it was inferred that the

item discriminated between those who had received the APP intervention and those who had not.

Appendix B:20-23, Figures 4.3 through 4.6 record the application of (i) and (ii) above with respect to the elimination or retention of KI items. An additional proviso was used: the number of items retained in each major content area was in proportion to the time allocated to them in the APP.

4.3.9 Consistency and Balance of Retained Items

Using the data obtained from testing and retesting the ninety-six St Stithians College students (i.e. Group SSF (first testing) and Group SSG (second testing)), 3 x 3 contingency tables were computed showing the number of students responding incorrectly (score -1), correctly (score +1), and "do not know, not sure" (score 0) at each testing. Using the data contained in each 3 x 3 frequency table the Gamma test and M^{c}Nemar's test of symmetry were applied in order to determine the consistency and balance, respectively, of respondents' answers to each item at the two testing times (BMDP[1] Manual, Program 4F:152). The Gamma and M^{c}Nemar statistics obtained are summarised in Tables 4.2 and 4.3.

Gamma values may be considered analogous to correlation coefficients, for ordinal categorical data. The range of Gamma values can vary between -1 and +1 and the greater the value of Gamma, the greater the consistency of students' responses to an item at the two testings. The Gamma values of the 23 items remaining in the refined KI ranged from 0.50 to 0.97 with a mean value of 0.71. Most of the 23 items in the refined KI appear to behave reasonably consistently over a two week period.

[1]BMDP is a registered trademark of BMDP Statistical Software, Inc.

Table 4.2: Gamma values obtained for items in the refined KI

Range of Gamma Values	Item Numbers				Total # of Items in each Range
0.90 - 1.00	2.2	3.2	3.13.2	3.13.3	4
0.80 - 0.89	3.13.1	3.13.4	5.5	-	3
0.70 - 0.79	2.4	3.9	4.5	-	3
0.60 - 0.69	1.11.5	1.11.6	2.5	3.8	10
	3.10	3.12.1	3.12.2	3.14	
	5.3.2	5.6	-	-	
0.50 - 0.59	1.5	1.10	1.11.1	-	3

M^{c}Nemar's test of symmetry (Bowker 1948) tests the equalities of frequencies in all pairs of cells that are symmetric about the diagonal of the chi-square table. This program does not compute statistics where any row or column has a value of zero (four items had insufficient data to calculate the *p* value: items 2.2; 2.4; 3.2 and 3.9). When test-retest data is not highly associated, and fails to find a significant Gamma statistic, low *p* values (0.00 to 0.09) obtained in M^{c}Nemar's test of symmetry may be attributable to asymmetric changes in responses and scores. Five items fell into this category (items 1.5; 1.10; 3.8; 3.12.1; and 3.14).

Table 4.3: M^{c}Nemar's p values obtained for items in the refined KI

Range of M^{c}Nemar's *p* Values	Item Numbers			Range of M^{c}Nemar's *p* Values	Item Numbers		
0.90 - 1.00	3.10	5.3.2	-	0.40 - 0.49	3.13.3	-	-
0.80 - 0.89	1.11.5	5.5	-	0.30 - 0.39	3.13.4	-	-
0.70 - 0.79	5.6	-	-	0.20 - 0.29	1.11.1	-	-
0.60 - 0.69	-	-	-	0.10 - 0.19	2.5	3.12.2	4.5
0.50 - 0.59	1.11.6	3.13.1	3.13.2	0.00 - 0.09	1.5	1.10	3.8
					3.12.1	3.14	-

It appears that only two items lack both consistency and balance in the refined KI - items 1.5 and 1.10.

4.3.10 Test-Retest Reliability

Using only those items that were retained following the procedures outlined in §4.3.8, a test-retest reliability analysis was performed in order to establish a coefficient of stability over 2 weeks for §A of the CQ - the refined KI. The KI total scores, obtained by the same St Stithians College students (n=96) at the two CQ administrations, were used in computing the (Pearson's Product-Moment) correlation coefficient[2] as the stability coefficient. The coefficient of stability over two weeks for the refined KI section of the CQ was found to be 0.72.

4.3.11 Properties of Refined KI

The properties of the refined KI are presented in Table 4.4.

Table 4.4: Properties of the refined KI

# of Items	Response Mode of Items	Coefficient of Stability over Two Weeks for the KI
19	true/false/do not know, not sure (9 false; 10 true)	0.72
3	multiple choice - 3 response options + an option of do not know, not sure	
1	multiple choice - 4 response options + an option of do not know, not sure	
Item difficulty indices ranged from 0.04 to 0.90 and the average item difficulty for the 23 items was 0.59. The discrimination indices for the 23 items had a range of 0.00* to 0.46 and a median of 0.25.		
Content Validity		
As the test covers a representative sample of items from the knowledge domain, and these are in proportion to their emphasis in the intervention, the refined KI may be considered to have content validity.		

* *4.3.8 (a) Item analysis (Item discrimination, para.7) provides an explanation*

[2] (Multiple regression) correlation coefficient is given under the name "multiple R" in the BMDP regression printouts. This correlation coefficient, when there is only one explanatory variable, reduces to the familiar (simple linear regression) correlation coefficient, also called Pearson's Product-Moment correlation coefficient. In the context of test-retest reliability issues the correlation coefficient between test and retest scores serves as an appropriate measure of that reliability and is used in those contexts throughout this thesis.

4.4 § B - ATTITUDE TOWARDS PEOPLE WITH AIDS SCALE

4.4.1 Objective

The attitude towards people with AIDS Scale (APWA Scale) in § B of the CQ, was used to measure what effects, if any, the APP had on respondents' attitude towards people with AIDS (PWA).

4.4.2 Assembly of Item Pool

Following a search of the literature examining people's attitude towards PWA, twenty questions were assembled using items developed by other researchers (Robinson (*op.cit.*), Brown *et al.* (1990), Macdonald and Smith (1990), Mathews *et al.* (*op.cit.*), Huszti *et al.* (*op.cit.*), and Brown and Fritz (1988)).

4.4.3 Modification of Item Wording

The wording of some of these items was changed so that each was made to reflect either (a) the personal aspect of an attitude (i.e. by using ego-centric terms); or (b) the social aspect of an attitude (i.e. by employing socio-centric aims); or (c) the active aspect of an attitude (by using action-centred items) - a rationale suggested by Hess 1978 (cited by Shrigley and Trueblood 1979:73).

4.4.4 Identification of Attitude Sub-Concepts

The modified items were then studied for the presence of any sub-components of the attitude object (i.e. PWA). Initially three sub-components were believed to be present:

(a) fear: v.i. & t. be afraid of; hesitate *to* do; shrink from do*ing*; apprehend, have uneasy anticipation of; be afraid *that*. [The Concise Oxford Dictionary 5th Ed.(1964)].

(b) prejudice: n., & v.t. preconceived opinion, bias (*against, in favour of,* person or thing); injury that results or may result from some action or judgement, as *to the ~ of;* without ~ , without detriment to existing right or claim. [The Concise Oxford Dictionary (*op.cit.*)].

(c) compassion: n. pity inclining one to spare or help, as *have ~ on us.* (compassionate a. sympathetic, pitying.) [The Concise Oxford Dictionary (*op.cit.*)].

Three postgraduate students reputed to be particularly sensitive and empathetic individuals were asked to act as judges in evaluating each of the 20 items with regard to these three sub-components. On the basis of their input, it was clear that there seemed to be only two sub-components in evidence i.e. fear and prejudice.

4.4.5 First Pilot Study

In order that the pilot study would not intrude too extensively into the students' school time, and to maximize the chance of obtaining permission from a school to access a pilot sample, it was decided that two 10-item questionnaires (Questionnaires A and B) should be constructed from the 20 item pool.

The pilot sample comprised all Standard 9 students attending their first scheduled class on 30 August 1991 at Herzlia Senior School. Herzlia Senior School is a private, fee-paying, co-educational secondary school in Cape Town with a predominantly Jewish student population.

On the day prior to the pilot study, each subject teacher who was to be involved in the administration of the instrument was given a mix of the two questionnaires (half Questionnaire A and half Questionnaire B) and the procedural directives for its administration.

Questionnaires A and B

As far as was possible the twenty items were sorted into matched pairs, based upon their similarity - for example one pair dealt with the subject of prejudice against homosexuals (homophobia). One of each pair of items was assigned to Questionnaire A and the other to Questionnaire B (see Appendix B:24-27).

Questionnaire A contained six items dealing with the fear component of a person's attitude towards PWA (one positive and five negative); and four items dealing with prejudice against PWA (one positive and three negative).

Questionnaire B contained five items dealing with the fear component of a person's attitude towards PWA (one positive and four negative); and five items dealing with prejudice against PWA (three positive and two negative).

Scoring of Responses

For scoring it was decided to use score values from 1 to 5 for the respective response categories "strongly agree", "agree", "not sure", "disagree" and "strongly disagree" to a favourable statement. Scoring was reversed for negative statements. Thus, scores were obtained such that a strongly agree response to a favourable statement and a strongly disagree response to a negative statement both received scores of one.

4.4.6 Initial Item Analysis

Data Transformation

The returned questionnaires were sorted twice:

(a) into Questionnaire A and Questionnaire B piles; and then
(b) into male students and female students.

Thus the four sub-groups comprised:

Questionnaire A - Male Students Only	(n=32)
Questionnaire B - Male Students Only	(n=50)
Questionnaire A - Female Students Only	(n=25)
Questionnaire B - Female Students Only	(n=56)

Because the actual investigation was to involve only male respondents, only the male students' questionnaires (i.e. two of these four sub-groups) were used in refining the scale.

The response made to each item, by each male respondent, was scored, and a cumulative total score calculated. The data sets derived for each sub-group - Questionnaire A male students (n=32), and Questionnaire B male students (n=50) - was separately treated as follows:

Those subjects with scores within the top 32% of all the total scores were considered to have the most negative attitude towards PWA, while those with the lowest 32% of all the total scores were considered to have the most positive/favourable attitude towards PWA. Thus only 64% of the questionnaires were used for the analysis of items in each questionnaire. According to Churchill (*op.cit.*:227-228) if an item is a good one, the mean

score for each statement for the favourable attitude group should be less than the mean score for the unfavourable attitude group. Thus, for each item in the questionnaire: (a) the frequency of responses in each category was determined for both the highest and lowest scorers; (b) each frequency was multiplied by its scale value for both the highest and lowest scorers; (c) the mean score was calculated for both groups; and finally, (d) the mean score of the highest 32% subtracted from the mean score of the lowest 32% to determine the difference in mean scores for each item. Table 4.5 illustrates the application of this procedure for item 1 in Questionnaire A.

Table 4.5: Computation of the difference in mean score values of the two extreme groups for Item # 1 in Questionnaire A

Response Category	Scale Value x	High Group (n=10)		Low Group (n=10)	
		f	fx	f	fx
Strongly agree	5	5	25	8	40
Agree	4	1	4	2	8
Not sure	3	1	3	-	-
Disagree	2	3	6	-	-
Strongly disagree	1	-	-	-	-
SUMS		10	38	10	48
MEANS		3.8		4.8	
Mean (Low Group) - Mean (High Group) = +1.0					

Results of Initial Item Analysis

Table 4.6 summarises the results obtained for all 20 items. As this scale was to form only one of the ten variables to be measured by the CQ, it was decided to limit the number of items in the scale to ten.

Selection of Items for APWA Scale

The twenty statements were rank ordered according to the difference in mean score values of the two extreme groups. Those ten items (marked (•) in Table 4.6) showing the greatest positive difference in mean score values were retained to form § B of the CQ - the APWA Scale.

A limitation of the results of this item analysis is their dependence on the small sample used for analysis (refer to Nunnally's caution cited in §4.3.8). Accordingly, all ten items were subjected to refinement using the data obtained from a larger sample of 180 respondents (refer to §4.8).

Table 4.6: Difference in means between the two extreme groups for the 20 items in Questionnaire A and B (male pilot students only (n=20))

QUESTIONNAIRE A			QUESTIONNAIRE B		
Fear Component Items			Fear Component Items		
Item #	Difference in Means (n=20)	*Item # in § B of CQ*	Item #	Difference in Means (n=32)	*Item # in § B of CQ*
1.	+ 1.00		1.	+ 1.78•	*1.*■
3.	+ 1.70•	*3.*	3.	+ 1.14	
4.	+ 2.70•	*4.*	4.	+ 1.64	
8.	+ 1.60		8.	+ 2.14•	*9.*■
9.	+ 0.90		9.	+ 2.00•	*2.*
10.	+ 0.90				
Prejudice Component Items			Prejudice Component Items		
Item #	Difference in Means	*Item # in § B of CQ*	Item #	Difference in Means	*Item # in § B of CQ*
2.	+ 0.60		2.	+ 0.71	
5.	+ 2.10•	*5.*	5.	+ 2.00•	*7.*
6.	+ 2.00•	*6.*	6.	+ 1.35•	*8.*
7.	+ 0.10		7.	- 0.07	
			10.	+ 1.36•	*10.*

• = items selected for the APWA Scale ■ = *item reworded for greater clarity*

4.4.7 Description of Unrefined APWA Scale

The ten items selected for the scale yielded a difference in mean score values ranging from + 2,70 to + 1,35. Of these ten items: five questions related to fear (and of these, all five were negatively phrased); and five questions related to prejudice (and of these, one was negatively phrased and four positively phrased).

The response categories offered were "Strongly Agree", "Agree", "Not Sure", "Disagree", and "Strongly Disagree" (see Appendix C:8).

Items were scored such that a high total score would indicate a positive attitude towards PWA (Appendix B:28, Table 4.22 refers).

4.4.8 Refinement of APWA Scale

Refinement of the APWA Scale was performed at the same time and using the same methodology as the analysis of items in the other Likert Scales (§4.8 refers).

4.5 § C(Q1) - SELF-EFFICACY SCALE (SE1 Scale)

4.5.1 Objective

The SE1 Scale (§ C, Question 1 (Q1) of the CQ) was used to measure what effect, if any, the APP had on respondent's self-efficacy with respect to avoiding the sexual transmission of HIV.

4.5.2 Assembly of Item Pool

The study population, as reported by their Life Styles teacher, was believed to be relatively sexually inexperienced (§4.6.2, Item Phrasing, para.2 refers). It was therefore considered important to include a scale which would deal with the perceived self-efficacy of respondents with respect to future behaviours involved in avoiding the sexual transmission of HIV. Ideas for items were obtained from two main sources: the study of Lawrance *et al.* (1990) on self-efficacy and AIDS prevention for pregnant teens, and from reviewing the literature pertaining to behaviours required to avoid the sexual transmission of HIV.

4.5.3 Description of Unrefined SE1 Scale

The SE1 Scale contained seven items dealing with behaviours relating to the avoidance of the sexual transmission of HIV. All seven items were positively phrased. The response categories offered were "Very Certain"; "Certain"; "Uncertain"; and "Very Uncertain" (Appendix C:9 refers).

Item scoring was done in such a manner that a high total score would indicate a greater perception of self-efficacy. Appendix B:28, Table 4.23 gives the item coding and scoring memorandum for the SE1 Scale.

4.5.4 Refinement of the SE1 Scale

Refinement of the SE1 Scale was performed at the same time, using the same methodology, as that for the Likert scales in §§ B, D, E and F (refer to §4.8).

4.6 §§ C(Q2), D AND E OF THE CQ - MODIFICATION OF KEEN'S (1990) SCALES

4.6.1 Keen's (1990) Scales

Due to difficulties related to the academic boycott of South Africa, the Keen (*op.cit.*) scales arrived by facsimile only three days before pretesting took place. The microfiche of the Keen's dissertation - "Development of scales to assess psychosocial variables related to AIDS preventive sexual behavior" arrived by post only after the intervention and post-testing had taken place. Thus, in the three days prior to pretesting, it was possible only to review Keen's Self-Efficacy Scale (SES), Perceived Threat Scale (PTS) and Social Support Scale (SSS) and make such subjective modifications as appeared necessary (§4.6.2). The three resulting scales: Self-Efficacy Scale (SE2 Scale), Perceived Threat Scale (PT Scale) and Perceived Social Norms Scale (PSN Scale) were neither piloted nor modified further prior to their use in the South African investigation.

On later receipt of Keen's (*op.cit.*) dissertation the author learned that the sample used in the development of Keen's scales were all American college student volunteers. Their ages ranged from 18 to 58 years (mean age 23.9 with 90% less than 32 years old). As none of the items in the SE2, PT, and PSN Scales (modified after Keen *op.cit.*), had been piloted with younger respondents prior to the commencement of the author's investigation, it was considered prudent to investigate the reliability and validity of all the items in these scales with adolescents. Any items shown to be unreliable and/or lacking in validity would then be dropped from the final data set of this South African investigation prior to the analysis of the results (§§4.8 and 4.9 refer).

4.6.2 *Subjective Modification of Keen's Scales*

Three of Keen's (*op.cit.*) scales were reviewed: self-efficacy scale (SES), perceived threat scale (PTS), and social support scale (SSS). Owing to the absence of Keen's supporting dissertation at this time, modifications were made to these three scales on a purely subjective basis, prior to their use in the pretest questionnaire as follows:

Length of Scales

Keen's three scales were quite long in relation to the total length of the CQ:

Self-Efficacy Scale (SES)	20 items
Perceived Threat Scale (PTS)	20 items
Social Support Scale (SSS)	27 items

The theory pertaining to questionnaire design indicates that it is important not to fatigue respondents with questionnaires that are too lengthy (see §4.3.3). Nunnally (*op.cit.*:459) suggests that in practice attitude scales should probably contain at least 10 statements. As these scales were to form only three of the ten variables measured by the CQ, each scale was shortened to include about half the number of items.

Reverse Wording

Keen appeared to use the method of reverse wording, a technique suggested by Orlich (*op.cit.*:65) to alleviate biasing any items comprising a sub-scale and to provide a means of testing respondent consistency. However, she sometimes failed to separate these reverse-worded item pairs. Orlich (*op.cit.*:38) cautions that such items ought not to follow one another otherwise the technique may become obvious to respondents and the validity of respondents' answers to these items may be compromised. In order to keep the scales as short as possible, but not to compromise the breadth of sampling from the attitude universe, it was decided not to utilize this method. It is acknowledged that by not using this method the data collected by use of these partially modified instruments could be biased and inconsistent.

Response Options

Each of Keen's three scales had a 6-point rating scale and thus no neutral response option was offered.

Anderson says that a smaller number of response options could be used to make a Likert scale more appropriate for younger respondents as they typically are able to make fewer reliable differentiations (1988a:427). Thus, at pretesting, a 4-point rating scale was used for all three scales.

Terminology Usage

Keen uses terminology relating to AIDS and HIV infection rather loosely. Where relevant these terms were modified to reflect their more accurate meanings - for example "HIV" instead of *"the AIDS virus"*. Furthermore, the literature suggested that her use of the term *"social support"* was incorrect (Turner 1992, Veiel and Baumann (Eds.) 1992). Accordingly, the modified version of Keen's Social Support Scale which was used in the current investigation, was renamed the Perceived Social Norms Scale (PSN Scale).

Item Phrasing

The phrasing of Keen's items relating to sexual behaviour implied: (a) that respondents had already become sexually active; and (b) that promiscuity was a norm among respondents. In addition it was felt that the wording of some items could be potentially offensive in the South African cultural context.

Having learnt from the teacher involved in the implementation of DC's Life Styles Programme of her perception that (a) only about 10% of the Standard 9 population had become sexually active, and that (b) promiscuity was not the norm in the sample being investigated, the author believed it important to modify the wording of these items so that these implicit assumptions were removed. Consequently those of Keen's items that were chosen for use were all carefully studied for the presence of these implied assumptions. Where present, the relevant word and/or phrase selection was modified to remove these assumptions.

Additionally, items whose phrasing was seen to be potentially intrusive and/or insensitive were revised in order to avoid possibly invading respondents' privacy or sensitivity (Orlich *op.cit.*:29-31). A local well respected and highly experienced high school English teacher reviewed all the items. Each item was checked for sensitivity; the presence of semantic problems; and difficult vocabulary which might prevent students at the Standard 9 level from clearly comprehending the statement. The requisite changes were made to those statements where any of these problems existed.

Appendix B:29-31, Tables 4.24 through 4.26 indicate:

(a) items drawn from Keen's original scale which were used in the investigation (Keen's original wording);

(b) modifications made to Keen's items used in the investigation (Modified wording); and

(c) additional items added by the author to a scale for the investigation.

4.6.3 § C(Q2) - Self-Efficacy Scale (SE2 Scale)

Objectives

§ C, Question 2 (Q2), of the CQ - the SE2 Scale (modified after Keen's SES *op.cit.*) was used to measure what effect, if any, the APP had on respondent's self-efficacy with respect to reducing the sexual transmission of HIV.

Description of Unrefined SE2 Scale

The nine items comprising the modified version of Keen's (*op.cit.*) SES Scale, referred to as the SE2 Scale, are shown in Appendix C:10, as Q2 in § C of the CQ. All nine items were positively phrased. The response options offered were "Very Certain"; "Certain"; "Uncertain"; and "Very Uncertain".

Item scoring was done in such a manner that a high total score in a scale would indicate a greater perception of self-efficacy with respect to reducing the risk of HIV contagion by sexual means. Appendix B:32, Table 4.27 shows the item coding and scoring memorandum for the SE2 Scale.

4.6.4 § D - Perceived Social Norms Scale (PSN Scale)

Objectives

§ D, the PSN Scale, was used to measure what effects, if any, the APP had on respondents' perception of social norms with respect to HIV/AIDS preventive behaviour (APB).

Description of Unrefined PSN Scale

The unrefined PSN Scale (modified after Keen's SSS *op.cit.*) contained ten items relating to perceptions of social norms with respect to APB. Five items were positively phrased and five negatively phrased (see Appendix C:11-12).

The response categories offered at pretesting were: "Strongly Agree"; "Agree"; "Disagree"; and "Strongly Disagree". However, from comments made by the students at pretesting (refer to Appendix B:33, Figure 4.7) it was obvious that a neutral response option ought to be offered, in order to avoid forcing students to choose a favourable or unfavourable response. The decision was further supported by the belief that the respondents were relatively sexually inexperienced. Thus, for the post-test and follow-up-test, a "not sure" option was added to the response categories offered in the PSN Scale (see Appendix B:34, Table 4.29, row 5).

The items were scored in such a manner that a high total score would indicate a perception of social norms supportive of APB. Appendix B:32, Table 4.28 gives the item coding and scoring memorandum for the PSN Scale.

4.6.5 § E - Perceived Threat Scale (PT Scale)

Objectives

§ E, the PT Scale, was used to measure what effect, if any, the APP had on respondents' perceptions of the threat of HIV infection.

Description of Unrefined PT Scale

The unrefined PT Scale, modified after Keen's PTS (*op.cit.*), comprised ten items dealing with personal perceptions regarding the threat of HIV infection (see Appendix C:13). Eight items were negatively phrased and two positively phrased.

Like the PSN Scale, at pretesting four response options were offered, and at post-testing and follow-up testing, a neutral response category was added (§4.6.4, para.3 refers).

The higher the score a person obtains on the scale, the greater would be their perception of being personally vulnerable to HIV infection. Appendix B:35, Table 4.30 gives the item coding and scoring memorandum for the PT Scale.

4.7 § F - DRINKING HABITS AND ATTITUDE TOWARDS ALCOHOL USE SCALE (ATAU Scale)

4.7.1 Objectives

§ F was used to determine (a) the habits of respondents with respect to alcohol consumption (Q1); and (b) respondents' attitude towards alcohol use (Q2 - the ATAU Scale).

4.7.2 Assembly of Item Pool

The items in Q1 relating to drinking habits were taken from Section 12 of the WHO's standardised interview schedule for AIDS (*op.cit.*:27). Where necessary the response categories were modified and/or added to - for example, contextualizing places where respondents normally go to drink. The information requested in Q1 was purely factual.

In Q2 the items related to attitudes towards alcohol use. The items were assembled using three main sources: two questions were derived from Q1007 in WHO's standard interview schedule for AIDS (*op.cit.*:27); the remaining items were developed using two articles on alcohol abuse in South Africa (Van Zyl 1977 and Hurford *op.cit.*) together with information gleaned from discussions with adolescents regarding their own, and their peer-group's, social mores related to the drinking of alcohol.

4.7.3 Initial Piloting of Items

Piloting of the items occurred at the same time and with the same critical assessment group of Higher Diploma of Education students at the UCT in 1991 (refer to §4.3.5). As a result of student responses to the items at piloting, one item was removed from Q1, and four removed from Q2. Appendix B:36-37, Tables 4.32 and 4.33 show the modifications made to the piloted items retained for use in the CQ.

4.7.4 Description of Modified § F

Q1 contained three items related to drinking habits (see Appendix C:15) and Q2 (the ATAU Scale) contained seven items dealing with ATAU - one was positively phrased and six negatively phrased (see Appendix C:16). Item scoring in the ATAU Scale was done in such a manner that a high total score would indicate a healthy attitude towards alcohol use. Appendix B:35, Table 4.31 presents the item coding and scoring memorandum for items in the ATAU Scale.

4.7.5 Refinement of ATAU Scale

Item analysis was performed at the same time, using the same methodology, as the analysis of items in §§ B, C, D, and E (refer to §4.8).

4.8 REFINEMENT OF SCALES - §§ B, C, D, E AND F

4.8.1 Validity

Shrigley and Trueblood (*op.cit.*) recommend that the initial step in validating a Likert attitude scale is to check each statement against Edwards' (1957) fourteen criteria for attitude statements.

Presented in Figure 4.1 on the following page is a modified set of these fourteen criteria, developed by Edwards (*op.cit.*:13-14) from those suggested by a number of researchers: Wang (1932), Thurstone and Chave (1929), Likert (1932), Bird (1940), and Edwards and Kilpatrick (1948). These criteria were used to select out the valid statements in each attitude scale, prior to item analysis.

GENERAL DIRECTIVE:

- Select statements that adequately sample the universe of the attitude object under study.

EACH STATEMENT should:

- use language that is simple, clear, and direct;
- be in the form of a simple sentence rather than in the form of a compound or complex sentence;
- be short, rarely exceeding 20 words;
- contain only one complete thought;

AVOID:

- statements that refer to the past rather than to the present;
- statements that are factual or capable of being interpreted as factual;
- statements that may be interpreted in more than one way;
- statements that are irrelevant to the psychological object under consideration;
- statements that are likely to be endorsed by almost everyone or by almost no one;
- statements containing universals such as all, always, none, and never as they often introduce ambiguity;
- words such as only, just, merely, and others of a similar nature in writing statements;
- the use of words that may not be understood by the intended respondents;
- the use of double negatives.

Figure 4.1: Modified set of Edwards' (1957) criteria for attitude statements

4.8.2 *Item Analysis*

Data Used in Item Analysis

Table 4.7 provides the details of the scales piloted and the data used for the analysis of items in these scales[3].

[3]As no neutral response category was offered in the PSN and PT Scales at pretesting at DC, only the St Stithians College sample (n=96) could be used for an analysis of items in these two scales.

Table 4.7: Details of the samples used in the item analysis of scales contained in §§ B through F of the CQ in 1991/1992

Section and Scales Piloted	Samples used for Item Analysis	School	# of Respondents	Total # of Respondents
§ B - APWA § C - SE1 § C - SE2	Groups A, C, and E together with	Diocesan College (pretested students)	(n=84)	n=180
§ F - ATAU	Group SSF	St Stithians College (students at first testing)	(n=96)	
§ D - PSN § E - PT	Group SSF only	St Stithians College (students at first testing)	(n=96)	n=96

Selecting Items with Emotional Intensity

A unique quality of an attitude which sets it apart from other psychological concepts (such as opinion, drive, trait and habit) is its evaluative or emotional quality, the tendency to be for or against an object, event, issue, or person (Fishbein and Ajzen 1975). Thus the first step in deciding whether or not a particular attitudinal statement should be retained in an instrument is to determine whether or not it displays this emotional intensity (Abdel-Gaid *et al.* (1986:826), Shrigley and Koballa (1984:113)). Many researchers simply carry out an item-total correlation in order to judge the evaluative nature of an attitude statement. However Shrigley and Koballa (*op.cit.*:117) have shown that an item can show an acceptably high item-total correlation coefficient but fail to discriminate between those respondents with a positive and those with a negative attitude towards the attitude object. Furthermore such statements often have been found to approach the level of fact - a phenomenon Likert (1932) warned against in his original treatise.

Shrigley and Koballa (*op.cit.*) contend that the items in a conceptually valid attitude scale ought to: (a) generate data that spread across the attitude continuum or even cluster at each end of the attitude scale; (b) show a low "neutral" response; and (c) discriminate between those with a positive attitude and those with a negative attitude towards the

attitude object. Judging the emotional intensity of an attitude statement therefore requires not only an acceptable item-total correlation, but a close examination of the frequency distributions of the data on each item generated by the respondents. Their methodology was employed in the analysis of items in each of the specified Likert scales.

Data Transformation

(a) The frequency distribution of responses made to each item was obtained.

(b) Responses to items were scored on a 5-point scale where a response to a favourable item was scored as follows: "Strongly Agree" 5; "Agree" response 4; "Not Sure" response 3; "Disagree" response 2; and a "Strongly Disagree" response 1 respectively. Reverse scoring was used for the unfavourable items. A total score was calculated for each respondent and then:

(i) an adjusted item-total correlation[4], mean and standard deviation were computed for each item in each Likert scale.

(ii) using the same methodology as that employed in the KI (refer to §4.3.8: (a) Item Analysis (i) Data transformation (3rd and 4th bullets)) the total scores were rank ordered, the two extreme groups selected, and the response frequencies computed for both criterion groups. Appendix B:15, Table 4.17 presents the details pertaining to the criterion groups used in the item analysis of each of the scales in § B through F of the CQ.

In order to visualise the results obtained in both (a) and (b)(ii) above, a compound line graph[5] was plotted for each item showing the frequency distribution of responses obtained: (a) for the entire group (see (i) and (ii) below); and (b) for the top- and bottom-scoring respondents (see (iii) below). The mean and standard deviation were used to judge the emotional intensity of each item. The adjusted item-total correlation was used to justify the inclusion of an item with other items in the scale. The item analysis was

[4]Respondents' total scores on the scale, less their scores for the item in question, are correlated with the respondents' item scores in each case (Oppenheim *op.cit.*:138). In the item-total validity analyses the correlation coefficient for item scores and adjusted totals is a measure of the conceptual coherence of the responses to each item with the responses to the remaining items. High correlation in this context indicates the validity of each item for inclusion in a refined scale.

[5]Theoretically the data ought to be graphically represented by histograms as the data is discrete, not continuous.

performed using a modified form of the methodology employed by Shrigley and Koballa (*op.cit.*) as described in the following paragraphs.

(i) *Bipolar Data*

By looking at the response distribution graph for the entire group, together with the group's mean score and standard deviation on the item, it was possible to determine whether or not the generated data spread across or clustered at both ends of the Likert continuum. The item's emotional intensity was questioned where the data for any item was skewed; i.e. the mean was either very high or very low and/or the standard deviation was low. The authors suggested the following *"rules of thumb"* for a 5-point Likert scale : the mean should be between 2.5 and 3.5; and the standard deviation should be somewhere between 1.0 to 1.5. However, if perfect separation is found between the responses from the high-scoring and low-scoring groups, it is likely that the item's standard deviation would be greater than 1.5. Consequently, in this investigation, the "rule of thumb" relating to standard deviation values was modified to include all values greater than or equal to 1.0.

(ii) *Neutral Data*

The response distribution graph for the entire group also displays the percentage of respondents who gave a neutral response to the item. As a neutral response erodes the principle of emotional intensity, ideally, few respondents should respond "Not Sure". Shrigley and Koballa (*op.cit.*) suggest that researchers should begin questioning items which generate neutral data of 25% or more. However, this is not a rigid cut-off point, but should serve *"as a signal; a yellow flag - not a red one"*. The percentage of neutral responses given to an item was therefore considered in the light of the adjusted item-total correlation, and corresponding mean and standard deviation; and whether or not its distribution was bipolar or skewed. A suspect item on these criteria could mean either that respondents were unwilling to commit themselves, or that the item lacked clarity or was ambiguous. Such items were removed from all the scales.

(iii) *Discrimination Index*

The graphical information from the top-scoring and bottom-scoring respondents, together with the adjusted item-total correlations, were used to determine whether

the item discriminated between respondents with the most positive attitude and those with the most negative attitude to the attitude object. For example, in a positively-phrased attitude statement the top-scoring students should cluster at the "Strongly Agree" / "Agree" end and the bottom-scoring students should cluster at the "Disagree" / "Strongly Disagree" end of the continuum. Those items failing to discriminate, and with marginal or low adjusted item-total correlations, were removed from the scale. Appendix B:38-39; 45-46; 48-49; 51-52; 58-59; 61-62, Tables 4.34 through 4.45, present a summary of the properties and item analysis, and the item discrimination data for the APWA, SE1, SE2, PSN, and ATAU scales respectively. Discussion of the rationale for the retention or elimination of items in each scale are presented in Appendix B:40-44; 47; 50; 53-57; 60; 63-66, Figures 4.8 through 4.13 respectively.

4.8.3 Results of Item Analysis

Following the rigorous refinement procedures only five of the six scales remained. The sixth, the PT Scale (§ E of the CQ) had to be discarded. Appendix B:67, Figure 4.14 gives a critical evaluation of the PT Scale as a valid implementation of the Health Belief Model (HBM).

4.8.4 Item-Total Correlation

Following the refinement of each attitude scale the adjusted item-total correlation for each included item was recalculated. The data generated by Groups A, C, E and SSF at pretesting (n=180) was used to compute these adjusted item-total correlation values for scales in §§ B, C and F; the adjusted item-total correlations for the items selected in § D were computed using the data generated by only group SSF (n=96). The ranges of values found for the adjusted item-total correlation for items in each refined attitude scale are shown in Table 4.8.

Table 4,8: Range of adjusted item-total correlation values found for items in the refined CQ scales

Section of Comprehensive Questionnaire	Refined Scale (n)	# of Items	Range of Adjusted Item-Total Correlations	Mean Adjusted Item-Total Correlation
B	APWA (n=180)	4	0.45 to 0.58	0.50
C(Q1)	SE1 (n=180)	7	0.34 to 0.53	0.44
C(Q2)	SE2 (n=180)	5	0.17 to 0.50	0.32
D	PSN (n=96)	3	0.50 to 0.62	0.54
F(Q2)	ATAU (n=180)	4	0.85 to 0.88	0.87

4.9 RELIABILITY OF REFINED SCALES §§ B, C, D and F

There are two aspects of the reliability construct which need to be investigated when developing and refining Likert scales. These are the internal consistency and the temporal stability of the scale (Crano and Brewer 1973:229).

4.9.1 Internal Consistency

The term internal consistency describes the condition in which there is a high degree of interrelatedness among items in a scale.

When Likert scales are used to assess a respondent's attitude towards a particular attitude object, an individual's response to each attitude statement is first scored and then these scores are summated to produce the individual's overall "attitude score". In order to justify this summation process, it is necessary that a high degree of interrelatedness exists among all items in the scale. If such were not the case then the adding together of unrelated responses in deriving an overall attitude score represents an exercise in self-deception. Crano and Brewer (*op.cit.*:230) report Nunnally's observation that: *"a test should 'hang together' in the sense that the items should all correlate with one another. Otherwise it makes little sense to add scores over items and speak of total scores as measuring any attribute."*

Cronbach's *"coefficient alpha"* (1951) represents the average inter-item correlation of all items constituting a scale. It represents the average split-half correlation based on all

possible divisions of a test into two equal halves or parts. It is widely regarded as the best estimate of a scale's internal consistency. In practice there is no need to compute all possible correlation coefficients as coefficient alpha values can be computed from the variances of the individual test items and variances of the total test score (Youngman and Eggleston 1982:21) as shown in the equation below.

$$\alpha = \frac{n}{n-1}\left[1 - \frac{\Sigma V_i}{V_t}\right]$$

where alpha represents coefficient alpha (the average inter-item correlation of all items constituting a scale); n is the number of items in the scale; V_i is the variance of each item; and V_t is the variance of the total score (V = standard deviation squared).

Utilizing the same data sets, already mentioned in §4.8.2, standard deviation values were computed for each refined attitude scale[6] i.e. the standard deviation of the total score and the standard deviation of each item in each of the refined attitude scales. Using the equation, coefficient alpha was calculated for each of the refined attitude scales. Table 4.9 shows the coefficient alpha values obtained for each refined attitude scale.

Youngman and Eggleston (*op.cit.*:21) report that typically coefficient alpha values of 0.70 are expected for attitude scales. Using this guideline, all the scales investigated, apart from the SE2 Scale, achieved values greater that 0.70. Crano and Brewer (*op.cit.*:230) and Anderson (1988c:425) on the other hand suggest that the alpha coefficient ought to be at least 0.80 in order to satisfy the criterion of internal consistency. Only the ATAU Scale obtained an alpha coefficient value greater than 0.80. Anderson (1988c) however quotes a coefficient alpha value of 0.80 for a well-developed attitude scale with ten items. Crano and Brewer (*op.cit.*) also point out that a possible reason which would explain the failure of a scale to achieve a coefficient alpha value greater than or equal to 0.80 could be that it contains an insufficient number of items. Nunnally (*op.cit.*:459) suggests that in practice attitude scales should probably contain at least ten items. All the refined attitude scales contain fewer than ten items and this may very well be the reason for the lower coefficient alpha values obtained.

[6]With respect to the ATAU Scale only the data from students who indicated that they drank alcohol in Q1.1 were included.

4.9.2 Temporal Stability

The temporal stability of a scale is concerned with an assessment of the degree to which data obtained in a given test administration will resemble those obtained on a second testing employing the same scale and the same sample of respondents. It is undertaken in order to determine whether the results of a scale are replicable or whether the findings are a function of situation-specific factors. A large, positive correlation coefficient is taken as evidence of temporal stability.

The test-retest data obtained from the St Stithians College students, (Groups SSF and SSG), over a two week period were used. Data arising from those items comprising a refined attitude scale were used to compute the (Pearson's Product-Moment) correlation coefficient (refer to footnote 2, p. ***91***) of each attitude scale[7]. Table 4.9 presents the coefficients obtained for the refined attitude scales. These were taken to indicate the stability (reliability) of the scale over 2 weeks (n=96).

Table 4.9: The reliability of the refined CQ scales

Section of CQ (# of Items)	Scale	Internal Consistency Coefficient Alpha	Temporal Stability Multiple Regression Coefficient
B (4)	APWA	0.71 (n=180)	0.74 (n=96)
C(Q1) (7)	SE1	0.73 (n=180)	0.64 (n=96)
C(Q2) (5)	SE2	0.55 (n=180)	0.67 (n=96)
D (3)	PSN	0.78 (n=96)	0.74 (n=96)
F(Q2) (4)	ATAU	0.84 (n=147)	0.65 (n=71)

Recent literature suggests that an attitude scale ought to have a stability coefficient in the range of 0.85 and 0.90 in order to be considered to have temporal stability (Anderson 1988c). However, Youngman and Eggleston (*op.cit.*) report that attitude scales rarely show very high values - *"0.75 to 0.80 might be the best that one can expect"*. Two of the attitude scales - the APWA and ATAU Scales - both obtained stability coefficients of 0.74. The other three attitude scales obtained stability coefficients of between 0.64 and 0.70.

[7]With respect to the ATAU Scale only the data from students who indicated that they drank alcohol in Q1.1 were included.

Appendix B:68-70, Tables 4.46 through 4.50 provide a detailed summary of the properties and parameters of each refined Likert scale.

4.10 § G - ROSENBERG'S SELF-ESTEEM SCALE (1965)

4.10.1 Objective

Rosenberg's Self-Esteem Scale (RSE Scale) measures the self-acceptance aspect of self-esteem (Robinson and Shaver 1973:81). It was used to measure the self-esteem of students participating in the programme. As self-esteem is considered to be a stable personality trait it was not envisaged that it would be affected by the APP. Instead, scores obtained using the scale would be used to determine whether there was any relationship between a groups' self-esteem and other variables which were being measured.

4.10.2 Choice of Instrument

RSE Scale was chosen for the following reasons:

Practical Considerations

- Cohen (1976:106) says the RSE Scale is suitable for use with older students in secondary schools. Indeed Rosenberg originally developed the scale for use with high school students.

- The RSE Scale is easy to administer as it simply requires a respondent to check his/her answers to ten items.

- The RSE Scale is economical with respect to time since it can be completed in, at most, five minutes (Robinson and Shaver *op.cit.*:82).

- The RSE Scale is unidimensional and therefore allows one to rank respondents along a single continuum ranging from those with a very high self-esteem to those with a very low self-esteem.

Theoretical Considerations

(a) Properties

The RSE Scale is a Guttman-type scale. The determination that a scale is a Guttman scale is made solely on the basis of two empirical criteria: the coefficient of

reproducibility and the coefficient of scalability (Anderson 1988c). These two coefficients provide information about the internal consistency of the responses to a Guttman scale. Guttman says that for a scale to be acceptable as a Guttman scale the coefficient of reproducibility should be larger than 0.90, and the coefficient of scalability should exceed 0.60 (Anderson 1988b:429). Rosenberg (*op.cit.*) reports a coefficient of reproducibility of 0.93; and an item scalability of 0.73 for his Self-Esteem scale (n=5 024). Thus the scale appeared sound.

(b) *Reliability*

Rosenberg (*op.cit.*) says that if a Guttman scale has a high reproducibility then it must necessarily have high test-retest reliability. Burns (1979) highly recommends the scale in view of the RSE Scale obtaining acceptable reliability coefficients obtained on only ten items. Silber and Tippett obtained a test-retest reliability coefficient of 0.85 over two weeks (n=28).

(c) *Validity*

(i) Construct Validity

There is considerable evidence for the construct validity of the RSE Scale derived from the many theoretical relationships studied and shown significant in Rosenberg's 1965 study (Rosenberg *op.cit.*:Chapter 9).

(ii) Convergent Validity

Silber and Tippett (1965) found that the scale correlated from 0.56 to 0.83 with several similar measures and clinical assessment (n=44)(cited by Robinson and Shaver *op.cit.*:81). Robinson (1973) found that when Coopersmith's Self-Esteem Inventory was scored as a Guttman scale, and then compared with the RSE Scale, a correlation coefficient of 0.59 was obtained.

4.10.3 Description of RSE Scale

The scale consists of ten statements, five phrased in a positive direction and five phrased in a negative direction to control for acquiescence. Respondents answer on a four-point

scale from strongly agree to strongly disagree by checking the answer which shows how they feel about themselves (see Appendix C:17).

Scoring for the instrument was done using a cardboard cut-out marking key (see Appendix B:71, Table 4.51). High scores indicate low self-esteem.

4.11 § H - DEMOGRAPHIC CHARACTERISTICS

The final section of the CQ comprised five questions requesting a respondent's age; home language; boarding status; whether or not the respondent was currently studying Biology at the Standard 9 level; and how many years they had been at their current school (see Appendix C:18). The questions were asked in order to assess the range of demographic characteristics of every sample and population used in the investigation.

4.12 ASSEMBLY OF CQ INSTRUMENT

4.12.1 Sequencing of Measures and Items

Within the CQ the measures were ordered from least sensitive to most sensitive within the context of proceeding from one aspect to the next in a logical fashion. It was believed that by placing the section on knowledge of HIV and AIDS at the beginning of the CQ respondents' interest and co-operation would be secured so that when the more delicate and sensitive questions were posed they would be less likely to react negatively. The duller demographic questions were placed at the end of the questionnaire in accordance with Churchill's (*op.cit.*) and Babbie's (*op.cit.*:147) suggestion that placing it at the beginning may give the appearance of a routine form which might demotivate or alienate respondents and prevent them from proceeding further. Figure 4.2 shows the sequencing of the sections and their measures within the CQ instrument.

Between Sections E and F a blank page was left, with drawn lines, and a statement at the top which read "This space is reserved for any comments you may wish to make". It was designed to provide students with an opportunity of unloading some of their emotions and/or thoughts onto paper after having responded to the somewhat sensitive questions in the preceding sections.

With respect to the sequencing of the items within each measure:

Section A - §4.3.7 refers; for the scales in §§ B through F the items were randomly ordered within each scale (Churchill *op.cit.*); §F, Q1 items, were arranged as given in the WHOs standard interview schedule for AIDS (*op.cit.*) from which the items were drawn; §G, item sequence as given in Rosenberg's Self-Esteem Scale (*op.cit.*): and the demographic questions in § H were arranged logically.

Section A	Knowledge Instrument - KI
Section B	Attitude towards People with AIDS Scale - APWA Scale
Section C (Q1)	Self-Efficacy Scale (avoidance of the sexual contagion of HIV) - SE1 Scale
Section C (Q2)	Self-Efficacy Scale (reducing the risk of sexual contagion of HIV) - SE2 Scale
Section D	Perceived Social Norms Scale - PSN Scale
Section E	Perceived Threat Scale - PT Scale
Section F (Q1)	Drinking habits
Section F (Q2)	Attitudes towards Alcohol Use - ATAU Scale
Section G	Rosenberg's Self-Esteem Scale (1965) - RSE Scale
Section H	Demographic characteristics

Figure 4.2: Sequencing of sections and measures in the CQ instrument

4.12.2 Format of CQ

Formatting the CQ was in accordance with suggestions offered by the questionnaire practitioners already cited (see §4.2). The title page included a heading and a short introduction designed to be non-threatening, serious, neutral and firm to encourage the full, honest and careful participation of the students.

Where considered appropriate, a section was introduced with a short statement concerning its content and purpose in order to put respondents in the favourable frame of mind for answering the questions.

Clear instructions on how to complete each question were provided. All instructions were placed in grey-shaded boxes.

In formatting the CQ the directives offered by questionnaire practitioners were followed. For example: the items were spread out and uncluttered so maximizing the "white space"; the layout was consistent throughout as was the alignment of items and adequately spaced response boxes within each section.

In order to facilitate later coding and data capture, numbered boxes were printed opposite each item forming a column headed "FOR OFFICE USE ONLY" on the extreme right hand side of each page. The column was separated from the questions and response boxes by a vertical line. The title page informed the students to ignore these numbered blocks as they were for computer use only.

A well respected and highly experienced local high school English teacher reviewed the CQ. Both instructions and items were checked for sensitivity; the presence of semantic problems; and difficult vocabulary which might prevent students at the Standard 9 level from clearly comprehending a statement. A few minor adjustments were made based on her critique.

The CQ was laser printed and photostat copies assembled for use in the investigation. Appendix C contains the original CQ used in the investigation, prior to its refinement.

4.13 SUMMARY

The CQ developed for use as a repeated measures instrument in the investigation (at pre-post-, and follow-up-testing), comprised eight sections, designed to measure ten variables (see Appendix C).

In order to improve the quality of the research findings, however, seven of the ten CQ measures underwent a further potential refinement process prior to analysis of the data sets generated during the study: i.e. the knowledge instrument (KI), the attitude towards people with AIDS (APWA Scale), self-efficacy with respect to avoiding the sexual transmission of HIV (SE1 Scale), self-efficacy with respect to reducing the sexual transmission of HIV (SE2 Scale), perception of social norms with respect to APB (PSN Scale), perceived threat scale (PT Scale), and the attitude towards alcohol use scale (ATAU Scale).

On further analysis one of the measures was discarded (PT Scale); one remained unchanged (SE1 Scale) and the remaining five were refined, namely the KI, APWA, SE2,

PSN, and ATAU Scales. Table 4.10 presents the final properties and parameters of these nine measures (four unaltered and five refined measures), globally referred to as the refined CQ.

Table 4.10: Final properties and parameters of the nine measures in the refined CQ

Section of CQ	Measure	# Items	Possible Score Range (minimum to maximum)	Mean (adj.) Item-Total Correlation	Internal Consistency	Temporal Stability (2 weeks)
A	KI* (Knowledge Instrument)	23	- 23 to 23	n/a	n/a	0.72
B	APWA Scale* (Attitude towards People With AIDS)	4	4 to 20	0.50	0.71	0.74
C (Q1)	SE1 Scale (Self-efficacy - avoiding HIV risk)	7	7 to 28	0.44	0.73	0.64
C (Q2)	SE2 Scale* (Self-efficacy - reducing HIV risk)	5	5 to 20	0.32	0.55	0.67
D	PSN Scale* (Perceived Social Norms Scale)	3	3 to 12 (pretest) 3 to 15 (post- and follow-up-test)	0.54	0.78	0.74
F (Q1)	Drinking habits	3	n/a	n/a	n/a	n/a
F (Q2)	ATAU Scale* (Attitude Towards Alcohol Use Scale)	4	4 to 20	0.87	0.84	0.65
G	RSE Scale (Rosenberg's Self-Esteem Scale)	10	0 to 6	n/a	0.73 (item scalability)	0.93 (coefficient of reproducibility)
H	Demographic characteristics	5	n/a	n/a	n/a	n/a

* *Measure refined* (adj.) = *adjusted*

Chapter 6 describes the analysis of data generated by measures in the refined CQ, and the results of these data analyses.

CHAPTER 5

DATA ANALYSIS AND RESULTS

CHAPTER 5

DATA ANALYSIS AND RESULTS

5.1 INTRODUCTION

Chapter 3 explained the research design, procedures and organisation of the investigation, implementation of the experimental and control programmes, administration of the Comprehensive Questionnaire (CQ) and Supplementary Questionnaire (SQ), the coding of the CQ, data collection and verification, and the scoring and data transformation of all quantitative measures contained in the SQ and refined CQ. Chapter 4 gave a detailed description of the development, modification and refinement of the CQ measures. The present chapter provides details of the statistical analysis of the quantitative data generated by both the refined CQ and SQ and presents the findings as *p* values or ratings. The findings relating to the hypotheses are interpreted[1] in terms of the calculated *p* values. In addition, Chapter 5 provides a qualitative analysis of the data generated by the CQ and SQ.

5.1.1 Quantitative Data

(a) *(i) CQ data:*

From the extended Solomon four-group design employed in the study ten sets of quantitative data were generated, each comprising the same nine measured variables: two sets of pretest data; four sets of post-test data; and four sets of follow-up-test data. Figure 5.1 presents an overview of the samples and testing.

(ii) Analysis of the CQ data:

Fixed/Explanatory Variables: Four fixed/explanatory variables were measured on all participants by the CQ: demographic characteristics; alcohol drinking habits; attitude towards alcohol use and self-esteem. Analysis of these data sets provided a quantitative description of the populations and samples used in the investigation, as well as an assessment of the equivalence of these populations and samples on these four fixed/explanatory variables (§5.2).

[1]For evaluation, *p* values equal to 0.05 or less were deemed to have statistical significance.

Outcome/Dependent Variables: By design, data generated by the refined CQ in the extended Solomon four-group design was incomplete from a statistical perspective with respect to the five repeatedly measured outcome variables: knowledge and understanding of HIV and AIDS (KI); attitude towards people with AIDS (APWA Scale); self-efficacy with respect to avoiding the sexual transmission of HIV (SE1 Scale); self-efficacy with respect to reducing the risk of sexual transmission of HIV (SE2 Scale); and perceived social norms with respect to HIV preventive behaviour (PSN Scale). Pretest data is obtained intentionally from only two of the four groups (Figure 5.1). In addressing this structure Spector (1981) suggests that the best procedure for analysing Solomon four-group design data is to conduct the analysis in stages.

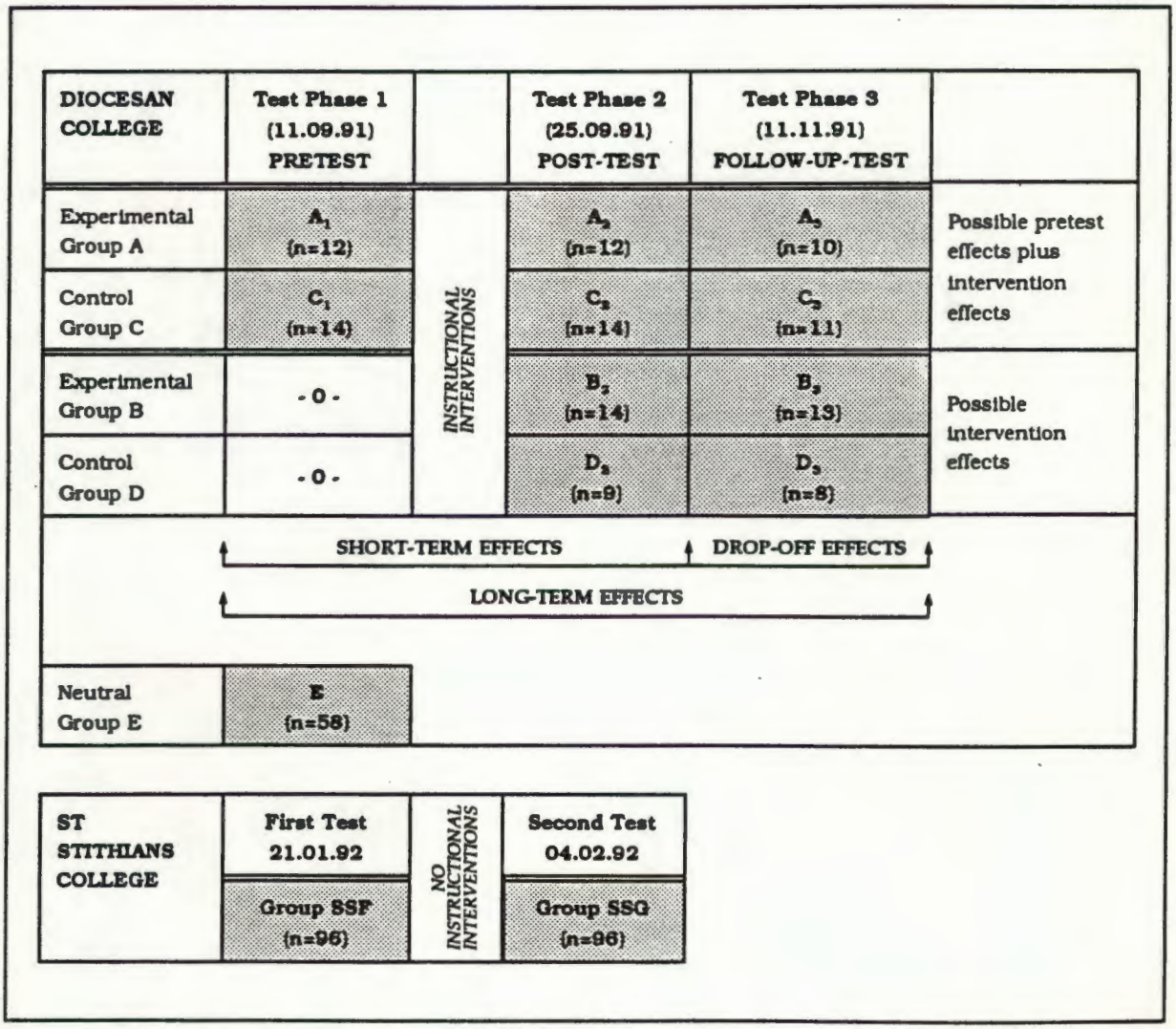

Figure 5.1: Details regarding the populations and samples to whom the CQ was administered during the investigation

Consequently, the analysis of the quantitative data derived from the refined CQ was conducted in three stages:

- **Stage I:** involved an analysis of pretest scores to establish the comparability and representativeness of groups on the variables measured. The implications of the data analysis results will be discussed in this chapter.

- **Stage II:** entailed an analysis of post-test scores to determine the short-term, pretest and interaction effects of the ten hour HIV/AIDS prevention programme (APP) on the experimental group, and the placebo programme on the control group.

- **Stage III:** comprised an analysis of gain scores between: pretest and post-test; post-test and follow-up-test; and pretest and follow-up-test to determine the short-term, drop-off, and long-term effects, respectively, of the APP.

Stages II and III were conducted in order to test the five null hypotheses of the investigation, namely:

Null Hypothesis 1: Short-term Effects of the APP

At post-intervention there will be no significant difference between the post-test scores obtained by students in the experimental group/s (A and B), and students in the control group/s (C and D) on any of the five outcome variables as measured by the KI, APWA, SE1, SE2 and PSN Scales.

Null Hypothesis 2: Pretest Effects

At post-intervention there will be no significant differences between the post-test scores obtained by students in the pretested group/s (A and C) and the non-pretested group/s (B and D) on any of the five outcome variables as measured by the KI, APWA, SE1, SE2 and PSN Scales.

Null Hypothesis 3: Interaction Effects

At post-intervention there will be no significant interaction effects between the treatment format and the presence or absence of a pretest, on any of the five outcome variables as measured at post-testing by the KI, APWA, SE1, SE2 and PSN Scales.

Null Hypothesis 4: Drop-off Effects following the APP

There will be no significant differences between pretested experimental and control groups with respect to drop-offs in gain scores[2] between post-testing and follow-up testing, on any of the five outcome variables as measured by the KI, APWA, SE1, SE2 and PSN Scales.

Null Hypothesis 5: Long-term Effects of the APP

There will be no significant differences between pretested experimental and control groups with respect to the long-term gain scores between pretesting and follow-up-testing, on any of the five outcome variables as measured by the KI, APWA, SE1, SE2 and PSN Scales.

In this chapter the data analysis findings of Stages II and III will be interpreted only in terms of the resultant *p* values. Interpretation and evaluation of these findings, in terms of the five null hypotheses, will be discussed in the next chapter (Chapter 6).

(b) *(i) SQ data:*

In the SQ (Supplementary Questionnaire) quantitative data was obtained in the form of student responses to §§ A and B which requested them to rate their reaction to each of the five phases of the APP (§A) and to the entire APP (§B), on a ten point scale.

(ii) Analysis of SQ data:

The analysis of the SQ quantitative data was straightforward as it involved simple calculations of the means and standard deviations of student ratings.

[2]The difference between scores on measures of achievement obtained at two points in time are referred to as change scores as well as gain scores. Gain (or change) scores can be negative as well as positive (Linn:597, 1988).

5.1.2 Qualitative Data

(a) *(i) CQ data:*

The qualitative data on the CQ (Comprehensive Questionnaire) was obtained from experimental subjects' comments at post-testing in response to a statement on page 14 of the CQ: "This space is reserved for any comments you may wish to make".

(ii) SQ data:

At follow-up-testing experimental students' responses to three questions posed in § C of the SQ provided the quantitative data which was analyzed.

(b) *Analysis of CQ and SQ data:*

In order to capture the complexity, subtlety and detail of the qualitative data generated by the CQ and SQ, an extensive - although necessarily selective - quotation of student's written comments / responses are presented in §5.7. These comments provide the reader with the essential flavour of student perceptions of and reactions to the APP.

5.2 POPULATION AND SAMPLE CHARACTERISTICS

Data from the first set of CQ completed by each group were used to obtain the population characteristics of the Diocesan College (DC) and St Stithians College students, on the four fixed/explanatory variables (assumed constant within the respondents over the duration of the investigation) - i.e. demographic characteristics, alcohol drinking habits, attitude towards alcohol use (ATAU Scale) and self-esteem (RSE Scale).

The data sets generated on these four measures by all DC groups (i.e. A,B,C,D and E) and the St Stithians College students at first testing (Group SSF), were used in BMDP Program 4F to generate observed frequency tables.

5.2.1 Comparison of DC and St Stithians College Populations

The observed frequencies were used to perform chi-square tests[3] to determine the equivalence of the DC and St Stithians College populations on three of the four fixed/explanatory variables as follows:

Demographic characteristics §H Q1. to Q5. of CQ

Q1.	Age:	15-16 year olds vs 17-18 year olds.
Q2.	Home language:	English vs other languages.
Q3.	Boarding status:	Boarders vs day scholars.
Q4.	Biology:	Currently studying vs not currently studying.
Q5.	Period enrolled at present school:	Less than 5 years vs 5 years or more[4].

Drinking habits §F (Q1) of CQ[5]

Q1.1	Drinking frequency:	no response + never; every day + more than twice per week; once or twice a week; once or twice a month.
Q1.2	Drinking venues:	home; friend's place; restaurant/hotel + bar/pub + shebeen; more than one response[6].
Q1.3	Accompaniment by friend:	always + almost always; sometimes; seldom; never[7].

Self-esteem (RSE Scale) §G of CQ

Self-esteem:	Scores: 0-1; 2-3; 4-6. (i.e. high, medium and low self-esteem respectively)

[3]Chi-square tests were applied using BMDP 4F on the cell frequencies for 2-way tables of school x explanatory variable. Small chi-square values indicate similar profiles for the two schools. A correction for continuity was performed for 2x2 contingency tables. In some cases categories were combined in order to satisfy the need for theoretical frequencies to be at least five in each cell.

[4]Five years was used as the cut-off point because the "Life Styles Programme" at DC begun in 1987 (Chapter 3, §3.4.1(a) refers).

[5]For Q1.2 and Q1.3 only the data sub-sets generated by the responses of students to in the DC and St Stithians College populations who indicated that they did drink alcohol were used in the chi-square test.

[6]Data from students who indicated that they normally drank alcohol at the beach were excluded from the chi-square analysis because (a) there were too few to include in a separate category (only two in each population); and (b) it did not make sense to combine them with any other category.

[7]Students giving more than one response to this item were excluded from the chi-square analysis because there were too few in this category (two from DC and one from St Stithians College).

With respect to the fourth fixed/explanatory variable, the attitude towards alcohol use (ATAU Scale §F (Q2) of CQ) the scores generated by the DC and St Stithians College populations on this scale were compared statistically by performing a pairwise *t*-test using BMDP Program 7D.

Table 5.1 presents the statistical findings.

Table 5.1: Calculated p values for differences between Diocesan College and St Stithians College Standard 9 populations on the four fixed/explanatory variables

Fixed/Explanatory Variable	Diocesan College (n)	St Stithians College (n)	Chi-square value	*df*	*p* value
Demographic characteristics:					
age -	105	96	34.486	1	**0.00**
home language -	107	96	0.270	1	0.70
boarding status -	105	96	28.037	1	**0.00**
Biology -	105	96	33.744	1	**0.00**
years enrolled -	107	96	0.533	1	0.50
Drinking habits:					
frequency -	107	96	6.221	3	0.20
venue -	88	67	9.977	3	**0.02**
accompaniment -	87	68	4.957	3	0.10
Self-esteem	105	96	3.425	2	0.20
Attitude towards alcohol use:	89	68	Pairwise *t*-test		0.07

In addition, the observed frequency tables were used to construct overlapping bar graphs to illustrate the comparison between the DC and St Stithians College populations on the following variables: drinking frequency; drinking venue; accompaniment by girlfriend when drinking; attitude towards alcohol use; and self-esteem. Figures 5.2 to 5.6 illustrate the response profiles obtained by these two populations on these measures.

Demographic characteristics

No significant difference in home language was found between the two populations (p=0.70) - the majority spoke English. Neither was there a difference between the populations with respect to those who had been enrolled less than five years at the school compared to those who had been enrolled five or more years. However, significant differences (p=0.00) were found between the two populations in age (DC mean age 16.4

years vs St Stithians College 15.7 years), proportion of boarders to day scholars; and proportion currently studying/not studying Biology.

The non-equivalence in age between the DC and St Stithians College Standard 9 populations can be easily explained. The St Stithians students were tested in January of their Standard 9 year, whereas the DC students were tested in September of their Standard 9 year. When this eight month discrepancy is taken into account the populations are age equivalent. With respect to boarding status half the DC Standard 9 students were boarders whereas only 14% of the St Stithians College students were boarders. On the other hand, the majority of St Stithians College students were currently studying Biology (84%) whereas less than half of the DC students were currently studying Biology (43%).

Drinking Habits

Question 1 (Q1) in § F of the CQ asked students three purely factual questions relating to their alcohol drinking habits: (1.1) How often during the past holidays/weekends have you had drinks containing alcohol?[8]; (1.2) Where do you normally go to drink?; (1.3) How often is your girlfriend/ boyfriend with you when you drink?

[8]This item could be considered to be ambiguous, or flawed, as the use of the word "weekend" in the context of the question "How often during the past holidays/weekends have you had drinks containing alcohol?" could only match the first or last of the five response categories offered - that is, "every day" or "never". In the context of a weekend the three other response categories offered - that is: "more than twice a week", "once or twice a week", "once or twice a month" could not apply. As student responses ranged across all five response options offered however, the somewhat ambiguous phrasing did not appear to have biased student responses in this item.

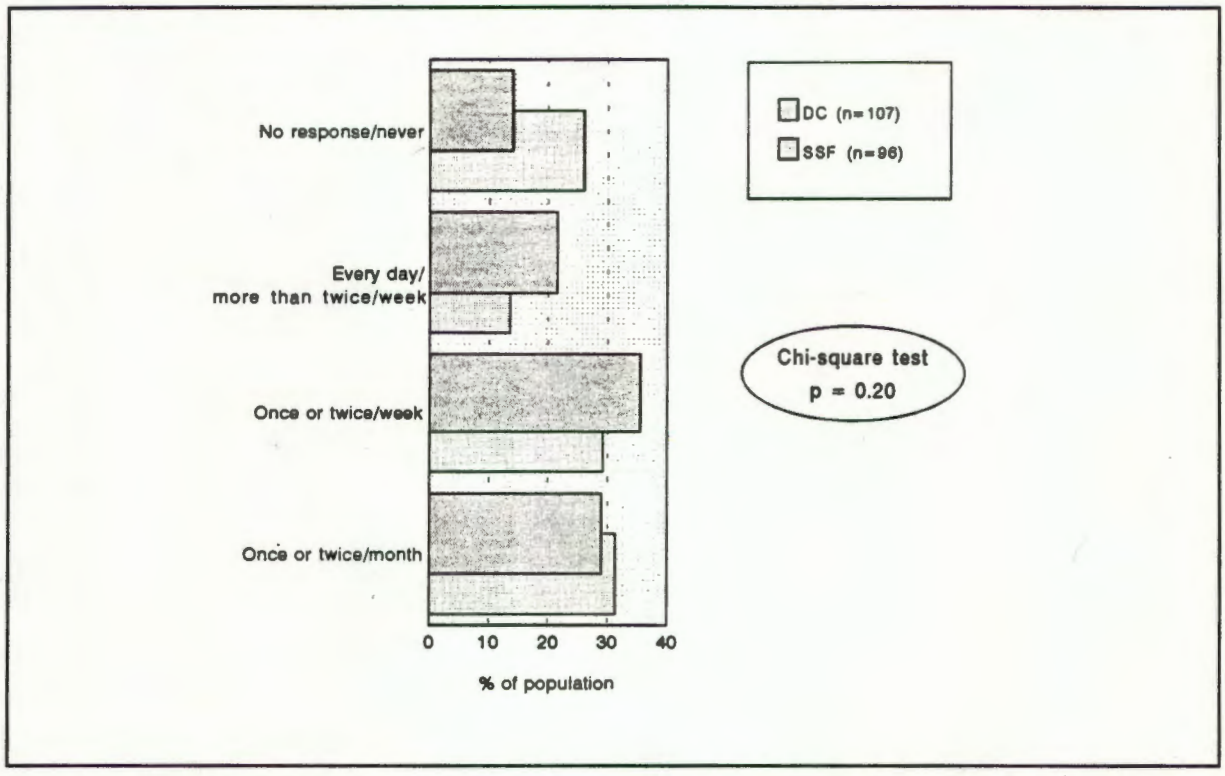

Figure 5.2: Drinking frequency response profiles of Diocesan College and St Stithians College Standard 9 populations (1991/2)

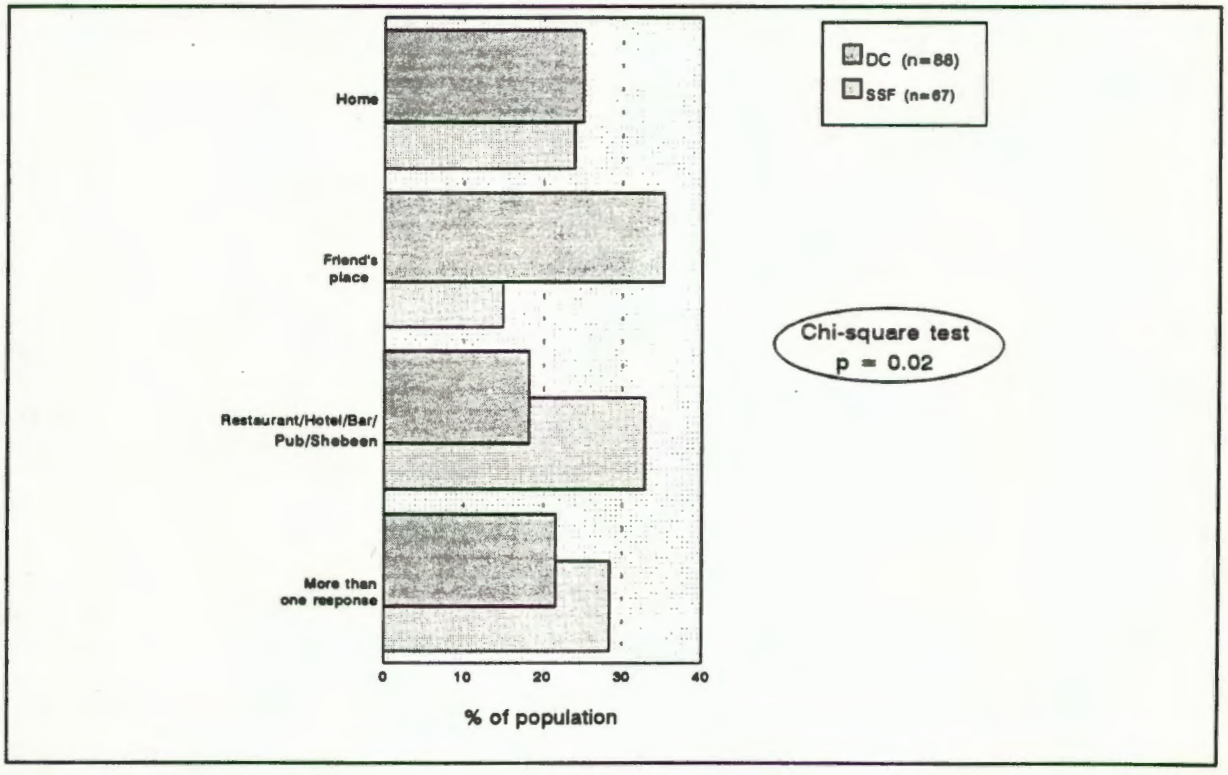

Figure 5.3: Drinking venue response profiles of Diocesan College and St Stithians College Standard 9 non-teetotal sub-populations (1991/2)

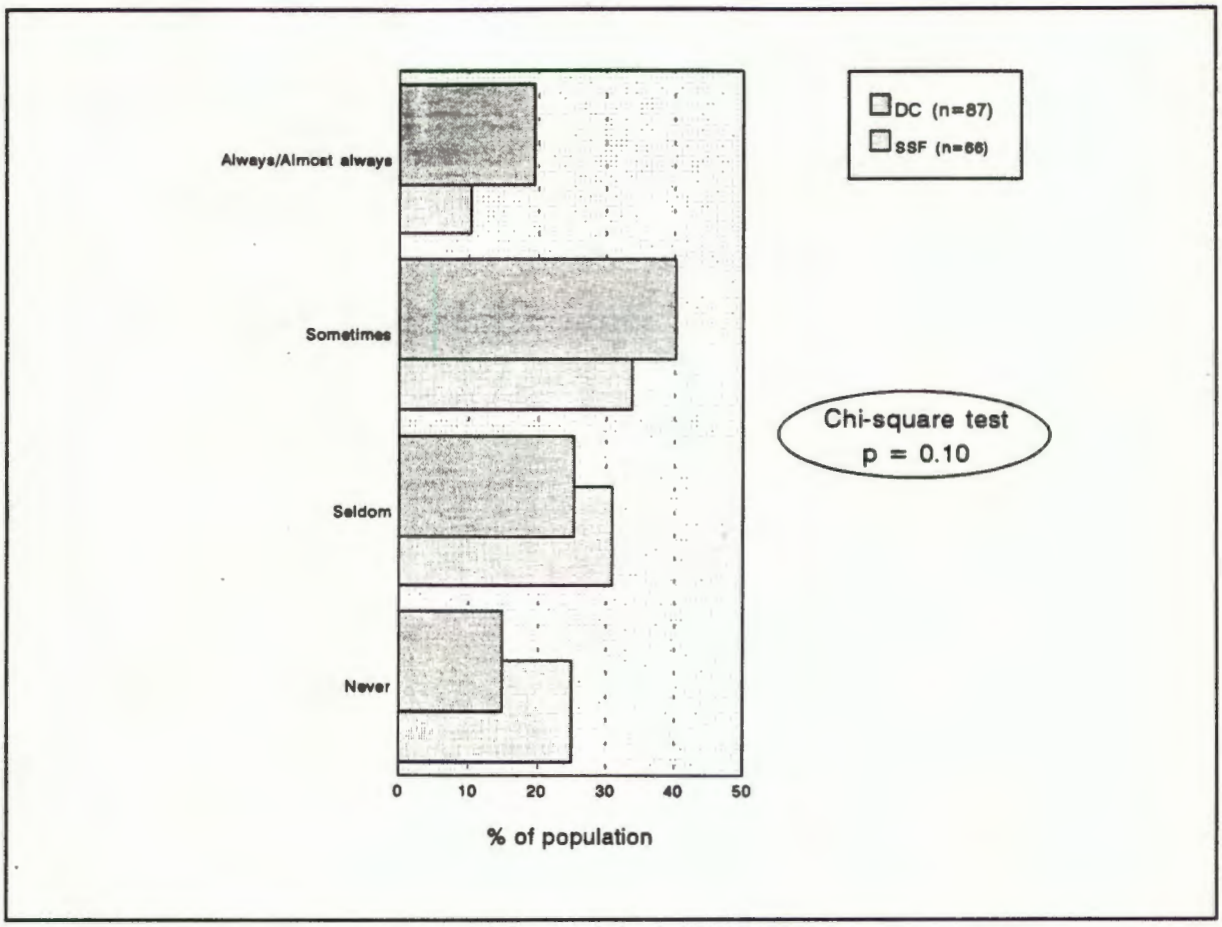

Figure 5.4: Accompaniment by friend when drinking: response profiles of Diocesan College and St Stithians College Standard 9 non-teetotal sub-populations (1991/2)

No significant differences were found between the DC and St Stithians College populations with respect to their drinking frequency patterns (Q1.1 - p=0.20) and, in the case of the non-teetotallers in how frequently their girlfriends accompanied them when they drank alcohol (Q1.3 - p=0.10). However, with respect to the non-teetotallers their drinking venues differed significantly (Q1.2 - p=0.00). DC students appeared to drink more frequently at "a friend's place" (35.2%) than did the St Stithians College students (14.9%). On the other hand, the St Stithians College students appeared to frequent public venues for their drinking (32.8%) - such as restaurants, hotels, bars, pubs - more often than the DC students (18.2%).

Attitude towards Alcohol Use (ATAU Scale)

The maximum and minimum possible scores obtainable on the ATAU Scale are four and twenty respectively. High scores indicate the least damaging attitude towards alcohol use and vice versa.

No significant differences were found between the ATAU scores obtained by DC and St Stithians College alcohol-drinking sub-populations (p=0.07).

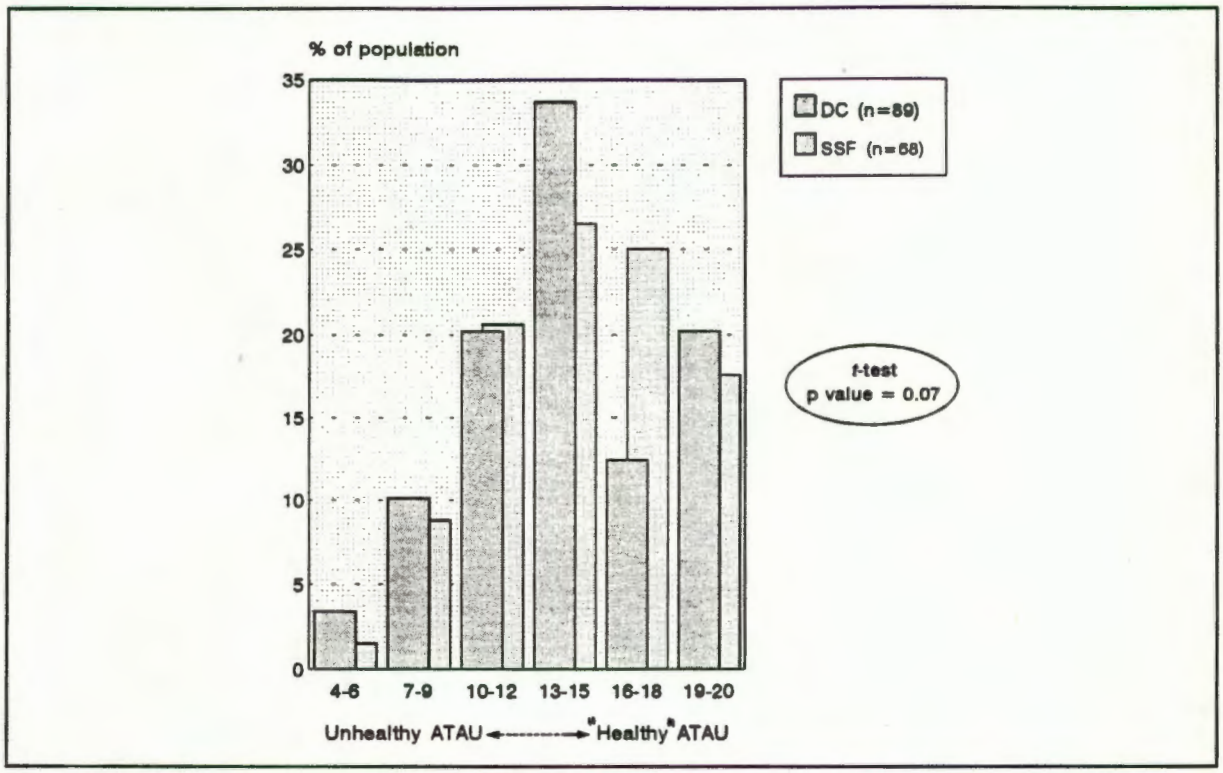

Figure 5.5: Attitude towards alcohol use score profiles of Diocesan College and St Stithians College Standard 9 non-teetotal sub-populations (1991/92)

Self-Esteem (RSE Scale)

The maximum and minimum possible scores obtainable on the RSE Scale are six and zero respectively. High scores indicate low self-esteem and vice versa.

No significant difference was found (p=0.20) between the self-esteem of the DC and St Stithians College Standard 9 populations. Generally speaking, over 60% of both populations showed high self-esteem (score 0-1) and less than 10% of both populations had poor self-esteem (score 4-6).

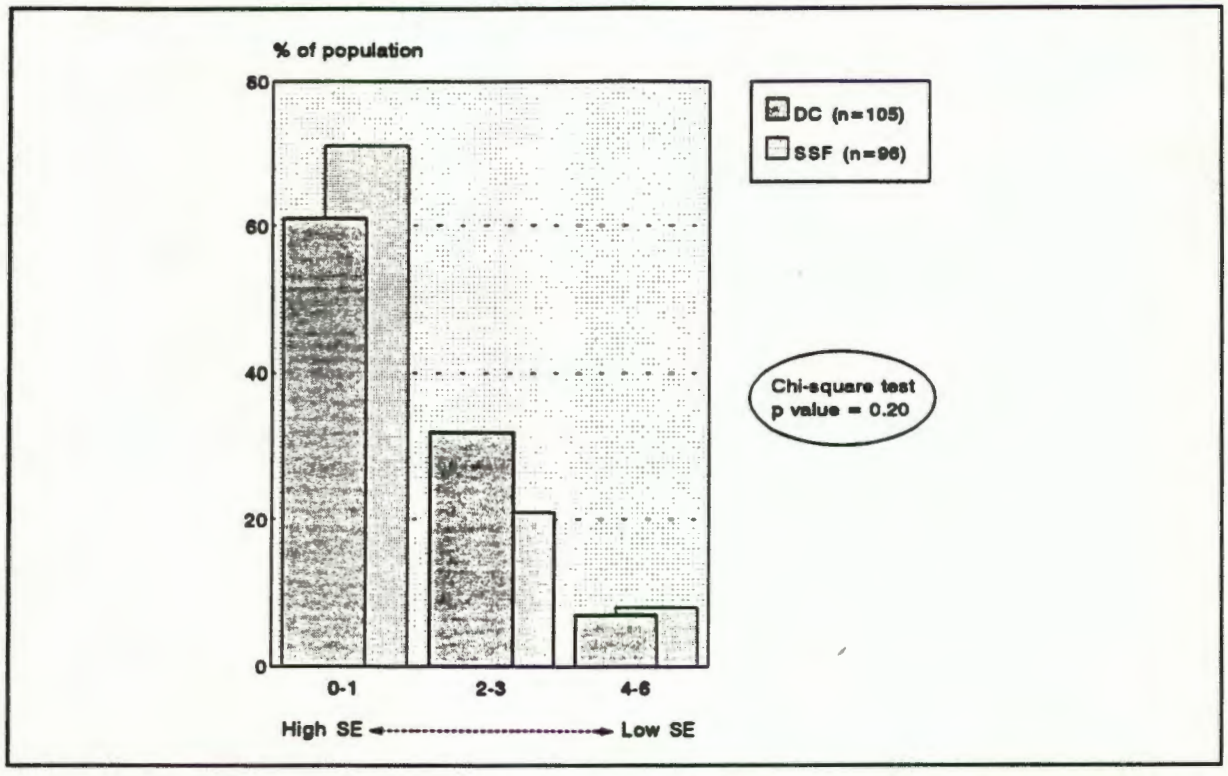

Figure 5.6: Self-esteem score profiles of Diocesan College and St Stithians College Standard 9 populations (1991/92)

Interpretation of the Findings:

From the findings discussed above one may infer that the DC and St Stithians College Standard 9 populations were:

- were not statistically different with respect to their: home language and years of enrolment at their respective schools; drinking frequency patterns, and accompaniment by a girl/boyfriend when drinking[9]; attitudes towards alcohol use[9]; and self-esteem.

- were statistically different with respect to their: drinking venues[9], age, boarding status, and the proportion currently studying Biology.

5.2.2 Comparison of DC Groups (A to D)

Using the observed frequency tables generated by BMDP Program 4F the following DC groups were statistically compared: A and B, C and D, A and C, and B and D. Owing to small cell frequencies Fisher's Exact Probability tests were performed on the two of the

[9]That is the non-teetotal members of the DC and St Stithians College Standard 9 populations.

four fixed/explanatory variables measured by §G (self-esteem[10]) and §H (demographic characteristics) of the CQ. On the third fixed variable, the attitude towards alcohol use, pairwise *t*-tests were performed on the data sets using BMDP Program 7D. With respect to the fourth fixed/explanatory variable (drinking habits) the cell frequencies were too low to conduct statistical tests for group comparability. Table 5.2 presents the findings.

Table 5.2: Calculated p values for differences between the four DC study samples (Groups A through D) on three of the four fixed/explanatory variables

Section of CQ	Fixed/Explanatory Variables	*p* values			
		Groups Compared			
		A vs B	C vs D	A vs C	B vs D
H	† Demographic characteristics:				
	age -	0.38	0.09	0.28	0.40
	home language -	0.20	0.29	0.36	0.14
	boarding status -	0.22	0.28	0.15	0.32
	studying Biology -	0.24	0.33	0.29	0.22
	years at present school -	0.28	0.34	0.32	0.31
F (Q2)	‡ Attitude towards alcohol use:	0.28	0.49	0.29	0.62
G	† Self-esteem	0.46	0.64	0.52	0.50

† Fisher's Exact Probability test ‡ pairwise two-sample *t*-tests

Interpretation of the Findings

The four DC study groups can be considered to be statistically indistinguishable with respect to all four fixed/explanatory variables investigated.

5.2.3 *Implications of the Interpreted Findings*

With respect to the equivalence of the DC and St Stithians College Standard 9 populations: The two populations were found to be statistically indistinguishable with respect to home language, the number of years enrolled at their present school, drinking frequency patterns and self-esteem. In respect of the non-teetotallers the two Standard 9 populations were also found to be statistically indistinguishable with respect to how frequently their girlfriends accompanied them when drinking, and in their attitude towards alcohol use. However, the generalisability of the research findings to similar Standard 9 populations of boys enrolled at boys private schools in South Africa may possibly be compromised by the finding of statistical differences between these two populations on age, boarding status, and whether or not they were studying Biology.

[10]Score categories used were 0-3, and 4-6.

With respect to the equivalence of the DC Study Samples (Groups A-D): The four DC study samples, Groups A, B, C and D can be considered to be comparable on all four fixed/explanatory variables. Thus, none of the four fixed/explanatory variables investigated could be used to account for any outcome differences between the four study groups.

5.3 STAGE I - ANALYSIS OF PRETEST SCORES

As Figure 5.1 indicates, only two of the four DC groups directly involved in the investigation were asked to complete the CQ at pretesting on 11 September 1991 - i.e. Groups A and C, yielding data sets labelled A_1 and C_1. One of the purposes of pretesting the DC Groups A and C was to establish whether these two samples were comparable in nature - i.e. to establish their *a priori* equivalence on all the measures used in the investigation. Establishing equivalence would allow one to infer that any final outcome differences, between the pretested samples, were due to treatment effects alone - assuming other threats to the validity of that inference had been controlled. It was considered important to establish group comparability statistically, rather than to assume that random assignment and allocation to treatments had achieved this aim, because of the small numbers in each group[11]; and the fact that attrition had occurred between pretesting and post-testing[12].

Members of another sample of DC students (n=58), who were not directly involved in the investigation, were also asked to complete the pretest CQ at the same time - i.e. neutral Group E (Figure 5.1). The sole purpose of pretesting Group E was to establish whether or not Groups A and C could be considered representative of the wider study population at DC on all the measures used in the investigation.

Additionally, a group of 96 Standard 9 St Stithians College students were asked to complete a slightly amended form of the CQ[13] in January 1992 - labelled neutral Group

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[11]Subjects in the DC samples (Groups A through D) were randomly chosen from the study population, and randomly assigned to groups and treatments. Theoretically these procedures ought to result in comparable groups with a high probability *a priori*. However, this assumption of equality of groups depends on the operation of the statisticians' "law of large numbers", so we are cautious and use a post-factum check on these small samples.

[12]At the start of the respective ten hour interventions Groups A and C comprised fifteen students each. Attrition occurred in both groups between the start and finish of the interventions over a period of two days: Group A lost three students (20% attrition) and Group C lost one student (7% attrition). The pretest data used to test for equivalence of these two groups therefore comprised only the data generated by those students who had participated in the entire ten hour intervention - that is, Group A (n=12) and Group C (n=14).

[13]Appendix B:34, Table 5.29 summarizes the minor changes made to the CQ after its initial use as a pretest at Diocesan College.

SSF (Figure 5.1). One of the purposes of pretesting Group SSF - a similar population from a different school - was to establish whether or not DC students could be considered representative of similar populations at similar schools in South Africa. Finding the DC students were representative of a similar broader community, on the measures used in the investigation, would give the study findings broader generalisability.

In order to establish (a) the equivalence of the DC study samples at pretesting (i.e. Groups A and C); and (b) the equivalence and hence representativeness of (i) DC Groups A, C, and E at pretesting, and (ii) DC Groups A, C, and E (at pretesting) and St Stithians Group SSF (at first testing); several parametric[14] statistical tests were performed on the pretest scores obtained on seven CQ measures (i.e. KI, APWA, SE1, SE2, PSN, ATAU[15]124

and RSE Scales). Table 5.3 summarizes the tests of statistical significance applied, the groups compared, and the effects investigated in this first stage of the data analysis.

[14]Although the Likert scales APWA, SE1, SE2, PSN, ATAU and the Guttman RSE scale generated ordinal data, Triandis (1971) says that since Likert and Guttman Scales closely approximate interval scales parametric tests are robust enough to allow use in the statistical analysis of data from these scales.

[15]Only for those students who indicated that they drank alcohol.

Table 5.3: Summary of Stage I of the data analysis: statistical tests performed on seven CQ measures

Stage I of Data Analysis	Effect Investigated	Statistical Test Applied	Groups Compared
Analysis of Pretest Scores (on seven variables) § 5.3	Equivalence of study samples at pretesting § 5.3.1	Two-sample *t*-test	A_1 vs C_1
	Equivalence and representativeness of study samples from Diocesan College study population § 5.3.2	One-way ANOVA & Bonferroni test for equal means & Levene's test for equal variances	A_1, C_1, E
	Equivalence and representativeness of study population and samples from a similar study population § 5.3.3	One-way ANOVA & Bonferroni test for equal means & Levene's test for equal variances	A_1, C_1, E, SSF

5.3.1 Equivalence of Study Samples (Groups A and C)

To establish the *a priori* equivalence of the two pretested groups on seven measures in the refined CQ, using BMDP program 7D, two-sample *t*-tests were performed on the pretest means obtained by experimental Group A and control Group C.

As only one pair of means is compared, a single comparison must have a *p* value of 0.05, or less, to be significant at the 0.05 level (Table 5.4).

Findings:

As Table 5.4 indicates, a significant difference ($p<0.01$) was found between experimental Group A and control Group C on the PSN Scale (with experimental Group A scores significantly higher than control Group C scores). However, with respect to the other six variables investigated (i.e. KI, APWA, SE1, SE2, ATAU, and RSE Scales) no significant differences ($p<0.05$) were found at pretesting, between Group A and Group C.

Table 5.4: Two-sample t-tests on pretest means, on seven CQ measures, for Groups: experimental A_1 (n=12) versus control C_1 (n=14)

CQ Measures	Means		Standard Deviations		*p* values obtained for differences between means	
	Group A_1 Experimental	Group C_1 Control	Group A_1 Experimental	Group C_1 Control	Separate Variance	Pooled Variance
KI	8.92	7.64	5.05	5.02	0.53	0.48
APWA	12.50	11.93	3.58	3.58	0.69	0.67
SE1	20.42	21.07	2.58	2.81	0.54	0.58
SE2	15.17	15.50	2.41	2.21	0.72	0.72
PSN	9.50	7.29	2.51	1.27	**0.01**	**0.00**
ATAU*	15.73	12.77	5.00	3.90	0.13	0.12
RSE	1.25	1.43	1.49	1.16	0.74	0.80

** only for those students who indicated that they drank alcohol (Group A_1 (n=11), Group C_1 (n=13)).*
p values ≤0.05 are considered to be significant at the 0.05 level

Interpretation of the Findings:

At pretesting Groups A and C can be considered to be statistically equivalent on six of the seven measures in the refined CQ. Namely, the KI, APWA, SE1, SE2, ATAU and RSE Scales. However these two groups may not be considered statistically equivalent on the Perceived Social Norms Scale (PSN Scale).

5.3.2 *Representativeness of Groups A and C*

In order to establish the equivalence of DC Groups A, C and E at pretesting and hence the representativeness of Groups A and C among the broader Standard 9 population at DC, three statistical tests were performed on the pretest scores obtained by Groups A, C and E, on seven measures of the refined CQ. Using the BMDP program 7D, the pretest scores were analyzed by applying the following three statistical tests:

- A simple one-way analysis of variance to test the equality or otherwise of group means[16]; and

[16]A one-way analysis of variance (ANOVA) tests the equality of group means. Tail probability is the probability of exceeding the observed F ratio when the group means are equal (the probability reported is appropriate when the data are sampled from normal populations with equal population variances; the distribution of the F ratio is sensitive to the assumption of equal population variances (Brown and Forsythe, 1974a cited in BMDP Manual))

- A Bonferroni test[17] for determining differences in group means for groups with unequal sample sizes; and

- Levene's test for equal variances[18] among groups.

p values of 0.05 or less were considered to be significant at the 0.05 level. Table 5.5 summarizes the calculated *p* values obtained from the application of these three statistical tests on the pretest scores of Groups A_1, C_1 and E for the seven CQ measures.

Findings:

In the one-way analyses of variance on the group means the *F* ratio was significant at the 0.05 level on only one of the seven measures, the PSN Scale (column 2, Table 5.5). Similarly, in the Bonferroni tests of equal means, a significant difference ($p<0.05$) was found between the three pretested DC groups on only one of the seven measures namely, the PSN Scale (column 3, Table 5.5).

Levene's test for equal variances suggests that the three pretested DC groups were homogeneous with respect to variance (tail probability $p>0.05$) on all but the SE1 Scale of the seven variables investigated (column 4, Table 5.5).

[17]The Bonferroni test conservatively determines the significance of any one or more of several pair-wise differences in the means for groups that may have unequal sample sizes. Bonferroni significance levels (indicated by * in the printout) are adjusted for the number of comparisons specified in the BMDP comparisons option of the PRINT paragraph of program 7D.

[18]Levene's test for variances (1960) provides a statistic for testing equal variability among groups based upon an ANOVA of absolute deviations of observations from the appropriate group mean.

Table 5.5: Calculated p values for differences in pretest scores of DC Groups A (n=12), C (n=14) and E (n=58) on seven CQ measures

CQ Measures	ANOVA of the group means	Bonferroni test (only *p* values for separate variance <0.10 reported)	Levene's test for equal variances
KI	0.22	-	0.92
APWA	0.54	-	0.95
SE1	0.69	-	**0.04**
SE2	0.94	-	0.58
PSN	**0.01**	**0.05**	0.35
ATAU*	0.28	-	0.40
RSE	0.78	-	0.69

** only for those students who indicated that they drank alcohol (A (n=11), C (n=13) and E (n=51))*
p values ≤ 0.05 are considered to be significant

Interpretation of the Findings:

At pretesting DC Groups A, C and E can be considered to be statistically equivalent on the following measures: KI, APWA, SE2, ATAU and RSE Scales, but not statistically equivalent on the SE1 and PSN Scales.

5.3.3 Representativeness of the DC Groups

In order to establish the equivalence of DC Groups A, C, and E (at pretesting) and St Stithians Group SSF (at first testing) and hence the representativeness of the DC groups among a broader sample population at a similar school, the same three statistical tests, already discussed in the previous § (5.3.2), were performed on the pretest scores obtained by Groups A, C, E, and SSF on six[19] CQ measures (Table 5.6).

Findings:

In the one-way analysis of variance of the group means the *F* ratio was not significant at the 0.05 level on any of the six measures investigated (column 2, Table 5.6). Similarly, in the Bonferroni test for equal means no significant differences were found between the pretested DC Groups and Group SSF at first testing on any of the six measures (column 3, Table 5.6).

[19]DC pretested Groups A, C and E could not be compared with the St Stithians College Group SSF on the PSN Scale because the DC groups at pretesting had four response options in this scale whereas Group SSF had five response options on the revised PSN Scale.

In Levene's test for equal variances however it was found that there was a significant difference ($p \leq 0.05$) between the four groups at pretesting, on the SE1 Scale.

Table 5.6: Calculated p values for differences in pretest scores of DC Groups A (n=12), C (n=14) and E (n=58) and St Stithians Group SSF (n=96) on six CQ measures

CQ Measures	ANOVA of the group means	Bonferroni test (only *p* values for separate variance <0.10 reported)	Levene's test for equal variances
KI	0.10	-	0.97
APWA	0.56	-	0.74
SE1	0.73	-	**0.05**
SE2	0.83	-	0.79
ATAU*	0.33	-	0.64
RSE	0.51	-	0.40

** only for those students who indicated that they drank alcohol (A (n=11), C (n=13), E (n=51), SSF (n=68))*
p values ≤0.05 are considered to be significant at the 0.05 level

Interpretation of the Findings:

Prior to the intervention Groups A, C and E from DC and Group SSF from St Stithians College can be considered to be statistically equivalent on the following measures: KI, APWA, SE2, ATAU and RSE Scales, but not statistically equivalent on the SE1 Scale.

5.3.4 *Implications of the Interpreted Findings*

(a) Representativeness of Groups A and C:

- DC Groups A and C can be considered representative of the Standard 9 DC study population on five of the seven variables as measured by the KI, APWA, SE2, ATAU and RSE Scales, but not necessarily representative of the DC population on the SE1 and PSN Scales.

- DC Groups A and C can be considered representative of a similar, broader population at St Stithians College on four variables as measured by the KI, APWA, SE2, ATAU and RSE Scales in the CQ. However, on the SE1 Scale, DC Groups A and C may not necessarily be considered to be representative of a similar, broader population.

(b) *Pretest equivalence of Groups A and C*

- Despite subject attrition between pretesting and post-testing[20] Groups A and C - whose subjects participated in the study from pretesting to post-testing and whose data constituted the pretest scores analyzed - can be considered statistically equivalent, at pretesting, on six of the seven CQ measures (i.e. KI, APWA, SE1, SE2, ATAU and RSE Scales).

- However, at pretesting Group A and C could not be considered statistically equivalent on the PSN Scale.

(c) *For further statistical analysis:*

Owing to the findings in (b) above, all further statistical tests performed in Stages II and III were conducted on the data generated by respondents on the following four repeated outcome measures only: KI, APWA, SE1 and SE2 (unless otherwise stated).

[20]Three subjects in Group A and one subject in Group C were absent between pretesting and post-testing - corresponding to attrition levels of 20% and 7% respectively - Table 3.11 refers).

5.4 STAGE II - ANALYSIS OF POST-TEST SCORES

Table 5.7 provides an overview of the three null hypotheses tested, the statistical tests applied and the groups compared in this second stage of the data analysis.

Table 5.7: Summary of Stage II of the data analysis: statistical tests performed on KI, APWA, SE1 and SE2 scores (unless otherwise stated)

Stage of Data Analysis	Effect Tested (i.e. H_0 tested)	Statistical Test(s) Applied	Groups Compared
Stage II: Analysis of Post-test Scores (§5.4 refers)	Effects of treatment on pretested groups (i.e. $H_0$1) § 5.4.1 (a)(i)	Two-sample *t*-tests	A_2 vs C_2 (Arrow [1] in Figure 5.7 refers)
	Effects of treatment on non-pretested groups (i.e. $H_0$1) § 5.4.1 (a)(ii)	Two-sample *t*-tests	B_2 vs D_2 (Arrow [2] in Figure 5.7 refers)
	Effects of pretest on experimental groups (i.e. $H_0$2) § 5.4.1 (b)(i)	Two-sample *t*-tests	A_2 vs B_2 (Arrow [3] in Figure 5.7 refers)
	Effects of pretest on control groups (i.e. $H_0$2) § 5.4.1 (b)(ii)	Two-sample *t*-tests	C_2 vs D_2 (Arrow [4] in Figure 5.7 refers)
	Treatment effects (i.e. $H_0$1) § 5.4.2 (a) Pretest effects (i.e. $H_0$2) § 5.4.2 (b) Interaction effects (i.e. $H_0$3) § 5.4.2 (c)	2 x 2 ANOVAS	A_2:B_2 vs C_2:D_2 (Arrow [5] in Figure 5.7 refers) A_2:C_2 vs B_2:D_2 (Arrow [6] in Figure 5.7 refers) A_2:D_2 vs B_2:C_2 (Arrow [7] in Figure 5.7 refers)
	Effects of treatment on pretested groups (i.e. $H_0$1) § 5.4.3	Analysis of covariance (pretest scores as covariates) **PSN only**	A_2 vs C_2 (Arrow [1] in Figure 5.7 refers)

In this second stage the effects of various factors were investigated: treatment format and use of a pretest. Table 5.8 summarizes these factors and the groups involved.

Table 5.8: Summary of factors investigated in the data analyses

Factor	Description of Factor	Groups Involved
Treatment Format	Ten hour HIV/AIDS prevention programme *[Experimental intervention]*	Experimental Groups A and B
	Ten hour Life Styles programme *[Control (Placebo) intervention]*	Control Groups C and D
Use of a Pretest	Pretested	Experimental Group A and Control Group C
	Non-pretested	Experimental Group B and Control Group D

BMDP program 7D was used to conduct two-sample *t*-tests and two-way ANOVAS on the post-test scores obtained on the KI, APWA, SE1 and SE2 Scales. BMDP program 1V was used for the analysis of covariance on post-test PSN Scale scores using the pretest PSN scores as covariates.

5.4.1 Two-sample t-tests on Post-test Scores

A series of four two-sample *t*-tests were performed on the post-test scores obtained by Groups A through D on the repeated measures. Arrows [1] through [4] in Figure 5.7 on page 142 refer. As only four of the six possible comparisons were made, to guarantee statistical significance at the 5% level, the reported *p* values in the tables of findings needed to be ≤0.0125 (i.e. 0.05 divided by 4), despite the fact that multiple comparisons were made within the corresponding data set. This adjustment is very conservative and is known as the Bonferroni correction.

(a) Treatment effects (arrows [1] and [2]):

(i) On pretested groups - arrow [1]

In order to determine the effect of the treatments (i.e. APP and Life Styles Programme) on the pretested groups, the post-test scores obtained on the repeated measures by experimental Group A and control Group C were compared by performing two-sample *t*-tests. Arrow [1] in Figure 5.7 on page 142 refers.

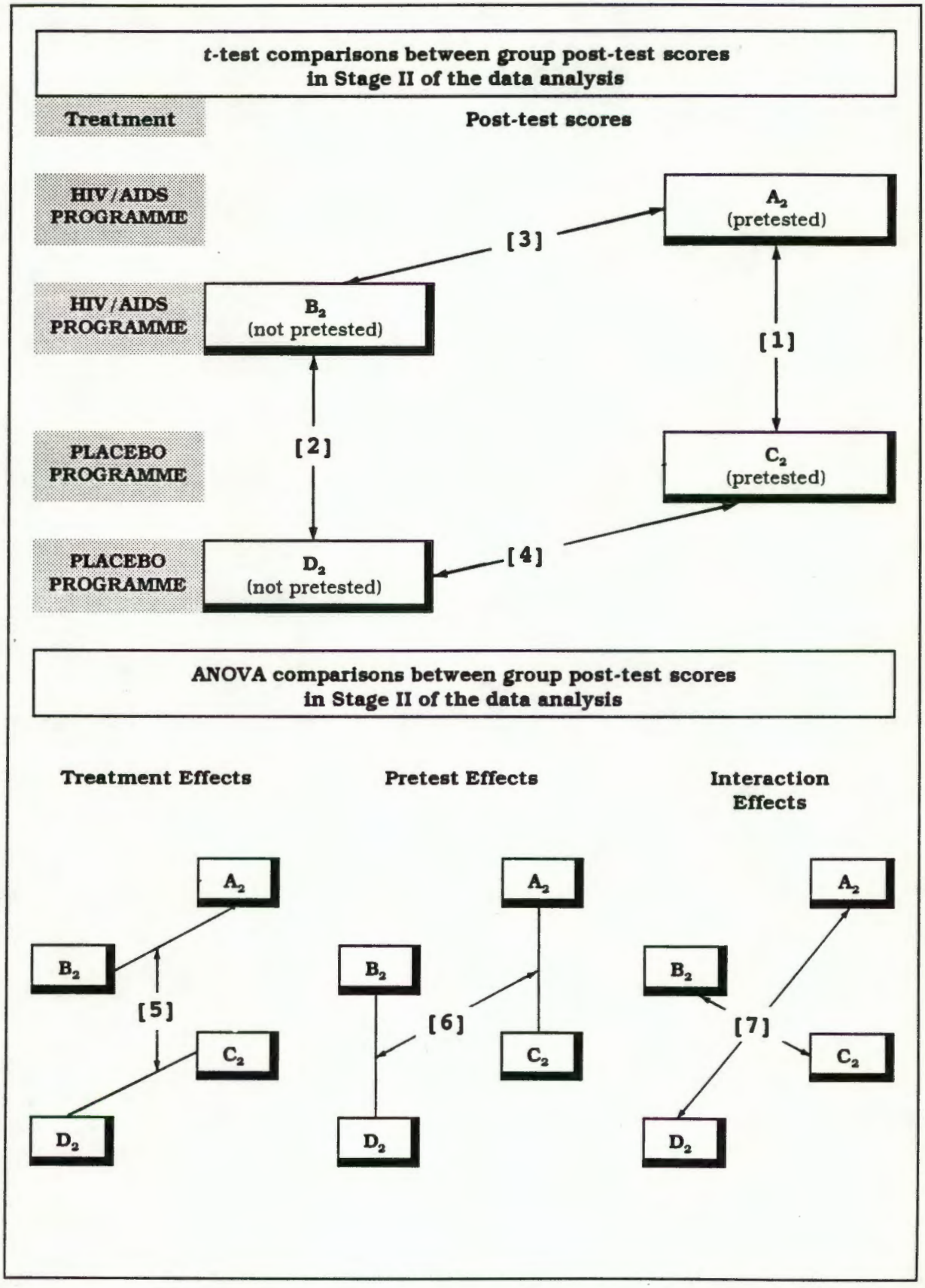

Figure 5.7: Diagrammatic summary of statistical comparisons performed on post-test scores, on four CQ measures, in Stage II of the data analysis

At post-intervention significant differences were found ($p<0.05$) between the pretested Groups A_2 and C_2 on two of the repeat measures: the KI and APWA Scale (Table 5.9). The mean of experimental Group A_2 was found to be significantly higher than the mean of control Group C_2 on both these measures.

Table 5.9: Two-sample t-tests on post-intervention means, on four outcome measures, for pretested Groups: experimental A_2 (n=12) versus control C_2 (n=14)

Outcome Measures	Means		Standard Deviations		*p* values obtained for differences between means	
	Group A_2 Experimental	Group C_2 Control	Group A_2 Experimental	Group C_2 Control	Separate Variance	Pooled Variance
KI	14.92	7.64	3.09	4.72	**0.0001**	**0.0001**
APWA	14.17	10.64	2.66	2.85	**0.0033**	**0.0109**
SE1	22.17	21.36	2.89	3.27	0.5092	0.4946
SE2	15.75	15.36	2.26	2.79	0.6973	0.6681

p values ≤ 0.0125 are considered to be significant at the 0.05 level

There was no evidence of significant treatment effects, on the pretested groups, on either of the other two outcome variables, as measured by the SE1 and SE2 Scales. However, in both cases the scores of the experimental group were higher than the control group.

Implications of the findings:

Although Groups A and C were found to be homogeneous with respect to their variances, on the both the KI and APWA measures, prior to their respective treatments, we do not know conclusively that they started on a par with one another. Perhaps there was a corresponding real difference between the pretested Groups (A and C) on these two measures at pretesting, and sampling errors did not permit these initial differences to show up when the pretest means of these two groups were compared. In fact, as Table 5.10 indicates, at pretesting experimental Group A did slightly better than control Group C on both these measures.

Table 5.10: Summary of means obtained by DC Groups (A to D) at pretest and post-test on four outcome measures

Outcome Measures	Pretest Means		Post-test Means				Possible Score Range
	Experimental	Control	Experimental Groups		Control Groups		
	Group A (n=12)	Group C (n=14)	A_2 (n=12)	B_2 (n=14)	C_2 (n=14)	D_2 (n=9)	
KI	8.92	7.64	14.92	18.07	7.64	7.22	-23 to 23
APWA	12.50	11.93	14.17	13.71	10.64	12.67	4 to 20
SE1	20.42	21.07	22.17	21.57	21.36	20.22	7 to 28
SE2	15.17	15.50	15.75	16.71	15.36	15.78	5 to 20

A statistical test that takes these initial differences into account is based upon gain scores[21]. Section 5.5.1 tests this first null hypothesis more thoroughly by testing whether any of the differences between the mean gain scores obtained by pretested experimental and control groups (A and C), between pretesting and post-testing, on each of the four repeat measures, are statistically significant.

(ii) On non-pretested groups - arrow [2]

In order to determine the main effect of the treatment on the non-pretested groups, the post-test scores on the repeat measures obtained by experimental Group B and control Group D were compared using two-sample *t*-tests. Arrow [2] in Figure 5.7 on page 142 refers.

[21]The difference between scores on measures of achievement obtained at two points in time are referred to as change scores as well as gain scores. Gain (or change) scores can be negative as well as positive (Linn:597, 1988).

Table 5.11: Two-sample t-tests on post-intervention means, on four outcome measures, for non-pretested Groups: experimental B_2 (n=14) versus control D_2 (n=9)

Outcome Measures	Means		Standard Deviations		*p* values obtained for differences between means	
	Group B_2 Experimental	Group D_2 Control	Group B_2 Experimental	Group D_2 Control	Separate Variance	Pooled Variance
KI	18.07	7.22	2.53	6.70	**0.0011**	**0.0000**
APWA	13.17	12.67	4.58	2.35	0.4790	0.4760
SE1	21.57	20.22	2.93	3.56	0.3581	0.2957
SE2	16.71	15.78	1.64	2.54	0.3445	0.3478

p values ≤ 0.0125 are considered to be significant at the 0.05 level

At post-intervention, a significant difference was found on the KI between the means of the non-pretested experimental Group B and control Group D (Table 5.11). The mean KI score of Group B_2 was found to be significantly higher ($p<0.05$) than that obtained by Group D_2.

There was no evidence of significant treatment effects, on the non-pretested groups, on any of the other three outcome variables, as measured by the APWA, SE1 and SE2 Scales, although there was a tendency, in every case, for the scores of the experimental group to be higher than the control group.

(b) Pretest effects (arrows [3] and [4]):

(i) On experimental groups - arrow [3]

To determine whether pretesting had any effect on the results obtained by the experimental groups at post-testing, two-sample *t*-tests were performed on the post-intervention means, on the repeat measures, obtained by pretested Group A and non-pretested Group B. Arrow [3] in Figure 5.7 on page 142 refers.

Table 5.12: Two-sample t-tests on post-intervention means, on four outcome measures, for experimental Groups: pretested A_2 (n=12) versus non-pretested B_2 (n=14)

Outcome Measures	Means		Standard Deviations		*p* values obtained for differences between means	
	Group A_2 Pretested	Group B_2 Non-pretested	Group A_2 Pretested	Group B_2 Non-pretested	Separate Variance	Pooled Variance
KI	14.92	18.07	3.09	2.53	**0.0101**	0.0841
APWA	14.17	13.71	2.66	4.58	0.7572	0.7378
SE1	22.17	21.57	2.89	2.93	0.6074	0.6153
SE2	15.75	16.71	2.26	1.64	0.2343	0.2942

p values ≤ 0.0125 are considered to be significant at the 0.05 level

As Table 5.12 indicates, at post-intervention a significant difference was found between the means of experimental Groups A_2 and B_2 on the KI (separate variance only). Non-pretested experimental Group B obtained a significantly higher mean score on the KI at post-testing relative to the pretested Group A.

No significant pretest effects were found for the experimental groups on any of the other three outcome variables, as measured by the APWA, SE1 and SE2 Scales.

(ii) On control groups - arrow [4]

To establish the main effects of the pretest on the groups who participated in the ten hour Life Styles (placebo) programme, two-sample *t*-tests were performed on the post-intervention means, obtained by pretested Group C and non-pretested Group D, on the repeat measures. Arrow [4] in Figure 5.7 on page 142 refers.

Table 5.13: Two-sample t-tests on post-intervention means, on four outcome measures, for control Groups: pretested C_2 (n=14) versus non-pretested D_2 (n=9)

Outcome Measures	Means		Standard Deviations		*p* values obtained for differences between means	
	Group C_2 Pretested	Group D_2 Non-pretested	Group C_2 Pretested	Group D_2 Non-pretested	Separate Variance	Pooled Variance
KI	7.64	7.22	4.72	6.70	0.8723	0.8303
APWA	10.64	12.67	2.85	2.35	0.0786	0.1707
SE1	21.36	20.22	3.27	3.56	0.4527	0.3785
SE2	15.36	15.78	2.79	2.54	0.7135	0.6725

p values ≤ 0.0125 are considered to be significant at the 0.05 level

At post-testing, no significant differences were found between the means ($p<0.05$) of pretested control Group C_2 and non-pretested Group D_2, on any of the four outcome variables as measured by the following scales: KI, APWA, SE1 and SE2 Scales (Table 5.13).

5.4.2 Analysis of Variance on Post-test Scores

Using the post-test scores obtained by the four study samples (Groups A through D) on the repeat measures, two-by-two ANOVAS[22] were conducted. Each ANOVA tests for three significant effects: treatment effects, pretest effects and interaction effects (i.e. between treatment and presence or absence of a pretest). These ANOVAS were therefore used to test null hypotheses 1, 4 and 5 for each of the four outcome variables, as measured by the KI, APWA, SE1 and SE2 Scales, as follows:

(a) Treatment Effects:

Post-test scores of combined experimental Groups A_2:B_2 were compared with post-test scores of combined control Groups C_2:D_2. Arrow [5] in Figure 5.7 on page 142 refers.

(b) Pretest Effects:

Post-test scores of combined pretested Groups A_2:C_2 were compared with the post-test scores of combined non-pretested Groups B_2:D_2. Arrow [6] in Figure 5.7 on page 142 refers.

[22]Mouly (1970:255) contends that because of the differences in pretesting in the Solomon four-group design, the post-tests of the pretested groups (A and C) and the non-pretested groups (B and D) are not comparable and cannot be combined into a single test.

(c) Interaction Effects:

Post-test scores of combined Groups A_2:D_2 were compared with the post-test scores of combined Groups B_2:C_2. Arrow [7] in Figure 5.7 on page 142 refers.

Each two-way analysis of variance was performed on the post-test scores, with treatment level as one factor, and the presence or absence of a pretest as the other factor. Figure 5.8 shows the factor structure set-up for the two-way ANOVAS.

		TREATMENT FORMAT	
		HIV/AIDS Programme	Placebo Control Programme
USE OF A PRETEST	Yes	Post-test means of Group A_2	Post-test means of Group C_2
	No	Post-test means of Group B_2	Post-test means of Group D_2

Figure 5.8: Factor structure set-up for the two-way ANOVAS performed on the post-test scores, on the four outcome measures, in Stage II of the data analysis

Since single contrasts of means are examined in this 2 x 2 ANOVA, a single pre-specified comparison had to have a *p* value of 0.05, or less, to be significant at the 0.05 level.

A summary of the analysis of variance results and the means and standard deviations of the post-intervention group scores are given for each of the four outcome variables tested. Tables 5.14 through 5.21 present the findings. All values provided by the BMDP printout were given to four decimal places. However, the values reported in the tables have been rounded off to two decimal places.

Knowledge Instrument (KI)

As Table 5.14 shows, the *F* ratio for the treatment effect (A_2:B_2 versus C_2:D_2) was found to be highly significant ($p<0.00$) for the KI.

Table 5.14: Analysis of variance on post-test scores on the refined KI

Source	*df*	*SS*	*MS*	*F*	*p* value
Treatment (T)	1	973.74	973.74	52.38	**0.00**
Pretest (P)	1	22.16	22.16	1.19	0.28
T x P (Interaction)	1	37.90	37.90	2.04	0.16
Error	45	836.62	18.59		

p values ≤ 0.05 are considered to be significant at the 0.05 level

The combined experimental groups obtained significantly higher mean KI scores than the combined control groups (Table 5.15 refers). The *F* ratio for both the pretest (present A_2:C_2 versus absent B_2:D_2) and interaction effects (A_2:D_2 versus B_2:C_2) were found to be not significant (i.e $p>0.05$).

Table 5.15: Summary of means and standard deviations of post-test scores on the refined KI

Group	Conditions	Mean	Standard Deviation	Number of Students (n)
A Experimental	Pretest HIV/AIDS intervention	14.92	3.09	12
B Experimental	No Pretest HIV/AIDS intervention	18.07	2.53	14
C Control	Pretest Placebo intervention	7.64	4.72	14
D Control	No Pretest Placebo intervention	7.22	6.70	9

Attitude towards People with AIDS Scale (APWA Scale)

As shown in Table 5.16, the *F* ratio for the treatment effect (A_2:B_2 versus C_2:D_2) was found to be significant at the 0.02 level.

Table 5.16: Analysis of variance on post-test scores on the refined APWA Scale

Source	*df*	*SS*	*MS*	*F*	*p* value
Treatment (T)	1	61.96	61.96	5.58	**0.02**
Pretest (P)	1	7.32	7.32	0.66	0.42
T x P (Interaction)	1	18.18	18.18	1.64	0.21
Error	45	499.74	11.11		

p values ≤ 0.05 are considered to be significant at the 0.05 level

Experimental groups obtained significantly higher mean scores on the APWA Scale than the control groups (Table 5.17). The *F* ratio for both the pretest (present A_2:C_2 versus absent B_2:D_2) and interaction effects (A_2:D_2 versus B_2:C_2) were found to be not significant (i.e $p>0.05$).

Table 5.17: Summary of means and standard deviations of post-test scores on the refined APWA Scale

Group	Conditions	Mean	Standard Deviation	Number of Students (n)
A Experimental	Pretest HIV/AIDS intervention	14.17	2.66	12
B Experimental	No Pretest HIV/AIDS intervention	13.71	4.58	14
C Control	Pretest Placebo intervention	10.64	2.85	14
D Control	No Pretest Placebo intervention	12.67	2.35	9

Self-Efficacy Scale, Q1 (SE1 Scale)

As Table 5.18 indicates, the *F* ratios for the treatment effect (A_2:B_2 versus C_2:D_2), the pretest effect (present A_2:C_2 versus absent B_2:D_2), and the interaction effect (A_2:D_2 versus B_2:C_2) were found not to be statistically significant (i.e $p>0.05$). The differences between the group means shown in Table 5.19 were found to be not significantly different.

Table 5.18: Analysis of variance on post-test scores on the SE1 Scale

Source	*df*	*SS*	*MS*	*F*	*p* value
Treatment (T)	1	13.82	13.82	1.40	0.24
Pretest (P)	1	8.88	8.88	0.90	0.35
T x P (Interaction)	1	0.86	0.86	0.09	0.77
Error	45	443.87	9.86		

p values ≤ 0.05 are considered to be significant at the 0.05 level

Table 5.19: Summary of means and standard deviations of post-test scores on the SE1 Scale

Group	Conditions	Mean	Standard Deviation	Number of Students (n)
A Experimental	Pretest HIV/AIDS intervention	22.17	2.89	12
B Experimental	No Pretest HIV/AIDS intervention	21.57	2.93	14
C Control	Pretest Placebo intervention	21.36	3.27	14
D Control	No Pretest Placebo intervention	20.22	3.56	9

Self-Efficacy Scale, Q2 (SE2 Scale)

As Table 5.20 indicates, the *F* ratios for the treatment effect (A_2:B_2 versus C_2:D_2), the pretest effect (present A_2:C_2 versus absent B_2:D_2), and the interaction effect (A_2:D_2 versus B_2:C_2) were found to be not statistically significant (i.e $p>0.05$). The differences between the group means shown in Table 5.21 were found not to be significantly different.

Table 5.20: Analysis of variance on post-test scores on the refined SE2 Scale

Source	*df*	*SS*	*MS*	*F*	*p* value
Treatment (T)	1	5.24	5.24	0.97	0.33
Pretest (P)	1	5.69	5.69	1.05	0.31
T x P (Interaction)	1	0.88	0.88	0.16	0.69
Error	45	243.88	5.42		

p values ≤ 0.05 are considered to be significant at the 0.05 level

Table 5.21: Summary of means and standard deviations of post-test scores on the refined SE2 Scale

Group	Conditions	Mean	Standard Deviation	Number of Students (n)
A Experimental	Pretest HIV/AIDS intervention	15.75	2.26	12
B Experimental	No Pretest HIV/AIDS intervention	16.71	1.64	14
C Control	Pretest Placebo intervention	15.36	2.79	14
D Control	No Pretest Placebo intervention	15.78	2.54	9

5.4.3 Analysis of Covariance (PSN Scale)

Since the pretested groups were found to be not statistically equivalent on the PSN Scale prior to the intervention, an analysis of covariance was performed. The post-test scores obtained on the PSN Scale by pretested experimental Group A_2 and control Group C_2 were compared using their pretest PSN scores as covariates. Arrow [1] in Figure 5.7 on page 142 refers.

As Table 5.22 indicates, there was some evidence to suggest some linear change at post-testing. Zero slopes are rejected ($p<0.05$). However, the slopes are different between Groups A and C ($p<0.006$).

Table 5.22: Analysis of covariance on post-test scores of Groups A (n=12) and C (n=14) on the refined PSN Scale

Source of variation	*df*	*SS*	*MS*	*F*	*p* value
Equality of adjusted means	1	0.83	0.83	0.19	0.667
Zero slopes:					
All covariates	1	29.19	29.19	6.68	0.017
Error	23	100.49	4.47		
Equality of slopes:					
All covariates	1	29.75	29.75	9.25	0.006*
Error	22	70.74	3.22		

* *this test for parallelism is significant at the 5% level which indicates a difference of slopes*

5.5 STAGE III - ANALYSIS OF GAIN SCORES

A series of three pairwise *t*-tests were performed in order to test null hypotheses 1, 4 and 5; i.e. to determine any possible short-term, drop-off and long-term effects of the APP on the pretested experimental Group A, relative to control Group C, with respect to the four outcome variables investigated. These pairwise *t*-tests compared the calculated gain scores of the pretested experimental Group A and the pretested control Group C, on all four measures, for significant differences. Table 5.23 provides a summary of the null hypotheses tested, the statistical tests applied and the groups compared in this third stage of the data analysis.

As single pairs of univariate means were compared at the specified time intervals, technically no Bonferroni correction is required for significance at the 0.05 level. There are, however, precisely two possibly independent sets of gain scores, and an overall Bonferroni adjustment requiring $p \leq 0.025$ may be preferred. The *p* values provided by the computer printout are reported in the tables of findings.

Table 5.23: Summary of Stage III of the data analysis: statistical tests performed on KI, APWA, SE1 and SE2 Scales (unless otherwise stated)

Stage III of Data Analysis	Effect Tested (i.e. H_0 tested)	Statistical Test(s) Applied	Groups Compared
Analysis of Gain Scores	Short-term effects of the APP (i.e. $H_0$1) § 5.5.1	Pairwise *t*-tests	A_2 minus A_1 vs C_2 minus C_1 (Arrow [8] in Figure 5.9 refers)
	Drop-off effects following the APP (i.e. $H_0$4) § 5.5.2	Pairwise *t*-tests	A_3 minus A_2 vs C_3 minus C_2 (Arrow [9] in Figure 5.9 refers)
	Long-term effects of the APP (i.e. $H_0$5) § 5.5.3	Pairwise *t*-tests	A_3 minus A_1 vs C_3 minus C_1 (Arrow [10] in Figure 5.9 refers)
Analysis of Covariance	Long-term effects of the APP (i.e. $H_0$5) § 5.5.4 **PSN Scale**	Analysis of Covariance	A_3 and C_3 (using pretest PSN scores as covariates)

5.5.1 Short-term Effects of the APP

To test null hypothesis 1 more rigorously the gain scores derived from the post-test mean minus the pretest means, obtained by experimental Group A and control Group C, on each of the repeat measures, were compared - Arrow **[8]** in Figure 5.9 refers.

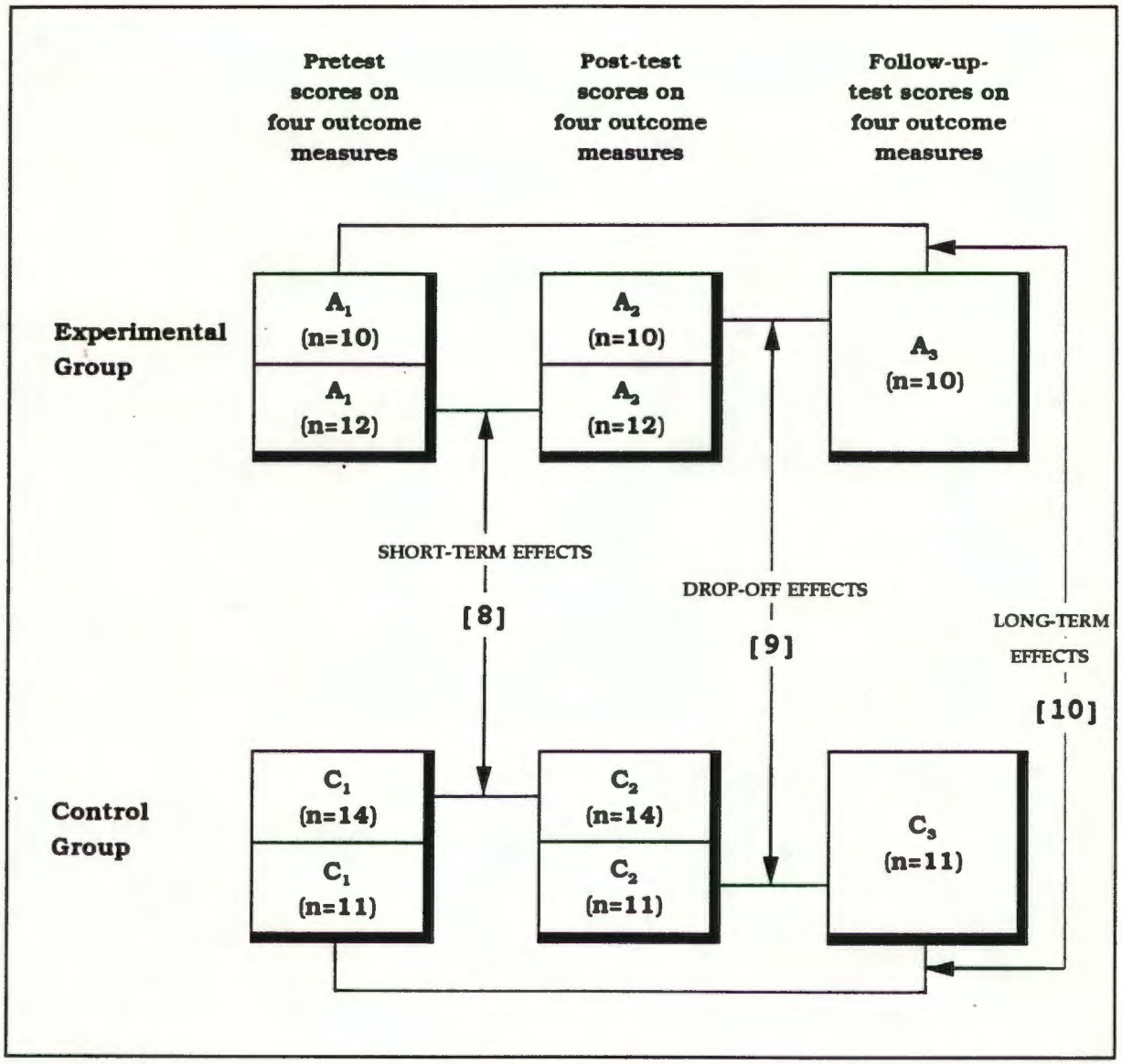

Figure 5.9: Diagrammatic summary of the three pairwise t-test comparisons performed on the gain scores, on four outcome measures, in Stage III of the data analysis

As Table 5.24 indicates, between pretest and post-test the pretested experimental Group A obtained a significantly higher ($p<0.05$) gain in mean score (6.00) on the KI relative to the pretested control Group C (0.00).

However, with respect to the APWA Scale the gain score of the experimental Group A - although higher than than that of Group C (1.67 versus -1.29) - failed to reach significance ($p=0.08$ for separate variance and $p=0.06$ for pooled variance). An examination of the computer-generated histograms, however, showed a clear upward shift in Group A's APWA scores relative to Group C. However, large single values (one in

each group) had plummeted and had clearly effected an increase in the variance such that no significance was found in the gain score analysis. A Wilcoxon two-sample test (equivalent to a Mann-Whitney U Test) was performed on the group gain scores obtained on this APWA Scale. A significant difference in location was found for the APWA Scale at the 0.01 level, with experimental Group A scores significantly higher than the control Group C scores.

Table 5.24: Pairwise t-tests on short-term gain scores (between pretest and post-test), on four outcome measures, for pretested Groups: experimental A (n=12) versus control C (n=14)

Outcome Measures	Means (post-test mean minus pretest mean)		Standard Deviations (of post-test scores minus pretest scores)		*p* values obtained for differences between means	
	Group A Experimental	Group C Control	Group A Experimental	Group C Control	Separate Variance	Pooled Variance
KI	6.00	0.00	3.54	2.88	**0.0001**	**0.0001**
APWA	1.67	-1.29	4.68	2.97	0.0757	0.0630
SE1	1.75	0.29	3.22	3.45	0.2749	0.2773
SE2	0.58	-0.14	2.71	2.45	0.4838	0.4797

p values ≤ 0.05 are considered to be significant at the 0.05 level

Although experimental Group A's mean scores on the SE1 and SE2 Scales increased during this period (1.75 and 0.58 respectively), and control Group C's mean increased slightly on the SE1 Scale (0.29) and decreased slightly (-0.14) on the SE2 Scale, no significant differences were found between the mean gain scores of these groups on the SE1 and SE2 measures during this two week period.

5.5.2 Drop-off Effects following the APP

To test null hypothesis 4, i.e. to determine whether the experimental group's post-test scores were stable over a short period of time (i.e. six-and-a-half weeks), the gain scores derived from the follow-up-test scores minus post-test scores obtained by the experimental and control groups, on each of the repeat measures, were compared - Arrow **[9]** in Figure 5.9 refers.

As Table 5.25 indicates, between post-testing and follow-up-testing the only significant difference in gain scores ($p<0.03$) between the experimental and control groups was found on the KI measure. On this measure, between post-testing and follow-up-testing, experimental Group A's mean score decreased (-1.50) whereas control Group C's mean score increased (2.82) during the six-and-a-half week period.

Table 5.25: Pairwise t-tests on drop-off gain scores (between post- and follow-up-test), on four outcome measures, for pretested Groups: experimental A (n=10) versus control C (n=11)

Outcome Measures	Means (follow-up-test mean minus post-test mean)		Standard Deviations (of follow-up-test scores minus post-test scores)		*p* values obtained for differences between means	
	Group A Experimental	Group C Control	Group A Experimental	Group C Control	Separate Variance	Pooled Variance
KI	-1.50	2.82	3.50	4.83	**0.0297**	**0.0315**
APWA	-1.20	0.00	1.75	1.79	0.1372	0.1375
SE1	0.70	-0.18	3.40	2.89	0.5323	0.5285
SE2	1.10	-0.27	2.51	2.57	0.2317	0.2321

p values ≤ 0.05 are considered to be significant at the 0.05 level

On the APWA Scale, experimental Group A's mean decreased (- 1.20), whereas control Group C's mean stayed the same during this period (Table 5.25). However the gain score comparison failed to reach statistical significance.

On both self-efficacy scales, during the six-and-a-half week period experimental Group A's mean scores increased (SE1: 0.70; SE2: 1.10) and control Group C's mean scores decreased (SE1: -0.18; SE2: -0.27). However the differences in the mean gain scores failed to reach statistical significance.

5.5.3 *Long-term Effects of the APP*

To test null hypothesis 5, i.e. to determine the long-term effects of the APP (i.e. six and a half weeks after completion of the intervention) on the experimental group, the gain scores derived from the follow-up-test mean minus the pretest mean obtained by the experimental and control groups, on each of the four measures, were compared - Arrow **[10]** in Figure 5.9 refers.

Table 5.26: Pairwise t-tests on long-term gain scores (between pretest and follow-up-test), on four outcome measures, for pretested Groups: experimental A (n=10) versus control C (n=11)

Outcome Measures	Means (follow-up-test mean minus pretest mean)		Standard Deviations (of follow-up-test scores minus pretest scores)		*p* values obtained for differences between means	
	Group A Experimental	Group C Control	Group A Experimental	Group C Control	Separate Variance	Pooled Variance
KI	4.10	2.55	5.49	5.73	0.5332	0.5341
APWA	-0.30	-1.73	4.79	2.33	0.4080	0.3885
SE1	2.30	0.09	2.98	2.26	0.0749	0.0693
SE2	1.40	-0.64	3.34	1.29	0.0968	0.0757

p values ≤ 0.05 are considered to be significant at the 0.05 level

Table 5.26 shows that between pretesting and follow-up-testing no significant differences ($p<0.05$) were found between the experimental and control groups, with respect to their gain scores, on any of the four outcome variables as measured by the KI, APWA, SE1 and SE2 Scales.

A closer examination of Table 5.26 reveals that during the two-and-a-half months between pretesting and follow-up-testing the mean KI scores of both experimental Group A and control Group C increased. Although Group A's gain score was higher (4.10) than that of Group C (2.55) during this period, the difference failed to reach statistical significance.

On the APWA Scale the mean scores of both groups decreased during the two-and-a-half months between pretesting and follow-up-testing. Although Group A's decrease (-0.30) was less than that of Group C (-1.73), the difference in their gain scores failed to reach statistical significance.

However, with respect to the SE1 and SE2 Scales, statistical significance is approached (in the case of the SE1: $p=0.08$; and SE2 $p=0.10$) where, in both instances, experimental Group A obtained a higher gain in mean score than control Group C.

5.5.4 *Long-term Effect of the APP on PSN*

A linear regression analysis of the PSN scores of Groups A and C between pretesting and follow-up testing was performed in order to determine the long-term effects of the APP on students' perceptions of the social norms pertaining to APB.

Table 5.27: Linear regression analysis on pre-, post-, and follow-up-test scores of Groups A (n=10) and C (n=11) on the refined PSN Scale

Source of variation	*df*	*SS*	*MS*	*F*	*p* value
Equality of adjusted means	1	0.60	0.60	0.09	0.769
Zero slopes:					
All covariates	2	29.61	14.80	2.22	0.139
pretest	1	4.16	4.16	0.62	0.441
post-test	1	29.41	29.41	4.41	0.051
Error	17	113.30	6.67		
Equality of slopes:					
All covariates	2	35.68	17.84	3.35	0.059
Error	15	77.63	5.18		
For each variable separately					
pretest					
all groups	1	24.12	24.12	4.33	0.054
error	16	89.18	5.57		
post-test					
all groups	1	30.42	30.42	5.87	0.028*
error	16	82.88	5.18		

* *this test for parallelism is significant at the 5% level which indicates a problem with equality of slopes*

As Table 5.27 indicates, there was some evidence of linear associations in the PSN scores at post-test and follow-up-test, and that the associations involved unequal slopes for Groups A and C. It appears that Group C exhibits stronger associations than Group A. There is no convincing evidence to indicate significant associations in the perceptions of social norms pertaining to HIV-preventive behaviour (APB) in the experimental and control groups between pretesting and follow-up-testing.

5.6 ANALYSIS OF SQ QUANTITATIVE DATA

The Supplementary Questionnaire (SQ) was completed only by students in the experimental Groups A and B. It was administered to these students on 11 November 1991, immediately after they had completed the follow-up Comprehensive Questionnaire (CQ), six-and-a-half weeks after their participation in the APP. No time constraints were given for its completion and, unlike the CQ, it protected students' anonymity totally. That is, students' computer-coded identity numbers were not used and they were specifically requested not to put their names on the questionnaire. The SQ is presented in Appendix D:1-2.

Sections A and B of the SQ were quantitative in that students were requested to assign a value, on a ten-point scale, to each of the five phases of the programme (Section A) and to the entire programme (Section B).

Table 5.28 presents details of the ratings given by the students to the five phases of the APP, and the mean rating given to the entire programme.

Table 5.28: Ratings of the ten hour APP, by subjects in experimental Groups A and B, at follow-up-testing

Phase of APP	# of students (n)	Maximum rating awarded	Minimum rating awarded	Standard deviation	Mean rating awarded
Knowledge and understanding of HIV/AIDS	24	10	2	2.67	**7.13**
Talk and discussion with a PWA	24	10	6	1.03	**9.38**
Awareness session about condoms	24	10	0	2.76	**6.25**
Lecture on sexuality outside marriage	24	10	1	2.00	**6.46**
Life skills for coping in the "Era of AIDS"	24	10	1	2.36	**6.08**
ENTIRE APP	23	10	2	2.40	**7.00**

5.7 ANALYSIS OF CQ AND SQ QUALITATIVE DATA

Section C of the SQ was qualitative in nature. Students were told to assume that they were being asked to design an HIV/AIDS education programme for their peers. They were requested to reflect on the APP they had experienced and to then provide a written critical evaluation of the APP (Questions 1 and 2). Question 3 asked students if they would include any additional section(s) and, if so, to provide reasons for its inclusion, and details concerning its content.

Section 5.7.1 which follows will present the qualitative findings arising from Section C of the SQ, together with comments made by students in the experimental groups, at post-testing, in response to the statement on page 14 of the CQ: "This space is reserved for any comments you may wish to make". Section 5.7.2 will present comments made by students at pretesting - in response to the statement in the CQ already mentioned - which were believed could be considered serendipitous findings.

5.7.1 Qualitative Findings of SQ and Post-test CQ

Eight of the twenty-six students in the experimental groups chose to make comment(s) during their completion of the post-test CQ (two from Group A and six from Group B). On the other hand, at follow-up-testing nineteen of the twenty-four students in the experimental groups chose to respond to one or more of the three questions in Section C of the SQ.

Student perceptions relating to the APP were inferred from studying these comments. It was felt important to separate the comments made by students in these two sections because of the time difference, and because the first (from the CQ) were unelicited, so to speak, whereas the second (from the SQ) were directly invited. Consequently, the unelicited comments made by students in the CQ at post-testing are given in italics, whereas the invited comments, made by students in Section C of the SQ are given in normal script. All student comments are reproduced verbatim - i.e. with original phraseology, spelling and other errors left unedited.

General Positive Comments:

- *I found the course to be very enlightening and taught me much about Aids that I was unaware of and that it affects all of us.*
- *In seeing both the affect of this course on myself and my fellows and the great planning, concern and effort behind the course, I see that A.I.D.S. is a topic that is being dealt with severly - I am truely proud that I can say, 'I am a South African.' Thank-you. You probably have saved my life.*
- *I think that the course was definitely a good one and that it has given us a better understanding of the problem, and has made us more aware of it's significance.*
- *I think that small groups in a workshop situation was much better than, say, a lecture to the whole standard - I felt more at home and less tense/uneasy when responding to personal questions, especially as I am fairly shy.*
- I would not exclude any of the phases, the order of each phase was good and I found the course as a whole most effective.
- All sections up to a very high standard as it is.

Comments in italics - unelicited (from CQ) Comments in normal script - invited (from SQ)

General Suggestions Made to Improve the Programme:

- *The AIDS teachers must learn the sex slang like muldive, 69, etc., otherwise communication breaks down.*
- Phases 1 and 5 - liven them up with more slides and illustrations. All phases - I would shorten them to improve attention span of recipients.
- All except the lecture from the sexologist could have been considerably better planned and more slickly executed. they were TOO LONG for the minimal information being transferred.
- Apart from the sexologist and PLWA I would train the rest with better public speaking skills. One must do something if your class is asleep!
- In all sections, I would choose to have both male **and** female instructors. This would serve to give oppinions from both sides of the fence. A mixing of boys and girls from the same social classes might also give both sexes valuable insight.

Comments in italics - unelicited (from CQ) Comments in normal script - invited (from SQ)

Phases 1 and 3 (PPA) and Phase 5 (Clinical Psychologists)

The first, third and fifth phases of the APP appeared to overlap with material that had already been dealt with in the school's Life-Styles Programme. This apparent repetition, mentioned by some thirteen students in the SQ, and two students in the CQ, may have led to boredom and inattentiveness. However, these phases were not entirely counter-productive - as illustrated by the following comments:

- *I have found this course very helpful in that is has tremendously increased my awareness of AIDS and HIV, and the precise differences between them. But it certainly did answer the questions I did have.*
- *The awareness session about condoms was very helpful as it helped me to more easily come to terms with the idea, access to, etc of the condom. Made me more comfortable towards sex, with a better knowledge of this protective means.*

Comments in italics - unelicited (from CQ)

On the other hand, one student said he would exclude the part about buying condoms:

- ..... because it did not make me feel more confident about buying them at all".

Comments in normal script - invited (from SQ)

Phase 2 (Talk by and discussion with a person living with AIDS (PLWA))

Meeting with and talking to a male in an advanced stage of AIDS appeared to have had a very powerful impact on a large number of students. Several staff members at the school made unsolicited comments to the author which independently substantiated the student comments made in this regard:

- *Yesterday* (i.e. Day 1) *was only valuable in one aspect: meeting a real AIDS victom.*
- *The experience we had with the man suffering from Aids who came to speak to us, was very profitable and I feel different towards AIDS patients. I will that they still must be looked after and that they are not "alians" like I viewed them before.*
- *Possibly what made the most impact was seeing and talking to the guy who had Aids. That will forever remain in my memory as a warning.*
- *Ivor is the first A.I.D.S. victim I have met, knowing that he has the symptom/condition.*
- *Without our introduction to the aids sufferer if would not have hit home so well.*
- *I think that the most persuasive/shocking (for our own benefit) was actually meeting, seeing, being with an AIDS patient - hearing about what he has to go through, etc.*
- I found the real danger of aids only hit me when we met and spoke to the man with aids. If the other courses could be made to scare people with facts and numbers it would help.
- Meeting some-one with aids. It changed my whole image of the Aids epidemic. If it was done on all Aids courses it would help to get the message through to a lot more people.
- The most affective part of the programme was actually **seeing** and **meeting, sitting next to, talking to** and AIDS patient. More of this kind of interaction would make much more of an impact.

Comments in italics - unelicited (from CQ) Comments in normal script - invited (from SQ)

Phase 5 (Lecture on Sexuality outside Marriage - Sexologist)

Comments on the presentation of this phase were favourable. Several students indirectly commented on the lecturer's good public speaking skills, and on how well planned and slickly executed his lecture had been. Only one student commented directly on the lecture.

"The lecture from the greek chap at UCT was very good."

Comments in italics - unelicited (from CQ)

However, students' reception of the lecture's content varied:

Several students suggested that they would exclude this phase from any APP they designed for the following reasons:

- people may listen but we feel that with proper preventive measures there is little chance of contracting AIDS so we would still have sex outside of marriage. Emotionally it is not too important.
- for I do not think it will make an impact on people. Talking about sex outside of marriage does not stop the sexual feelings of a person and will not stop the him from having sex."
- Although interesting and thought provoking, it had little influence on my understanding on the aids/hiv problem. It was however good propaganda for post-marital sex. I understand the logic, but it probably would't stop me from having sex."
- probably (exclude) the talk by the sexologist (but went on to suggest that) if this could be done on a more personal level i.e. a more relaxed environment, I think one would obtain more from it.

Comments in normal script - invited (from SQ)

The last suggestion was taken up by several students in their response to Section C, Question 2 of the SQ, which asked them which phases of the programme they believed could be improved, and how they would go about improving them:

- I would shorten the talk (by the sexologist) to make it more to the point, and less involved.
- I would involve the students more with sexologist instead of making them spectators.
  I, as a guy, felt better and more open about speaking to another guy, rather than a lady.

Comments in normal script - invited (from SQ)

Suggestions for additional sections:

Several suggestions were made to include additional sections.

- I would use more "shock therapy" to get the message of how bad AIDS is across, and videos generally communicated the quasi-medical facts far better than the speakers. The speaker should be their to answer any questions after the video.
- Family planning and AIDS should (I think) be combined in a 50/50 ratio instead of just mainly AIDS since they both overlap & involve more questions about the 2 subjects.
- I would get some of the leading doctors along to lecture and maybe show slides.

  N.B. I would have a family planning nurse come down to talk to the people. (In general, I believe that your impact that make is terribly important i.e. a negative person lecturing on Aids. Try to make them more "short but sweet".)
- Include a section on pornography to give students a view on what it does to one physcologically and the effects of this. (pornography is very freely available).

Comments in normal script - invited (from SQ)

5.7.2 Comments made by Students at Pretesting

Several students made comments at pretesting in response to the statement "This space is reserved for any comments you may wish to make" which could be considered as serendipitous findings:

- *Some questions were hard to answer - haven't experienced what they are asking.*
- *Some questions are difficult to answer, not being sexually active.*
- *I'm not sure what a few of the questions actually mean.*
- *Some of the questions in Section D are rather silly. Why would I ask for my friend's support before practicing safer sex? What and how I practice sex is my decision and do not ask my friend's permission before I decide to wear a condom or not.*

Comments in italics - unelicited (from CQ)

5.8 SUMMARY

Chapter 5 has provided a detailed account of the analysis of data generated by both the CQ and SQ during the investigation, and the results and findings of these analyses. Chapter 6 will evaluate these statistical and qualitative findings in terms of the research hypotheses. The study's research findings will then be examined in terms of how they relate to previously published studies; the implications for further research; and recommendations for HIV/AIDS prevention programmes for adolescents in the future.

CHAPTER 6

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

CHAPTER 6

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

Chapter 5 provided details of the results[1] of the statistical tests performed on the quantitative data sets generated by the Comprehensive Questionnaire (CQ). In addition, an analysis of the experimental students' ratings of, and qualitative comments about the ten hour HIV/AIDS prevention programme were presented.

The present chapter evaluates and interprets these results in terms of the study's five null hypotheses; examines the methodological shortcomings of the study; compares the outcomes of this study with the outcomes of other evaluated HIV/AIDS prevention programmes implemented among adolescents; and formulates conclusions. Finally, the implications of this study's findings both for further research and for adolescent HIV/AIDS prevention programmes in the future are examined.

In the previous chapter equivalence of the two pretested Groups A and C was established on all but one of the five outcome variables repeatedly measured in the investigation (i.e. on the PSN Scale[2]). It may therefore be inferred that any outcome differences found between the experimental and control groups on any of the four repeated measures KI, APWA, SE1 and SE2 were attributable to the impact of the treatment - assuming that other threats to validity, for example, pretest effects or interaction effects, had been ruled out. Consequently, the evaluation of the data analysis findings in terms of the null hypotheses will begin by discussing the pretest and interaction effects (i.e. null hypotheses 2 and 3). Thereafter, the short-term, drop-off, and long-term effects of the APP (i.e. null hypotheses 1, 4 and 5 respectively) will be discussed.

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[1]For the purposes of analysis, p values equal to 0.05 or less were deemed to have statistical significance.

[2]At pretesting Groups A and C were found to be not equivalent with respect to their beliefs about the social norms pertaining to HIV/AIDS preventive behaviours (as measured by the PSN Scale). An analysis of covariance and a linear regression analysis were therefore performed to determine the short- and long-term effects respectively of the APP on this variable.

6.2 DISCUSSION PART I: INTERPRETATION OF THE FINDINGS

6.2.1 $H_0$2: *Pretest Effects*

Null Hypothesis 2 states that: at post-intervention there will be no significant differences between the post-test scores obtained by students in the pretested group/s (A and C) and the non-pretested group/s (B and D) on any of the four[3] outcome variables as measured by the KI, APWA, SE1 and SE2 Scales. The data analysis findings reported in Chapter 5 pertaining to the testing of this second null hypothesis are presented diagrammatically in Figure 6.1 (arrows **[3]**, **[4]** and **[6]**).

As arrow **[3]** in Figure 6.1 indicates, non-pretested experimental Group B students obtained a significantly higher mean post-test KI score (18.07) than pretested experimental Group A (14.92). One might suggest the following possible explanations:

- Perhaps the KI pretest measure had a negative effect on the performance scores of Group A with respect to their knowledge and understanding of HIV and AIDS. However, since evidence indicated that the knowledge and understanding of this experimental group had improved significantly when compared to control Group C at post-intervention ($p<0.05$) this explanation is unlikely. However, having been exposed to the KI at pretesting, these experimental subjects may have become hesitant, indifferent, alienated, or blasé and consequently less receptive to the programme's content relative to non-pretested Group B. Boredom is also possible when the same test is administered a second time.

- Perhaps Groups A and B were not equivalent on the KI measure prior to the intervention - and therefore Group B appeared to improve significantly more on this measure at post-testing. This suggestion is unlikely as all the pretested DC and St Stithians College groups were found to be statistically equivalent on the KI measure at pretesting.

[3]Because the pretested groups were found to be not equivalent on the PSN Scale, similar statistical tests could not be applied legitimately, and this hypothesis was therefore amended.

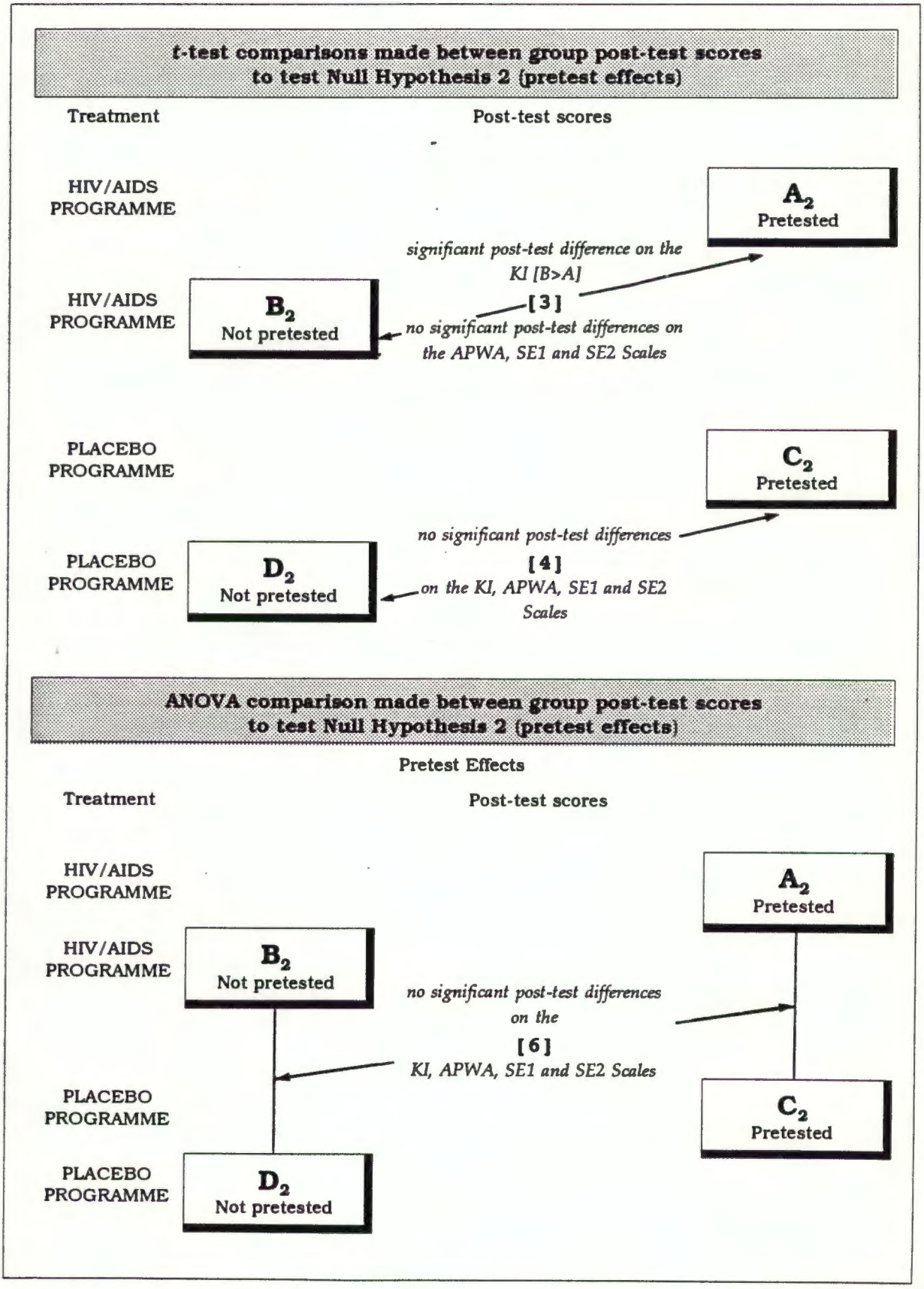

Figure 6.1: Diagrammatic summary of findings of statistical tests performed on post-test scores, on four outcome measures, to test Null Hypothesis 2 (pretest effects)

- Perhaps there was a difference in the effectiveness or sensitivities of the two instructors from the Planned Parenthood Association of the Western Cape (PPA) instructors, with respect to their implementation of this phase of the APP.

- Perhaps subjects in the non-pretested experimental Group B were more receptive to the APP than were subjects in pretested Group A. Although there was no significant difference in the number of students currently studying Biology in these two groups, Group B did have approximately 15% fewer students studying Biology than did Group A which may have improved the receptivity of Group B to the APP.

- Perhaps a combination of both of the latter two suggestions occurred. That is, Group B, having 15% fewer respondents currently studying Biology, may have also drawn a more effective PPA instructor and consequently were more receptive to this phase of the programme. This view has the author's cautious support because, although every effort was made to make the execution of the treatment to the two groups as homogeneous as possible, it was a fact that one of the instructors was in part-time, and one in full-time employment of the PPA. This factor may have resulted in the two PPA instructors not being equally self-confident in implementing the APP. In addition one student comment in the SQ suggested that the PPA instructor "didn't know much about AIDS herself". However, as responses in the SQ were completely anonymous, and the quality of the concurrent implementation of the APP by the two PPA instructors was neither monitored nor evaluated, there was no way of substantiating this causal explanation.

Based upon the findings summarised above, to which arrows **[4]** and **[6]** in Figure 6.1 relate, one may:

- conclude that <u>null hypothesis 2</u> is <u>supported</u> for the four outcome variables investigated. That is, there were no significant pretest effects, on any of the four variables investigated, as measured by the KI, APWA, SE1 and SE2 Scales, between the group/s who received a pretest and the group/s who did not receive a pretest.

Therefore, notwithstanding the finding that non-pretested experimental Group B obtained a significantly higher post-test mean KI score than pretested experimental Group A, pretesting respondents on their knowledge and understanding of HIV/AIDS, attitude towards people with AIDS, and self-efficacy with respect to both avoiding and reducing the risk of sexual transmission of HIV (as measured by the KI, APWA, SE1 and SE2 Scales) did not appear to affect either post-test measurement or treatments.

6.2.2 $H_0$3: *Interaction Effects*

Null Hypothesis 3 states that: at post-intervention there will be no significant interaction effects between the treatment format and the presence or absence of a pretest, on any of the five outcome variables as measured by the post-test scores on the KI, APWA, SE1 and SE2[4] Scales. The data analysis findings reported in Chapter 5 pertaining to the testing of this third null hypothesis are summarized diagrammatically in Figure 6.2 (arrow **[7]**).

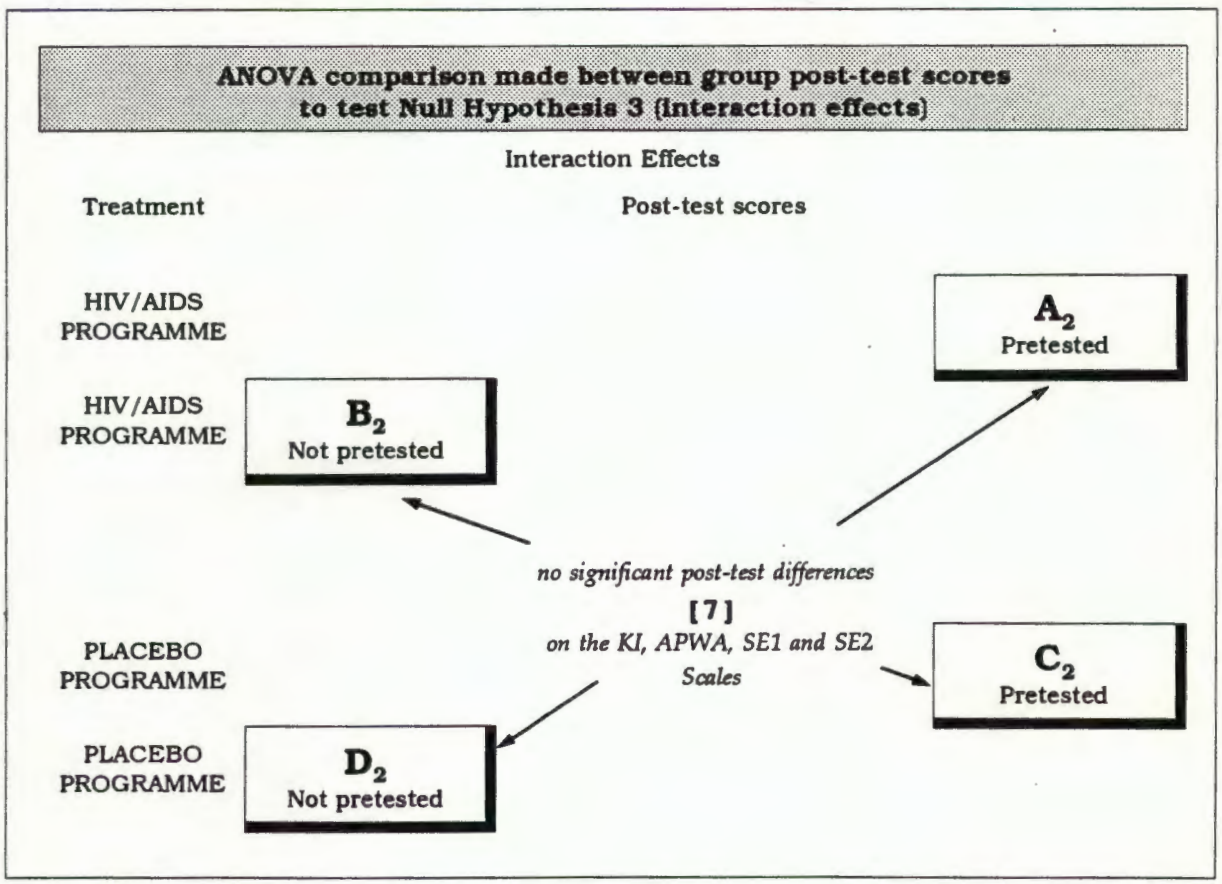

Figure 6.2: Diagrammatic summary of ANOVA findings to test for interaction effects (between treatment and presence/absence of a pretest ($H_0$3))

[4]It was not possible to examine the interaction effects of the PSN Scale with the treatment because at pretesting equivalence of the groups on this measure was not found. Hence the amendment of this hypothesis.

As no significant differences were found for any of the four outcome variables as measured by the KI, APWA, SE1, and SE2 Scales, when the means of Groups A_2:D_2 were compared with Groups B_2:C_2, null hypothesis 3 - is therefore supported.

Pretesting respondents on their knowledge and understanding of HIV/AIDS, attitude towards people with AIDS, and self-efficacy with respect to both avoiding and reducing the risk of sexual transmission of HIV (as measured by the KI, APWA, SE1 and SE2 Scales) did not appear differentially to affect the groups receiving either the ten hour HIV/AIDS prevention programme or the ten hour Life Styles programme.

6.2.3 $H_0$1: *Short-term Effects of the APP*

Null Hypothesis 1 states that: at post-intervention there will be no significant difference between the post-scores obtained by students in the experimental group/s (A and B) and students in the control group/s (C and D) on any of the five outcome variables as measured by the KI, APWA, SE1, SE2 and PSN Scales. The data analysis findings reported in Chapter 5 pertaining to the testing of this first null hypothesis with respect to the outcome variables as measured by the KI, APWA, SE1 and SE2 Scales are summarized diagrammatically in Figure 6.3 (arrows **[1]**, **[2]** and **[5]**).

With respect to the PSN variable, null hypothesis 1 was tested by conducting an analysis of covariance on the post-test PSN scores using the pretest PSN scores as covariates. No significant differences were found on this measure between experimental Group A and control Group C.

As arrow **[1]** in Figure 6.3 indicates, pretested experimental Group A obtained a significantly higher mean post-test APWA score than pretested control Group C (14.17 vs 10.64 p=0.0033 - where for significance at the 5% level a p value of 0.0125 was required). However, as arrow **[2]** in Figure 6.3 indicates, non-pretested experimental Group B did not obtain a significantly higher post-test mean APWA score than non-pretested control Group D (13.17 vs 12.67 p=0.4790 - where for significance at the 5% level a p value of 0.0125 was required). These findings suggest that the pretest may have sensitized Group A experimental subjects to the APP.

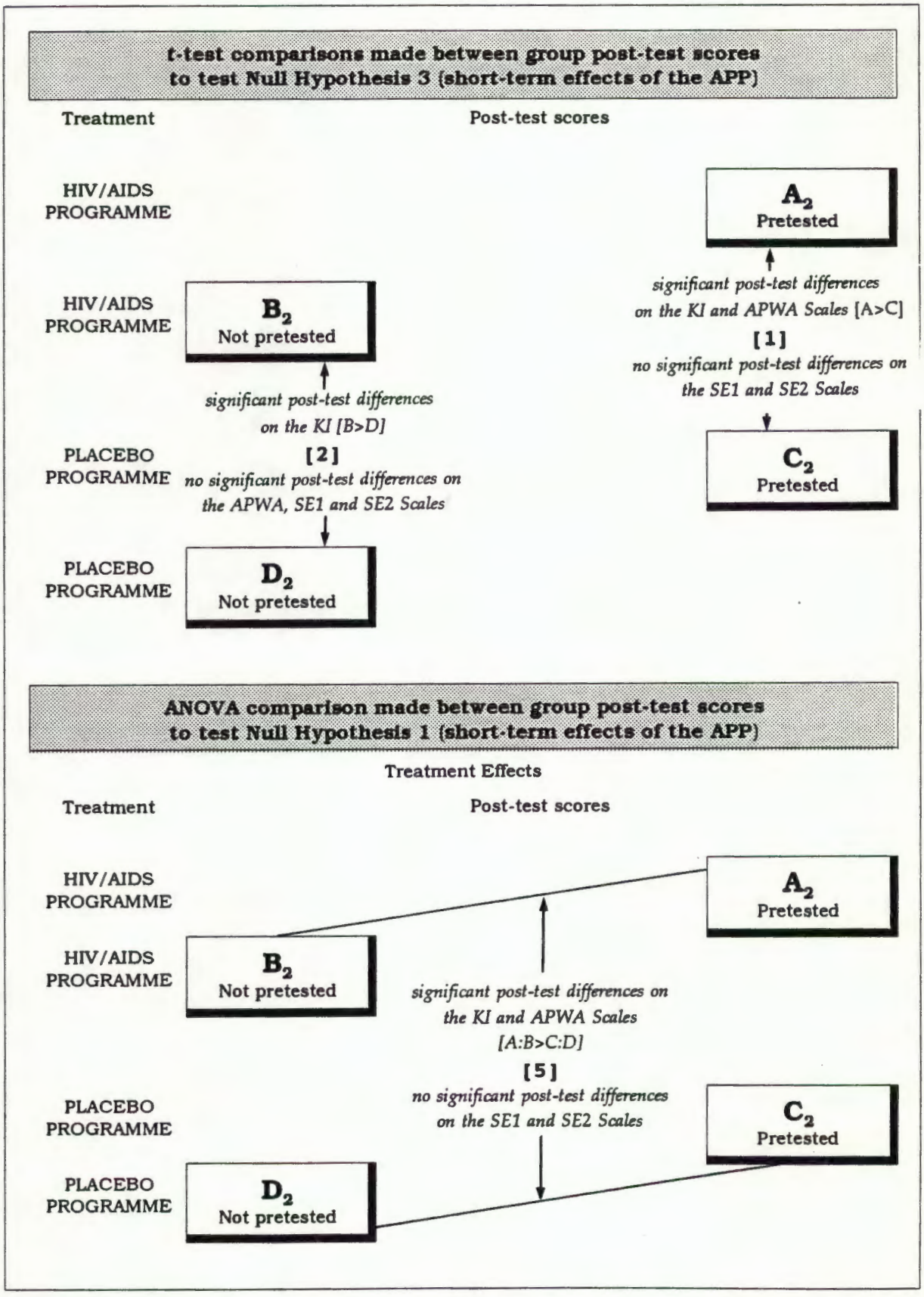

Figure 6.3: Diagrammatic summary of statistical test findings relating to evaluating the short-term effects of the APP (i.e. to test Null Hypothesis 1)

However, since no significant differences were found between the post-test mean APWA scores obtained by either pretested experimental Group A vs non-pretested experimental Group B (see arrow **[1]** in Figure 6.1 on page 170); or by combined Groups A:C (pretested) vs combined Groups B:D (non-pretested)(see arrow **[6]** in Figure 6.1 on page 170), this significant finding may simply be an artefact of the smallness of the groups.

Based upon the findings above, to which arrows **[1]**, **[2]** and **[5]** in Figure 6.3, and the ANCOVA findings on the PSN Scale relate, one may:

- cautiously accept null hypothesis 1 for the SE1 and SE2 and PSN Scales.
- cautiously reject null hypothesis 1 for the KI.
- cautiously reject null hypothesis 1 for the APWA Scale (for the pretested groups only).

Although prior to their respective treatments Groups A and C were found to be homogeneous with respect to their variances on the both the KI and APWA measures, we do not know conclusively that they started on a par with one another. Perhaps there was a corresponding real difference between the pretested Groups (A and C) on these two measures at pretesting, and sampling errors did not permit these initial differences to show up when the pretest means of these two groups were compared (Guilford 1956:195). In fact, as Table 6.1 indicates, at pretesting experimental Group A did perform slightly better than control Group C on both these measures.

Table 6.1: Summary of means obtained by DC Groups (A to D) at pretest and post-test on four outcome measures

Outcome Measures	Pretest Means		Post-test Means				Possible Score Range
	Experimental	Control	Experimental Groups		Control Groups		
	Group A (n=12)	Group C (n=14)	A_2 (n=12)	B_2 (n=14)	C_2 (n=14)	D_2 (n=9)	
KI	8.92	7.64	14.92	18.07	7.64	7.22	-23 to 23
APWA	12.50	11.93	14.17	13.71	10.64	12.67	4 to 20
SE1	20.42	21.07	22.17	21.57	21.36	20.22	7 to 28
SE2	15.17	15.50	15.75	16.71	15.36	15.78	5 to 20

The pairwise *t*-tests conducted on the short-term gain scores[5] took these initial differences into account and therefore tested null hypothesis 1 more thoroughly. Arrow **[8]** in Figure 6.4 diagrammatically summarizes the findings of the short-term gain scores analyses.

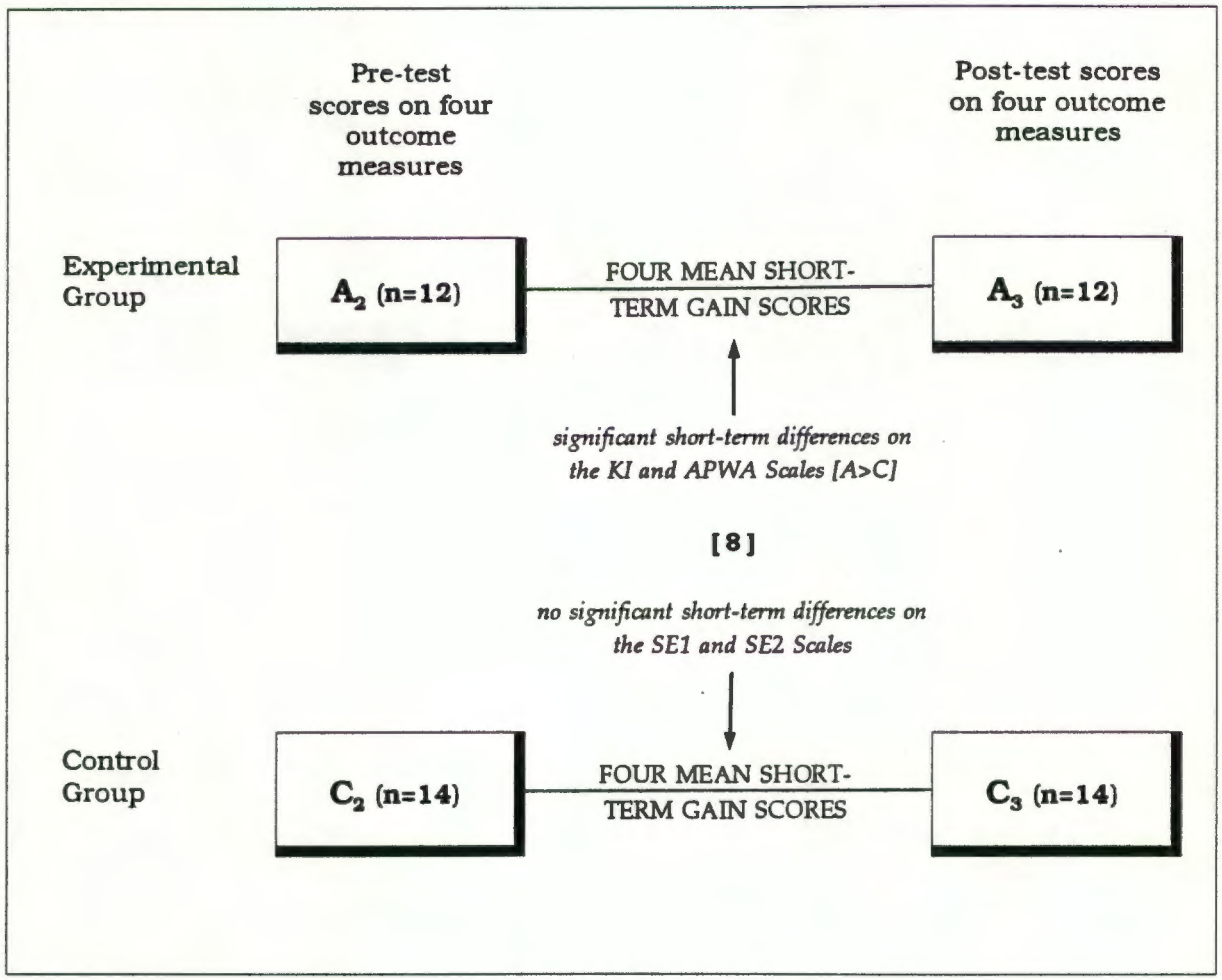

Figure 6.4: Diagrammatic summary of short-term gain score analysis findings related to testing the short-term effects of the APP (Null Hypothesis 1)

Based upon the initial findings and cautious conclusions already made, and on the more conclusive findings of the gain score analysis shown in Figure 6.4 (arrow **[8]**) null hypothesis 1:

[5]The short-term gain scores were obtained by subtracting the pretest mean scores from the post-test mean scores. The difference between scores on measures of achievement obtained at two points in time are referred to as change scores as well as gain scores. Gain (or change) scores can be negative as well as positive (Linn 1988:597).

- may be rejected conclusively for the KI measure for both the pretested and non-pretested groups.
- may be rejected conclusively for the APWA measure (only for the pretested groups).
- is supported for the PSN, SE1, SE2 Scales.

In the short-term, evidence indicated that the ten hour HIV/AIDS prevention programme had been successful in appreciably improving the knowledge and understanding of HIV and AIDS among programme participants relative to the control groups. In addition, evidence indicated that in the short-term the APP had been successful in encouraging more positive attitudes towards people with AIDS only among the pretested group.

On the other hand, evidence indicated that the APP had not been successful in the short-term in appreciably improving respondents' perceptions of the social norms pertaining to APB, nor the self-efficacy beliefs of participants - that is, for significantly improving the self-confidence of participants for enacting the behaviours required to avoid or reduce the risk of sexual HIV contagion.

Prior to discussing the data analysis findings relating to the drop-off and long-term effects of the ten hour HIV/AIDS prevention programme, the implications of student attrition must be addressed. Attrition occurred in both pretested groups between post-testing and follow-up-testing. In Group A two students were absent for the follow-up assessment (representing a 17% level of attrition); and in Group C three students were absent for follow-up assessment (representing a 21% level of attrition). Although evidence indicated that this attrition was not treatment-related, it did result in groups being compared for drop-off and long-term effects which were not equivalent to those compared when evaluating the short-term effects of the APP (i.e. immediately following the intervention). Therefore any inferences drawn, or conclusions made from the findings on the drop-off and long-term gain score analyses are made with this caveat in mind.

6.2.4 $H_0$4: *Drop-off Effects following the APP*

Null Hypothesis 4 states that: there will be no significant differences between pretested experimental and control groups with respect to drop-offs in gain scores[6] between post-testing and follow-up testing, on any of the four[7] outcome variables as measured by the KI, APWA, SE1, SE2 and PSN Scales. The data analysis findings of Chapter 5 pertaining to the testing of this fourth null hypothesis are presented in Figure 6.5 (arrow **[9]**).

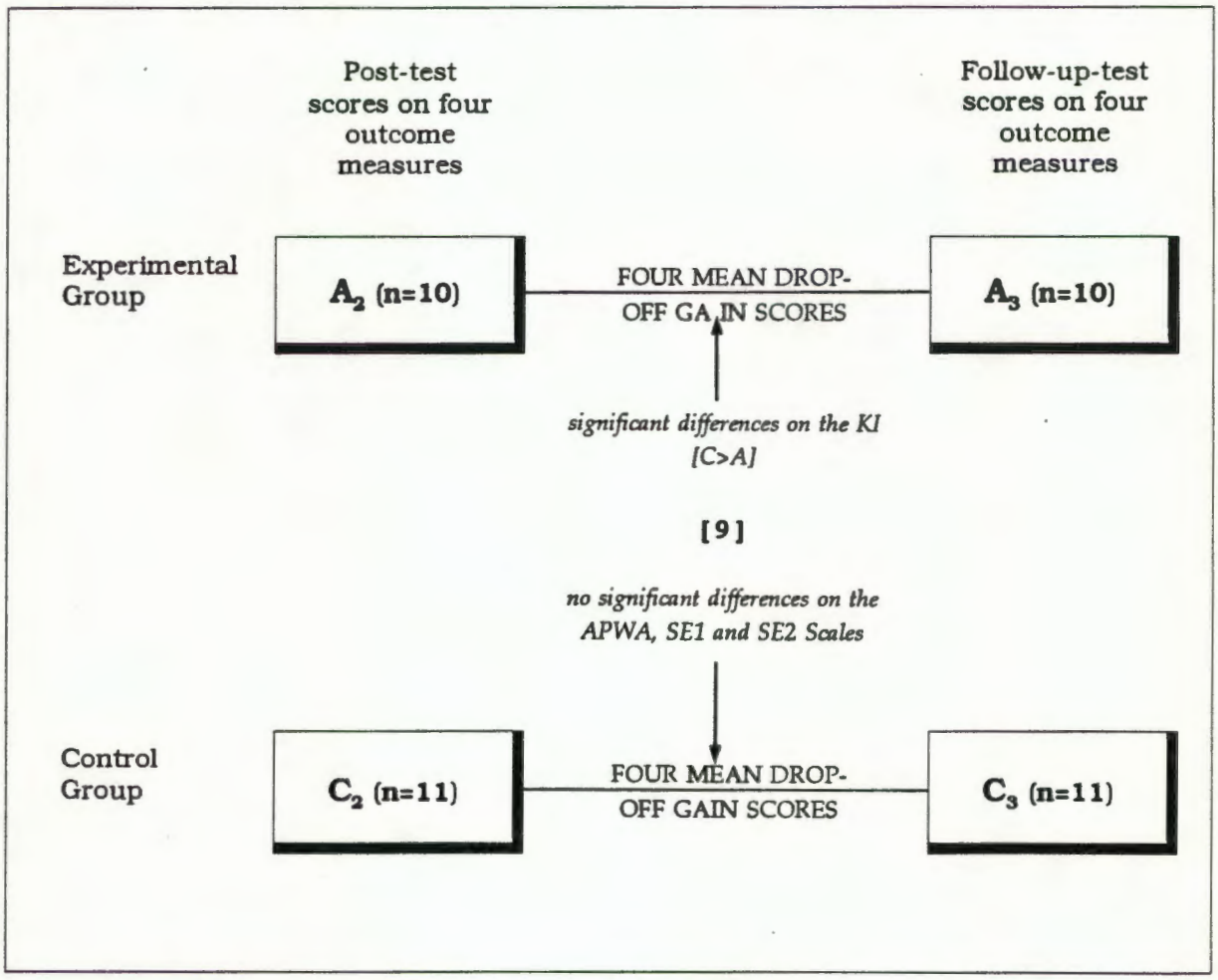

Figure 6.5: Diagrammatic summary of drop-off gain score analysis findings to test for drop-off effects following the APP (Null Hypothesis 4)

[6]The difference between scores on measures of achievement obtained at two points in time are referred to as change scores as well as gain scores. Gain (or change) scores can be negative as well as positive (Linn 1988:597).

[7]It was not possible to test for drop-off effects following the APP on the PSN scale as pretest equivalence was not found for Groups A and C - hence the amendment of this null hypothesis.

As arrow **[9]** indicates, between post-testing and follow-up-testing the only significant difference in drop-off gain scores ($p<0.03$) between the experimental and control groups was found on the KI measure. However, on this measure, between post-testing and follow-up-testing, experimental Group A's mean KI score decreased (-1.50) whereas control Group C's mean score increased (+2.82) during this six-and-a-half week period. Three possible suggestions are offered to explain this finding:

- perhaps contamination occurred during this six-and-a-half week period such that control Group C interacted with experimental Group A, which led to an increase in Group C's mean KI score, and a decrease in Group A's mean KI score;

- perhaps control Group C was simply exposed to, or actively sought out correct information from other sources, so becoming better informed, which led to the increase in their mean KI score;

- fatigue or boredom or irritation or indifference effects may have played a part in experimental Group A's decreased mean score at follow-up-testing - the third time this group had been requested to complete the same KI measure. However, since Group C had also been exposed to the CQ the same number of times this explanation is perhaps unlikely.

With respect to the APWA Scale, the significant positive improvement in Group A's attitude towards people with AIDS (PWA), evident immediately after the intervention, was no longer evident at follow-up-testing. In fact, during this six-and-a-half week period experimental Group A's mean gain score decreased (-1.20), whereas control Group C's mean APWA gain score stayed the same (0.00). One might infer from this finding that the pretested experimental groups' initially improved attitude towards PWA, evident immediately following the intervention, was shortlived and displayed recidivism over time. Perhaps this finding lends weight to the evidence suggesting that the use of the pretest APWA measure sensitized experimental subjects to the treatment.

With respect to the changes in drop-off gain scores on the SE1 and SE2 Scales, the six-and-a-half weeks between post-testing and follow-up-testing did not appear to have any appreciable differential effects on the experimental and control groups. However, non-significant trends were evident which indicated that the self-efficacy of the pretested experimental group had improved over this six and a half week period when compared

to the pretested control group, with respect to their self-efficacy for both avoiding and reducing the sexual transmission of HIV. Experimental Group A's mean drop-off gain score increased on both these measures between post- and follow-up-testing (0.70 and 1.10 respectively), whereas Group C's mean drop-off gain scores decreased during this period (-0.18 and -0.27 respectively).

Based upon the statistical evidence alone, one may:

- conclusively accept null hypothesis 4 for APWA, SE1 and SE2 Scales.
- cautiously reject null hypothesis 4 for the KI measure.

From the statistical evidence it appears that the short-term improvement shown in the experimental group's attitude toward people with AIDS was short-lived, as it showed recidivism over the six and a half week period between post- and follow-up-testing.

With respect to the knowledge and understanding of HIV and AIDS, the finding that the control group obtained a significantly higher drop-off mean KI gain score relative to the experimental group might be attributed to uncontrollable factors such as either contamination or historical effects, or a combination of both.

6.2.5 $H_0$5: *Long-term Effects of the APP*

Null Hypothesis 5 states that: there will be no significant differences between pretested experimental and control groups with respect to the long-term gain scores between pretesting and follow-up-testing, on any of the five outcome variables as measured by the KI, APWA, SE1, SE2 and PSN Scales. The data analysis findings of Chapter 5 pertaining to the testing of this fifth null hypothesis for the KI, APWA, SE1 and SE2 Scales are presented in Figure 6.6 (arrow **[10]**).

Between pretesting and follow-up-testing no significant differences were found between the experimental and control groups, with respect to their gain scores, on any of the four outcome variables as measured by the KI, APWA, SE1 and SE2 Scales.

In an attempt to explain the non-significant findings on the KI gain scores between the experimental and control groups during this period, their mean gain scores were examined more closely (Table 5.26 on page 158). It was noted that the mean KI scores

of both groups increased during this period. Although the mean gain score of experimental Group A increased more than that of control Group C (4.10 versus 2.55 respectively), the difference between their mean KI gain scores failed to reach statistical significance.

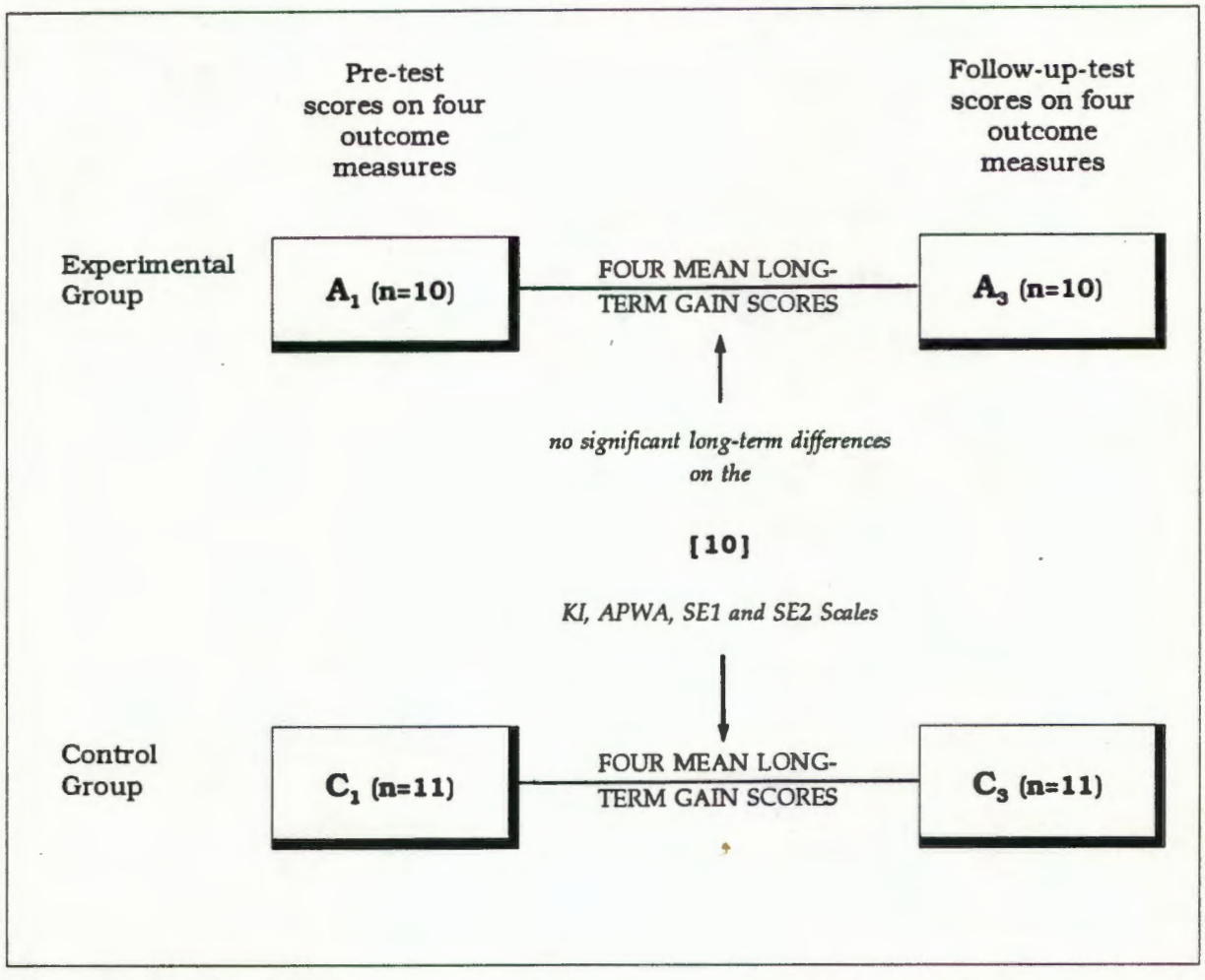

Figure 6.6: Diagrammatic summary of long-term gain score analysis findings to test for the long-term effects of the APP (Null Hypothesis 5)

The increased mean KI score obtained by Control Group C during this period might be explained by the following uncontrollable, intrusive effects:

- Between post-testing and follow-up-testing the scores of students in the control group might have been affected by interactions between students in both groups such that their knowledge and understanding of HIV/AIDS improved.

- Similarly, confounding effects might have occurred through students in the control group being stimulated to find the correct answers to some of the questions raised in the CQ.

- Students in the control group may have been exposed to correct information via the media, or by interaction with knowledgeable others (apart from the experimental groups), during this eight-and-a-half week period.

On investigating the gain scores of the experimental and control group on the APWA Scale, between pretesting and follow-up-testing, it was found that both groups' means decreased during this eight-and-a-half week period - although experimental Group A's mean gain score (-0.30) decreased less than Group C's mean gain score (-1.73). One might infer from this that the use of the APWA Scale on these subjects for the third time may have had a negative effect on their scores due to boredom or reluctance. However, it may also indicate the temporary nature of the initially significant short-term positive effect of the APP on the pretested experimental subjects' attitude towards people with AIDS.

With respect to the SE1 and SE2 Scales statistical significance is approached in the case of the SE1 Scale (p=0.08) and SE2 Scale (p=0.10), in which experimental Group A obtained a higher gain in mean score (+2.30 and +1.40) than control Group C (+0.09 and -0.64). This evidence suggests that the effect of the APP may not have any significant short-term effect on improving subjects' self-efficacy, in the context of behaviours required to avoid and reduce the risk of sexual HIV transmission. Rather, subjects' self-efficacy may be more likely to show improvement some time after the completion of such a programme.

With respect to the perceived social norms relating to HIV preventive behaviour, it was not possible to examine the long-term effects of the APP on the perceived social norms pertaining to APB (as measured by the PSN Scale) by means of a long-term mean gain score analysis because equivalence of the groups on the PSN Scale was not found at pretesting. Instead, a linear regression analysis was performed on the follow-up-test scores using the pretest and post-test scores as covariates. No long-term significant differences were found between the pretested experimental and control groups on this measure. One may therefore infer from this evidence that the APP had no effect on

changing the experimental groups' perception of those particular social norms pertaining to HIV preventive behaviour measured in this investigation.

Thus, on the basis of the statistical evidence alone, one might tend to accept null hypothesis 5 that the APP did not have any measured significant long-term effects on the pretested experimental subjects. However, due to the possible confounding effects of contamination, fatigue, and student attrition, caution is needed about drawing any definitive conclusions in this regard.

It appears that the ten hour HIV/AIDS prevention programme had no significant long-term effects on the participants' knowledge and understanding of HIV and AIDS, attitude towards people with AIDS, or on their perceptions of the social norms pertaining to APB. However, non-significant trends indicated that the pretested experimental groups' self-efficacy had improved in the long-term.

Table 6.2 summarizes the conclusions drawn from an evaluation of the statistical findings in terms of the study's five null hypotheses.

Table 6.2: Summary of the evaluation of the five null hypotheses of the investigation

Outcome Measure	$H_0$1 Short-term effects of the APP	$H_0$2 Pretest effects	$H_0$3 Interaction effects	$H_0$4 Drop-off effects following the APP	$H_0$5 Long-term effects of the APP
KI	**rejected**	accepted	accepted	**cautiously rejected with caveats**	accepted with caveats
APWA	**rejected for pretested group only**	accepted	accepted	accepted with caveats	accepted with caveats
SE1	accepted	accepted	accepted	accepted with caveats	accepted with caveats
SE2	accepted	accepted	accepted	accepted with caveats	accepted with caveats
PSN	accepted	accepted	accepted	accepted with caveats	accepted with caveats

Prior to discussing the outcomes of this investigation in the light of previously evaluated HIV/AIDS prevention programmes implemented among adolescents, the methodological shortcomings of this study will be addressed.

6.3 DISCUSSION PART II: LIMITATIONS OF THE INVESTIGATION

The external (population) validity (Huck *et al.* 1974:259) of the study's findings may be affected by the exclusion of female students and important groups of adolescents such as those attending government schools administered by the major education departments (Department of Education and Training, and the Houses of Assembly and Representatives), drop-outs and those attending specialised schools. Such exclusion may limit the possible generalisability of the study findings to Standard 9 boys from the upper middle classes enrolled at private boys schools in South Africa.

The external (ecological) validity (Huck *et al.*, *op.cit.*:262) of the drop-off and long-term effects of the ten hour HIV/AIDS prevention programme may be compromised by student attrition which occurred between post-testing and follow-up-testing across treatment groups; and by historical factors interacting with treatment effects between post- and follow-up-testing.

The short-term, drop-off and long-term effects of the ten hour HIV/AIDS prevention programme may also lack statistical conclusion validity (Tate 1988:95) because of the sizes of the groups used in data analysis. The use of small groups has two possible limitations: (a) when real differences do exist, it is harder to achieve statistical significance; and (b) when differences are detected in small groups it is not clear whether the difference is due to the imputed cause (in this study the APP) or whether it is an artefact of the smallness of the groups. Hence, the representativeness or generalisability of the findings may need replication with large groups or other supporting evidence.

The internal validity of the short-term effects of the APP may be compromised by the failure to engage independent observers to monitor the implementation of the APP. Where two facilitators were concurrently presenting the same APP phase to the two experimental groups, some method of rating their respective presentations to test for equivalence in presentation, content, ability to facilitate group discussion, effectiveness and sensitivities ought to have been built in.

Additionally, apart from the KI measure, all the other refined measures used to evaluate the outcome variables in the investigation consisted of fewer than eight items. In general, the reliability of a scale increases with increasing length. Provided that the added items have content validity, larger scales tend to have greater reliability.

One of the assumptions made in this study was that students know with reasonable accuracy how they might behave or react in a given social situation. Another assumption made was that participants would be willing and able to answer all questions posed in the two questionnaires with both frankness and honesty. Based on the comments made by several students at pretesting (i.e. in the CQ - refer to page 166) these assumptions are possibly fallacious for at least some of the students. This finding possibly compromises the validity of the study's findings.

The use of a pencil-and-paper questionnaire is limited by an individual's self-insight and self-understanding. The validity of asking adolescent respondents, believed to be relatively naive and inexperienced in matters of sexual behaviour, to project themselves into the future is questionable. Such future-oriented questions could be pertinent in a population of sexually active adolescents. Such individuals would presumably have established their sexual behaviour patterns; would have some experience to draw on; and would have a greater likelihood of being aware of their own strengths, weaknesses and limitations, in avoiding or reducing exposure to HIV. It is suggested that in a study population believed to be relatively sexually inexperienced, and presumably having incomplete self-knowledge, it would be difficult to obtain responses to such future-oriented questions that encompass an appropriate degree of informed honesty. Hence the trends indicating improved self-efficacy among students in the long-term may be fallacious.

These points having been made, the substance of the study's findings will now be compared to previously evaluated adolescent HIV/AIDS prevention programmes.

6.4 DISCUSSION PART III: LINKS WITH PREVIOUS FINDINGS

None of the previously published empirically-evaluated HIV/AIDS prevention programmes used standardised instruments to measure their outcome variables; nor did they all administer their pre-, post- and/or follow-up assessment questionnaires at

similar intervals. Consequently, it is difficult to make strong or fair comparisons between their findings and the findings of this study, but links can be made as follows.

6.4.1 Knowledge and Understanding of HIV and AIDS

The short-term results of this study, providing evidence that the APP significantly improved male adolescents' knowledge and understanding of HIV/AIDS, are similar to those reported in previously published and evaluated adolescent HIV/AIDS programmes. Specifically, the quasi-experimental studies of Johnson *et al.* (1988), and Ruder *et al.* (1990); and the controlled studies conducted by Huszti *et al.* (1989), DiClemente *et al.* (1989)(Table 2.3 in Appendix E), and more recently by Jemmott III *et al.* 1992 (Table 2.6 in Appendix E refers). All these studies found significant short-term[6] treatment effects for their respective HIV/AIDS prevention programmes.

The Jemmott III *et al.* (*op.cit.*) HIV/AIDS prevention programme was perhaps most similar to the current study in that it was five hours in duration, was implemented in one-day among small groups of male adolescents; and concurrently provided control groups with a placebo treatment. However, unlike the present study it was implemented among Black adolescents in the United States.

However, the findings of the present study are not supported by the recently published findings of Steitz and Munn (1993). The district-mandated intensive five day AIDS education programme was implemented among predominantly white middle- to upper-middle class adolescents (n=90) in Grades 9 and 10 enrolled at two large urban high schools in Tennessee. They found no significant main effects due to treatment or gender and suggest that this points to a plateau effect in the knowledge of junior and senior high school students. However, they did find a significant treatment by gender interaction which indicated that only the female participants had gained significantly in knowledge as a result of the AIDS education. The boys' knowledge was unaffected. However, this study lacks external validity because no other details of the AIDS education programme are provided and they only report a test-retest reliability coefficient

[6]The timing of post-intervention assessment varied among these studies. In the Huszti *et al.* (1989), DiClemente *et al.* (1989), Jemmott III *et al.*(1992) and Steitz and Munn (1993) studies the post-test was administered immediately after their respective HIV/AIDS interventions; in the Johnson *et al.* (1988) study the post-test was administered one week after the intervention; and in the Ruder *et al.* (1990) study post-testing was conducted 10 to 14 days after the intervention.

of 0.62 (period not stated) for 30 true/false items testing both AIDS knowledge (22 items) and tolerant attitudes towards people with AIDS (8 items).

Notwithstanding the caveat made with respect to the implications of student attrition between post- and follow-up-testing, the finding that the pretested APP groups' knowledge level was not significantly different from that of the control group in the long-term (i.e. eight-and-a-half weeks) contrasted with the findings of previously evaluated controlled interventions. In the Huszti *et al.* (*op.cit.*) study where follow-up assessment was done one month after the AIDS intervention; and in the Jemmott III *et al.* (*op.cit.*) study where follow-up-testing was done three months after completion of the AIDS programme; both found that although knowledge levels had declined between pre- and follow-up-testing, the levels were still significantly higher at follow-up-testing than they were at baseline. The more recent findings of Walter and Vaughan (1993), who administered their post-test three months after their six-class-period AIDS intervention, indicated significant treatment effects for the knowledge levels of participants (Table 2.6 in Appendix E refers).

6.4.2 Attitude towards People with AIDS

The short-term results of this study, presenting evidence that the APP apparently had a significant positive effect on improving the pretested groups' attitude towards people with AIDS, is consistent with the findings of other evaluated HIV/AIDS programmes implemented among adolescents (DiClemente *et al.*, *op.cit.*, Huszti *et al.*, *op.cit.*).

Again, notwithstanding the caveat, the current study findings indicating that at follow-up testing this positive short-term effect was no longer evident contrasts with the Huszti *et al.* finding that, although there was a decline in these scores between post- and follow-up-assessment, participants' tolerant attitudes towards people with AIDS remained significantly higher than at pretest levels.

6.4.3 Self-efficacy

In the short-term the APP did not significantly improve students' self-efficacy with respect to either avoiding or reducing the sexual transmission of HIV. In the long-term (i.e. eight-and-a-half weeks), however, significance was approached for both constructs. It was posited that this finding suggested that the impact of an intensive HIV/AIDS prevention programme may occur sometime after the treatment has been implemented.

In the Walter and Vaughan (*op.cit.*) study a significant treatment effect for improvement of students' self-efficacy was found when post-testing was done three months after the completion of their intervention. Their self-efficacy scale consisted of 13 items. It assessed the degree of certainty regarding their ability to successfully perform the following HIV-preventive actions: sexual abstinence, consistent condom use, sexual monogamy, and avoidance of sexual intercourse with high-risk partners. The current study findings are in harmony with this trend.

6.4.4 Perceived Social Norms

Statistical evidence obtained in the current study suggested that in the short-term and long-term the APP had not been successful in changing students' perceptions of the social norms relating to APB. Perhaps because the study population had high self-esteem, whether or not they believed their peers would support HIV-preventive behaviour or not was not an issue. This finding contrasts with the result reported in the Walter and Vaughan (*op.cit.*) study. They found significant treatment effects for improving subjects' perceived social norms for HIV preventive behaviour.

6.5 CONCLUSIONS

This study set out to conduct a rigorous controlled empirical evaluation of the impact of a professionally-delivered, specially designed ten hour HIV/AIDS prevention programme, implemented over two full teaching days on equivalent groups of Standard 9 male students aged 16 to 18 years (mean 16.4 years), enrolled at a Cape Town boys private school in September 1991. A Comprehensive Questionnaire (CQ) which *inter alia* contained five scales measuring the five outcome variables of interest (i.e. knowledge and understanding of HIV and AIDS; attitude towards people with AIDS; self-efficacy beliefs concerning behaviours required to avoid and reduce the risk of sexual HIV contagion; and perceived social norms relating to HIV/AIDS preventive behaviour) was used as a repeated measures instrument. Employing a Solomon four-group research design, the CQ was administered to one experimental and one control group two weeks prior to the interventions (pretesting); and to both experimental and both control groups: (a) immediately following completion of the treatments (post-testing), and (b) six-and-a-half weeks after post-testing (follow-up-testing).

Statistical evidence substantiated the following conclusions:

- The pretest was not a significant educational learning experience in itself.
- There were no interactions between the different treatments and the presence or absence of a pretest.
- In the short-term the APP was successful in appreciably improving participants' knowledge and understanding of HIV and AIDS; and in effecting a positive improvement in the pretested participants' attitude towards people with AIDS.
- In the short-term the APP was not successful in appreciably improving participants' self-efficacy with respect to behaviours required to avoid and reduce the sexual transmission of HIV, nor did it appear to have had any effect on participants' perceptions of the social norms related to HIV-preventive behaviour.
- The study findings relating to the outcome variables as measured by the KI, APWA and SE2 Scales are most probably generalisable to populations of Standard 9 boys enrolled at similar schools in South Africa.

With respect to the drop-off and long-term effects of the APP, no definitive conclusions could be drawn due to student attrition which occurred between post- and follow-up-testing. Notwithstanding the caveat made with respect to the implications of this phenomenon, statistical evidence indicated the following:

- In the six-and-a-half weeks between post-testing and follow-up-testing there was a drop-off effect in the pretested experimental groups' knowledge and understanding of AIDS relative to the pretested control group. This finding was attributed to uncontrollable information contamination which may have occurred during this period.
- No measurable drop-off effect was indicated for pretested participants' attitudes towards people with AIDS suggesting that their initially improved attitudes towards people with AIDS, evident at post-testing, were not sustained at the measured level over time. No measureable drop-off effects were noted for participants' self-efficacy with respect to both avoiding and reducing the risk of sexual HIV contagion.

- In the eight-and-a-half weeks between pretesting and follow-up-testing the APP did not appear to have had any significant long-term effects on any of the five measured variables, although there was a trend indicating that the pretested experimental groups' self-efficacy had improved over this period.

An ancillary instrument in the form of a Supplementary Questionnaire was administered to the APP participants only, immediately following their completion of the CQ at follow-up-testing. This instrument elicited feedback from students in the form of quantitative ratings of, and qualitative comments about the APP. In addition, unelicited comments made by students at pretesting and post-testing also provided feedback about the ten hour HIV/AIDS prevention programme. The following conclusions were drawn from the analysis of this data:

- Providing an opportunity for the boys to meet with and talk to a person in an advanced stage of AIDS clearly made a very powerful impression on the boys' "ownership" of the HIV threat.

- The talk by the sexologist had interested and/or made a positive impression on some of the boys. However, one student saw the sexologist's address as "good propaganda for post-marital sex". As insufficient time was available to discuss the issues which arose as a result of this address, a very important learning opportunity (self-generated persuasion) was obviously lost.

- The Clinical Psychologists' input had made a positive impact on some individuals. However, time strictures perhaps prevented them from making a greater impact.

- The PPA successfully addressed students questions pertaining to HIV and AIDS. However, as these students had already had some instruction about HIV and AIDS, too much time was wasted on covering material with which they were already familiar.

- The use of small groups in workshop and small group discussion sessions was helpful in providing a social climate conducive to the active participation; and in helping to make the shyer members feel more comfortable, less tense and uneasy.

- The gender of the programme implementers was, for some participants, a factor which adversely affected open and frank communication.

Empirical and qualitative findings aside, the final conclusion of this research is that it is a difficult undertaking to devise in one step a completely valid instrument for measuring and testing one aspect of a theoretical model such as the Health Belief Model or the Social Influence Model. When the empirical findings are partly discrepant one cannot be sure whether: (a) the original proposed theoretical model is faulty, or (b) the devised instrument itself is faulty, or (c) the researcher's skill in constructing the instrument as applied theory is faulty (e.g. the Perceived Threat Scale (refer to Appendix B:67, Figure 4.14)), or (d) whether the scale is an inappropriate one for the respondents used in the investigation (e.g. the Perceived Social Norms Scale (PSN Scale)).

6.6 IMPLICATIONS OF THE STUDY FINDINGS

The implications of the study findings for future adolescent HIV/AIDS programmes will be addressed first. Thereafter, the implications for further research will be discussed.

6.6.1 Future Adolescent HIV/AIDS Prevention Programmes

The quantitative findings of this study suggest that adolescent HIV/AIDS prevention programmes which are short and intense in duration may achieve measureable short-term improvements in participants' knowledge and understanding of HIV and AIDS, and attitudes towards people with AIDS, but perhaps little measureable effects in the long-term. Qualitative and quantitative feedback from participants indicated that meeting and talking with a person living with AIDS was the one phase of the APP which had made the most powerful impact on participants' "ownership" of the HIV threat; and that the APP's holistic approach was appreciated by many of the programme participants.

These points having been made, the following suggestions are made for future adolescent HIV/AIDS programmes:

- HIV/AIDS education should probably and preferably be implemented over a much longer period, not in a one-off short and intense programme.

- HIV/AIDS education should probably be taught in the broader context of a Life Styles programme.

- Where at all possible, adolescents ought to have the opportunity of meeting with, and talking to HIV-infected people.

- Programmes ought to schedule a considerable amount of time for assertiveness training and for the development of effective interpersonal communication skills related to behaviours required to avoid or reduce the risk of sexual transmission of the HIV through role play practice.

- Programmes ought to create ample opportunities for small group discussions, led by adult facilitators, of the many germane issues which inevitably arise during such programmes. In single-sex schools efforts should be made to hold mixed gender discussions to allow both boys and girls to gain important insights into the opposite gender's views, opinions, beliefs, and attitudes relating to sexual behaviour.

- Perhaps mixed gender facilitation ought to be investigated.

In the author's judgement, there is not only an urgent need for adolescent HIV/AIDS programmes to be developed and implemented in South Africa, but there is an equally important need to evaluate the effectiveness of such programmes on an on-going basis.

6.6.2 Recommendations for Further Research

The first recommendation to be made is that in future research exploring the effectiveness of adolescent HIV/AIDS programmes, there is a need to use much larger samples, and to ask participants explicitly, but anonymously about their sexual behaviour. The collected data may be then examined separately, in the light of whether or not the participants are reportedly sexually active. The second recommendation, although it has ethical implications, would be to employ the method used by Jemmott III *et al.* (*op.cit.*) which reportedly increases the accuracy of self-reports by asking participants to sign an agreement, prior to every assessment, indicating that they understood it was important to answer the questions carefully and honestly, that their answers would be confidential, and that their names would not be put on their questionnaires. Perhaps in addition one could obtain their signed agreement to participate wholeheartedly throughout such a programme, from pretest through to and including follow-up assessment, which might obviate attrition during the programme. A third recommendation is to use larger groups to explore whether or not pretesting which utilises an attitude scale (e.g. an attitude towards people with AIDS scale) sensitizess experimental subjects to the treatment.

Considering the complexity of HIV/AIDS preventive behaviour the author believes that every effort should be made to employ a multidisciplinary team of specialist researchers to work with HIV/AIDS educators in the field in the design and evaluation of HIV/AIDS programmes for adolescents. It is suggested that such a team comprises specialists from the following fields:

- measurement and evaluation to design and develop appropriate valid and reliable standardised instruments which can be used to evaluate the impacts of such HIV/AIDS-related outcome variables as knowledge, beliefs, attitudes, behavioural intentions and behaviours.

- medical specialists in both the clinical, psychological, epidemiological and pathological fields, who can act in an on-going capacity as consultants with the HIV/AIDS programme planners, evaluators and implementers to keep them constantly apprised of new factual developments in their respective fields.

- health theory specialists in the fields of psychology and sociology, who can assist evaluators in meaningfully operationalising the constructs chosen for measurement of programmes outcomes, as well as helping with the interpretation of the measured programme outcomes.

- specialists in applied statistics, who can select and apply appropriate statistical tests required for: (a) the refinement of valid and reliable scales; and (b) quantitatively evaluating an HIV/AIDS prevention programmes' effectiveness.

- qualitative research specialists in the fields of sociology and anthropology fields, who can conduct preliminary research into a particular society's norms and values pertaining to sexual behaviour so that the programme developers have a baseline from which to work. In addition, where controlled interventions are evaluated they could be responsible for independently evaluating the implementation of the experimental and control programmes; and for interviewing programme participants to gain insights into the acceptability of the programme, its strengths and and its shortcomings.

- specialists in gender studies, who can explore meaningful ways of introducing gender appropriate and relevant tasks for programme participants to examine in

single gender and mixed gender small-group discussions which may provide participants with valuable insights. For example, exploring gender role expectations, gender imbalances in patriarchal societies, and why there are social taboos against serious discussion of sexual behaviour.

- communication specialists, to help design effective programmes in all South African languages, and train educators effective in the communication and facilitation skills required for small group discussions.

- specialists in research design, who can plan appropriate and effective longitudinal, empirical and qualitative studies to evaluate the effectiveness of HIV/AIDS programmes, standardize pretest, post-test and follow-up testing times for evaluation programmes so that cross-comparisons of different programmes might be drawn.

- educational psychologists and sociologists actively involved with adolescents, who can inform programme implementers of the sexual slang of adolescents to ensure communication with them may be more effective.

Finally, such evaluated programmes should be published promptly. Programme designers could then amend their programmes accordingly.

There is little doubt that people in South Africa have the necessary skills and expertise. This preliminary study has shown that universities are not always the "ivory towers" they are sometimes purported to be, but are able and willing to work with the people at the grassroots level to conduct this urgent multidisciplinary applied research. Expanded, it could prove to be instrumental in saving the lives of many South Africans in the years to come. I trust that we will continue to meet the enormous unfinished challenge which still lies beckoning ahead!

LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ANOVA	Analysis of variance
APB	HIV/Aids Preventive Behaviour
APP	ten hour HIV/AIDS Prevention Programme (the experimental treatment)
APWA	Attitude towards People With AIDS
a.r.	available range
ATAU	Attitude Towards Alcohol Use
AZT	Zidovudine (drug used in treatment of HIV-infected patients)
BMDP	Bio-Medical Data Processing
CQ	Comprehensive Questionnaire
D	Item Difficulty Index
DC	Diocesan College
HBM	Health Belief Model (Becker *et al.* 1974)
HIV	Human Immunodeficiency Virus
HRB	High Risk Behaviour
KI	Knowledge Instrument
PLWA	People Living With AIDS
PPA	Planned Parenthood Association of the Western Cape
PSN	Perceived Social Norms
PT	Perceived Threat
PTS	Perceived Threat Scale (Keen 1990)
PWA	People With AIDS
Q1	Question 1
Q2	Question 2
RSE	Rosenberg's Self-Esteem Scale (1965)
SCT	Social Cognitive Theory (Bandura 1986)
SE1	Self-Efficacy scale (§ C, Q1, of the CQ)
SE2	Self-Efficacy scale (§ C, Q2, of the CQ)
SQ	Supplementary Questionnaire
SSF	St Stithians College students at First testing
SSG	St Stithians College students at second testing
SSS	Social Support Scale (Keen 1990)
STD	Sexually Transmitted Diseases
Std	Standard
TRA	Theory of Reasoned Action (Fishbein and Ajzen 1975)
UCT	University of Cape Town
V	Item Validity
vs	versus
WHO	World Health Organisation

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APPENDIX A

OUTLINE OF TEN HOUR HIV/AIDS PREVENTION PROGRAMME

PARTICIPANTS:

2 similar groups of 15 Standard 9 boys (16 - 17 year olds). Groups to run concurrently.

INSTRUCTORS / FACILITATORS:

2 personnel from the Planned Parenthood Association of the Western Cape, a sexologist and 2 clinical psychologists. An attempt will be made to make the execution of the treatment to the two groups as homogeneous as possible.

GENERAL INTRODUCTION

Every effort will be made to present this programme in a manner that is acceptable, accurate, realistic, simple, clear, non-judgemental, culturally sensitive, positive, and unemcumbered* by conflicting data. Furthermore, the programme will attempt to foster a sense of pride and responsibility for the health of oneself and others.

** for example: euphemisms will not be used because this may lead to unnecessary fear, confusion and concern; the use of the term 'high risk groups' will be avoided because this may encourage denial of a student's vulnerability to the infection and prevent him from ownership of the problem. Thus, 'high risk behaviours' will be the term used instead.*

DUAL OBJECTIVES

(A) Primary Prevention
Teaching students who are not yet sexually active how to delay the onset of sexual activity - *e.g. how to resist peer pressure to engage in sex; how to behave intimately without having sex.*

(B) Secondary "Prevention" ie. Risk Reduction
Teaching those students who are already sexually active the strategies which need to be employed to reduce their risk of infection with HIV. - *e.g. how to discuss "safer" sexual practices with a partner; the less risky proper use of condoms.*

COURSE CONTENT

I. KNOWLEDGE

(A) Basic Information about HIV Infection and AIDS

- the function of the immune system
- the distinction between "the AIDS virus" (ie. HIV as the causative agent of immunosuppression) and AIDS (as a syndrome of some 30 distinct medical conditions)
- effect of HIV on the immune system
- brief epidemiology *(to help reduce prejudice and misconceptions and increase perception of personal vulnerability)*
- stages in the development of AIDS (latent, PGL, ARC, AIDS)
- symptoms, duration and outcomes
- **infectious at all stages**
- With present biomedical technology:
  - no vaccine or cure
  - treatment very expensive and palliative at best - fatal
- which body fluids contain the virus and in what concentrations? *Semen, vaginal fluids and blood **(including menstrual blood)** - high concentrations vs very low concentrations found in tears, sweat and saliva. Sometimes found in urine and faeces.*

(B) "Test for AIDS" (the ELISA test)

- what is it? (test for HIV **antibodies** not the virus)
- positive results - reliability and implications
- negative results - poor reliability because of:
  the 'window period' (careful explanation required) thus interpretation and implications
- where one can get an "AIDS Test"

II. UNDERSTANDING

(A) HIV Transmission

Principles taught - i.e. any **activity** which allows a **sufficient quantity** of HIV-infected "body fluid" from a person to gain an **efficient entry route** into another person's **bloodstream** will expose that person to HIV infection.

(B) Entry Routes for the HIV

HIV **cannot** get through **intact** skin
Medical profession still debating about whether the virus can gain entry through intact mucous membrane *(mucous membrane is the soft tissue found lining the inside of the mouth, vagina, anus, eyes, and around the head of the penis)*

Entrance for HIV therefore through **damaged** skin and mucous membrane.

(C) **Three Transmission Routes for HIV:**

[1] **Major transmission through sexual intercourse**
In Africa AIDS overwhelmingly an epidemic of **heterosexual** transmission. The main risk in sexual activity is from **damage*** to skin and mucous membrane. The activity may be risky because:
(a) it causes damage* to the skin/mucous membrane; or
(b) the skin/mucous membrane is **already** damaged*, *(these may be damaged without one being aware of it).*

*Damage includes cuts, sores, ulcers, abrasions or cervical erosions, and any severe skin conditions. Discussion of STDs and genital ulceration, traumatised tissues etc.

[2] **Via blood-to-blood contact**

[3] **Vertically (ie. from mother to foetus/baby)**

PERSONAL RISK EVALUATION (based on participatory learning)

Discussion opened to encourage the students to voice their own fears and anxieties on modes of HIV transmission. Facilitation of the discussion by the instructor to help each of them to **realistically assess** the risks inherent in any particular situation/activity - based on the general principles and medically established facts already covered and **not** on irrational feelings.

(D) **High Risk Behaviours (HRB)**

All high risk behaviours will be identified. The reasons why these activities are "high risk" will be stressed. It is anticipated that most of the HRB will have already been identified and discussed in the previous discussion.

[1] **In a social context** - *e.g. promiscuity, casual sex, multiple partners, anonymous sex, injecting drugs etc.*

[2] **In a sexual context** - *e.g. unprotected sexual intercourse*

[3] **In other contexts where blood/blood products are exchanged** - *e.g. practises in reputable medical establishments; practises in rural clinics; contact sports.*

III. EMOTIONAL/AFFECTIVE ELEMENT

Visit from a person with AIDS (PWA)

It is believed that this visit and talk by a PWA will achieve the following objectives:

[1] sensitise the students to the reality of AIDS i.e. at more than a cognitive/intellectual level - and thus

[2] foster increased understanding, compassion, concern and support from the students towards HIV/AIDS sufferers

[3] improve tolerance and reduce discrimination towards PWA

[4] help students reduce, if not avoid, the use of projection and scapegoating.

[5] help the students "own" the problem of HIV/AIDS in the sense of feeling that they, personally, are vulnerable to the infection - this could be their reality at some time in the future - and therefore provide them with a reason and/or motivation for making an emotional commitment to protect both themselves and those they love from contracting HIV.

IV. LIFE STYLE OPTIONS IN THE "ERA OF AIDS"

(A) Absolute Protection against Transmission of HIV

[1] Absolute Protection against Sexual Transmission

- delay the onset of sexual activity
- celibacy (ie. sexual abstinence)
  Teach students various ways to understand their sexual feelings and urges as well as the pleasures of having personally and socially intimate experiences short of sexual intercourse)
- exclusive lifelong monogamy where neither partner ever exposed to HIV

[2] Blood-to-Blood Transmission

- Refraining from practices that may involve the exchange of blood *(e.g. ear-piercing and tattooing)*

[3] The Benefits of "No Risk" Lifestyles

(B) Strategies to Reduce the Risk of HIV Infection i.e. Identification of Low Risk Behaviours (LRB)

[1] "Safer Sex" (ie. less risky sex)

Discussion of the following **inadequate measures** (and the **reasons** for them being unsafe):

- asking a potential partner for their past sexual and/or medical history
- using caution in chosing a partner
- limitations of reducing the number of sexual partners
- serial monogamy
- avoid HRB
- "safer" penetrative sex *(i.e. proper, less risky use of condoms with spermicides and water-based lubricants)*
- non-penetrative sex (where no exchange of body fluids)

IT IS IMPORTANT TO ASSUME THAT ALL POTENTIAL SEX PARTNERS COULD BE HIV EXPOSED AND THEREFORE THE NEED AND IMPORTANCE OF CONSISTENTLY ADOPTING "SAFER SEX" PRACTICES AT ALL TIMES AND WITH ALL PARTNERS.

[2] Improving the Safety of Practices which may involve Exchange of Blood

e.g. correct waterproof dressing of cuts etc.; using disposable needles and syringes or correct sterilization of same; 1 in 10 solution of Jik for cleaning up blood spills or other 'body fluid' spills using protective gloves.

[3] Benefits of Low Risk Lifestyles

- reduce risk of exposure to HIV if unexposed
- reduce chance of reinoculation with HIV in the event of already having been exposed and
- reduce the risk of the inadvertant transmission of HIV to others.
- reduced risk of pregnancy and STDs
- reduced fear and anxiety *(i.e. peace of mind)*

V. CARING RELATIONSHIPS (vs CASUAL RELATIONSHIPS)

Discussion of this topic:-

It is envisaged that this section will be presented in the form of a lecture followed by opening up the floor for questions and discussion. It is hoped that the students will be encouraged to:

[1] Explore their own values and beliefs regarding their sexuality and personal relationships; and

[2] Explore the areas of peer pressure and social pressure to help them develop an understanding of the extent to which these may adversely affect the choices that each of them may make;

[3] The possible mismatch between their own values and peer/social norms and values;

[4] What is meant by a caring relationship?

[5] What are the characteristics and advantages of such a relationship? [c.f. casual relationships] *e.g. unselfishness, sincere concern for not putting your partner at risk, trust, commitment, mutual respect, fairplay, security, not 'feeling used', shared commitment to health and responsible behaviour, 'peace of mind'.*

[6] Do I value such a relationship?

[7] How does one develop such a relationship?
e.g. getting to know someone well socially before becoming more deeply involved in the relationship; expressing affection in non-sexual ways - **GUIDELINES FOR BEHAVIOUR.**

[8] The need to be aware of "confidence tricksters" who wear inscrutable masks of respectability which conceal false intent; and people who do not know right from wrong.

VI. BEHAVIOURAL SELF-MANAGEMENT

Students will be encouraged to draw on their own previous experience and/or knowledge, and from hearsay etc. to identify the types of situational or environmental influences which they believe may increase the probability of risky sexual behaviour occurring - it is believed that this exercise will help them recognise the antecedents to HRB *(e.g. certain times, moods, places/settings, groups of people plus use of stimulants and depressants etc).*

[1] Effects of alcohol and drugs on body's physiology and emotions and therefore on a person's self-control.

Discussions of the possible reasons why the use of alcohol and/or drugs may lead to irresponsible risky sexual behaviour occurring. *For example alcohol use may impair the willingness and/or ability to avoid coercion or to use condoms effectively.*

[2] The need to listen to one's intuition and not be too trusting; and

[3] The need to heed warnings from one's friends and/or acquaintances;

[4] What conclusions may be drawn from the previous discussion
i.e. if one wished to minimize the risk of infection? For example curtailing alcohol use, socializing in a group, partying in homes only where effective parental supervision.

[5] **The need to train the will power so that one can cope with the pressures one may be faced with to "follow the crowd".**
Thus training in the generation and practise of self-statements that emphasize that each of them is capable of abstaining from sexual intercourse (and/or developing "safer sex" practices).

That abstaining from having sexual intercourse will remove the risk of exposure to the HIV and thus any anxiety; that such behaviour is considered to be both praiseworthy and highly responsible; (and/or "safer sex practices" will reduce their anxiety and risk of exposure to the AIDS virus).

VII. LIFE SKILLS FOR COPING IN A RESPONSIBLE MANNER

(A) The Proper Use of Condoms/Lubricants/Spermicides

- instruction to be given
- condoms are not 100% effective - **ALL METHODS ARE FALLIBLE**
- if one is going to be sexually active then there is a need to act to reduce the risk of exposure to the HIV virus and always have a condom easily available and accessible - and to use it properly
- where to get condoms and which types are most reliable use of condoms as a birth control method (mismatch of condom use for HIV risk reduction vs contraception (i.e. condoms not used during a woman's period when the risk of HIV infection is at its greatest for both the man (because exposed to mentrual blood as well as vaginal fluids which may contain HIV); and the woman (because the uterine tissues are in an exposed condition thus facilitating easier access of HIV in semen to gain entry into her blood stream)

(B) Assertiveness Training

Because mutual agreement necessarily forms the basis of any relationship students will be trained in developing the interpersonal communication skills required to handle the following possible scenarios in a sensitive and confident manner:

[1] (a) How to say "no" to sex; and/or
(b) How to handle a confrontation with a partner's verbal or non-verbal pressure to have sex

- acknowledge your partner's wish
- firmly refuse your partner's request
- provide a reason(s) for your refusal
- suggest an alternative that would not create a risk

[2] Initiation and negotiation of "no risk" intimate behaviour with a partner

- this conversation needs to occur well in advance of intimate behaviour being initiated and in non-emotional circumstances
- negotiation requires good grace and humour
- a person who discusses "no risk" intimate behaviour with a partner:

- is comfortable about expressing their love and concern for the person they care about
- values both their own and their partner's health and is therefore committed to avoiding HIV infection
- is acting responsibly
- avoids fear/anxiety for both partners

[3] Handling a coercive or non-cooperative partner

How to handle a confrontation with a partner's verbal or non-verbal pressure not to practise "safer sex".

- acknowledge your partner's wish
- firmly refuse your partner's unsafe request
- provide a reason for your refusal
- suggest an effective alternative that would lessen the risk (if not avoid it entirely)

All of these assertiveness skills will be practised in dyads of participants in role-playing situations.

Feedback and corrective instruction will be provided by the instructors/facilitators and/or peers.

Clinical Psychologist's AIDS Intervention Workshop
(based on content provided in Phases VI and VII(B))

1. EXPLORING SELF CONCEPT AND PEER PRESSURE **Time:9h40 - 11h10**

Ice-Breaker (Knots)

(a) how many have had sex?
(b) why have they had sex?
(c) what does it make you feel to be able to say you have had sex?
(d) how do those who have not had sex feel about it (ashamed? etc.)
(e) Expose statements ("how far did you get?" etc.) - meaning and pressure
(f) Brainstorm and write up what people think about those who have had sex and not had sex?
(g) definition of a "real" man (old macho image)
(h) what are peer group expectations (i.e. pressure to have sex etc)(list)

2. TOXICITY

(a) what is group pressure to drink and smoke dope?
(b) ? implications for HRB (*high risk behaviours)*

3. SUMMARY

Draw out psychological issues of above and cog.(*cognitive*) self-statements (PP (*peer pressure*) SC (*self concept*) etc)

(a) how do these pressures make you feel
(b) what do you tell yourself re: (scoring c (*with*) girls; what other boys will think etc.)

4. REFRAMING **Time:11h20 - 12h00**

(a) Is it possible that a "real" man is in fact responsible, caring, sensitive, knows how to treat a woman but also has the "guts" to be an individual (not have sex, use condoms, practice safe sex, etc.)

i.e. reframe qualities into "new-age" man of the 90's (a list compared to "old macho image)

(b) which of you would define yourself as an "old macho man" and which a "new-age man" and why

(c) create new cognitive self-statements (e.g. it's cool not to score with a girl; resisting peer pressure; using condoms; being man enough to treat a woman properly).

5. CONDOMS **Time:12h30 - 13h45**

(a) list advantages of using condoms (STD's (*sexually transmitted diseases*), pregnancy, AIDS, staying up longer and therefore being a better lover)
- disadvantages

(b) dealing with anxieties about getting condoms
- list anxieties (fears of what other think, feeling embarrassed etc.) Role play getting one (asking one from a chemist) ("box of ...." game)

(c) discuss fears about carrying condoms and dealing with peer teasing etc. (reframe courage it takes to carry and use one)

(d) dealing with partner concerns when insisting on using one during sex
- best time to initiate discussion of safe sex (using sensitivity and humour)

6. ASSERTIVENESS TRAINING **Time:13h45 - 14h20**

(a) being passive - assertive - aggressive (passive-aggressive)

I feel .....
because ....
propose alternative

(b) Role plays

7. CLOSURE AND UNFINISHED BUSINESS **Time:14h20 - 14h30**

APPENDIX B

Table 4.11: ***Modification of item wording in Section A of the Comprehensive Questionnaire after piloting at UCT in 1991***

Item #	Original Section A Item	Item #	Modified Section A Item
1.2	The "AIDS virus" attacks, and may finally destroy, the body's immune system.	1.4	The HIV attacks, and finally destroys part of the body's immune system.
1.4	In Africa AIDS is over-whelmingly an epidemic of heterosexual transmission	1.1	In South Africa the HIV[1] is transmitted primarily through heterosexual contact.
1.6	There is often a long latency (dormant) period between initial infection with the "AIDS virus" and the onset of "full-blown" AIDS	1.8	After initial infection with the HIV, a period of several years may elapse before the onset of AIDS
1.7	AIDS is diagnosed by:	1.6	AIDS is diagnosed by:
1.7.1	a blood test	1.6.1	a blood test
1.7.2	opportunistic infections	1.6.2	opportunistic infections[2]
1.7.3	sexual orientation		
1.8	Someone who has the "AIDS virus", but is not showing any symptoms, cannot pass it on to other people	1.9	An HIV-infected person only becomes contagious to others once s/he has developed symptoms
1.9	With present technology a person who has AIDS or the "AIDS virus" can be cured	1.7	With present technology AIDS can be cured by:
1.11	AIDS can be cured by:	1.7.1	antibiotics (e.g. penicillin)
1.11.1	penicillin	1.7.2	vaccination
1.11.2	vaccination	1.7.3	drugs (e.g. AZT)
1.11.3	AZT		
1.12	One cannot get AIDS by having sex with a woman who has AIDS or the "AIDS virus".	1.2	A male can become infected with the HIV by having sex with a woman who has AIDS[3]
1.13	One can get AIDS by having sex with a man who has AIDS or the "AIDS virus"	1.3	A male can become infected with the HIV by having sex with a man who has AIDS

[1]**HIV** is the acronym for Human Immunodeficiency Virus commonly referred to as "the AIDS virus"

[2]Opportunistic infections are caused by certain disease-causing organisms that would normally be resisted with ease.

[3]**AIDS** is the acronym for Acquired Immune Deficiency Syndrome

Table 4.11 (continued)

Item #	Original Section A Item	Item #	Modified Section A Item
2.	For each "body fluid" indicate whether it would contain: [1] high concentration of the "AIDS virus" [HIGH CONC.]; [2] low concentrations of the "AIDS virus" [LOW CONC.]; or [3] no "AIDS virus" [NONE] in a person infected with the "AIDS virus":	2.	For each "body fluid", indicate whether that fluid would contain: - a high concentration of the HIV [High Conc.]; - a low concentration of the HIV [Low Conc.]; or - no HIV [None] in a person infected with the HIV
2.1	blood	2.1	blood
2.2	saliva	2.2	saliva
2.3	semen	2.3	semen
2.4	sweat	2.4	sweat
2.5	tears	2.5	tears
2.6	urine	2.6	vaginal fluid
2.7	vaginal fluid		
3.1	One "AIDS test" can conclusively establish that a person is not infected with the "AIDS virus".	1.10	One HIV antibody test can conclusively establish that a person is not infected with the HIV
3.2	A person with antibodies to the "AIDS virus" (that is someone who is antibody positive):	1.11	A person with antibodies to the HIV:
3.2.1	has AIDS	1.11.1	may develop AIDS sometime in the future
3.2.2	is protected from AIDS	1.11.2	may have AIDS
3.2.3	has come into contact with the"AIDS virus"	1.11.3	is protected from AIDS
3.2.4	can give the "AIDS virus" to someone else	1.11.4	has come into contact with the HIV
3.2.5	has the "AIDS virus" in his/her blood	1.11.5	can transmit the HIV to someone else
		1.11.6	has the HIV in his/her blood
3.3	Transmission of the "AIDS virus" can occur if a sufficient quantity of an infected "body fluid" gains entrance into another's blood stream.	3.1	Infection by the HIV usually occurs if any HIV-infected "body fluid" gains entrance into another person's blood- stream.

Table 4.11 (continued)

Item #	Original Section A Item	Item #	Modified Section A Item
3.5	It would be accurate to say that the risk of transmission of the "AIDS virus" through saliva is theoretically possible but extremely unlikely	3.2	In theory the risk of HIV transmission through saliva is possible, but in practice is extremely unlikely.
3.6	If a pregnant woman is infected with the "AIDS virus" her baby is at risk:	3.3	If an pregnant woman is infected with the HIV her baby is at risk:
3.6.1 3.6.2 3.6.3	during pregnancy during birth after birth (from mother's breast milk)	3.3.1 3.3.2 3.3.3	during pregnancy during birth after birth (from mother's breast milk)
3.11	The "AIDS virus" cannot pass through intact skin	3.4	The HIV cannot pass through intact skin
3.12	The "AIDS virus" can gain easier entrance into a person's bloodstream through damaged mucous membranes*	3.7	The HIV can gain easier entrance into a person's bloodstream through damaged mucous membranes[4]
3.13	Mucous membrane could be damaged without one being aware of it	3.9	A mucous membrane could be damaged without a person being aware of it
3.14	The use of protective gloves and a 1 in 10 solution of Jik should be used to clean up any "body fluid" spills of a person with AIDS or the "AIDS virus"	3.8	The use of protective gloves and a 1 in 10 solution of Jik is a safe and effective way of cleaning up the "body fluid" spills of an HIV-infected person
3.15	The only certain ways of avoiding the sexual transmission of the "AIDS virus" is:	3.12.	The only certain way of avoiding the sexual transmission of the HIV is:
3.15.1 3.15.2	celibacy a strictly monogamous lifelong relationship when neither partner has ever been exposed to the "AIDS virus"	3.12.1 3.12.2	celibacy (i.e. sexual abstinence) a strictly monogamous lifelong relationship when neither partner has ever been exposed to the HIV

[4]mucous membrane is the soft tissue found lining the inside of the mouth, vagina, anus, eyes, and around the head of the penis

Table 4.11 (continued)

Item #	Original Section A Item	Item #	Modified Section A Item
3.16	The likelihood of being exposed to the "AIDS virus" can always be reduced by asking a partner about their sexual and medical history/ background.	3.5	Knowing a person's sexual history will indicate his/her HIV risk exposure
		3.6	Asking a potential sex partner for his/her sexual history is reliable method on which to base a decision, and will therefore reduce the likelihood of HIV exposure.
3.17	The likelihood of being exposed to the "AIDS virus" can always be reduced by using caution in the choice of sexual partners	3.10	One method of reliably reducing the risk of HIV exposure is to use caution in the choice of a sexual partner
3.18	A reduction in the number of sex partners, in the absence of condom use, is always effective in reducing the risk of infection with the "AIDS virus"	3.11	Reducing the number of sexual partners in a population with small numbers of HIV-infected people will contribute little or nothing to reducing the risk of HIV exposure
3.20	When one has sex with a person, you have sex with everybody your partner has slept with for the past 8 to 10 years	3.14	When a person has sex with a partner, s/he effectively has indirect contact with all the people with whom the partner has had sexual intercourse over the past 8 to 10 years
3.21	The "AIDS virus" can be spread by:	3.13.	The HIV can be spread by:
3.21.1	sharing eating utensils	3.13.1	sharing eating utensils with an HIV-infected person
3.21.2	using the same toilet	3.13.2	using the same toilet as an HIV-infected person
3.21.3	being bitten by a blood-sucking insect (e.g. a mosquito) after it has bitten an infected person	3.13.3	being bitten by a blood-sucking insect (e.g. a mosquito) after it has bitten an infected person
3.21.4	breathing in airborne particles from an infected person's coughing or sneezing	3.13.4	breathing in airborne particles from an infected person's coughing or sneezing

Table 4.11 (continued)

Item #	Original Section A Item	Item #	Modified Section A Item
4.	**For each intimate behaviour assume that one of the participating partners is infected with the "AIDS virus". Please indicate the risk of exposure to the AIDS virus for the other participating partner using the key below:** **[1] extremely high risk** **[2] high risk** **[3] remote risk** **[4] no risk** **[5] do not know, not sure** *If you do not know the answer please tick or cross the "do not know, not sure" option [5] and please do <u>not</u> guess.*	4.	**For each activity mentioned below assume that one participating partner is HIV-infected. Please indicate the risk of HIV exposure for the other participating partner.** *If you do not know the answer please tick or cross the "do not know, not sure" option marked DNKNS and please do **<u>not</u>** guess.* Response options given: **High Risk** **Low Risk** **Remote Risk** **No Risk** **DNKNS**
4.1	unprotected vaginal intercourse	4.1	unprotected anal intercourse
4.2	mutual masturbation	4.2	anal intercourse using a condom
4.3	oral intercourse not to orgasm	4.3	unprotected vaginal intercourse
4.4	hugging and caressing	4.4	deep kissing (French or wet kissing)
4.5	oral intercourse to orgasm	4.5	vaginal intercourse using a condom
4.6	anal intercourse	4.6	mutual masturbation (assuming no "body fluid" exchange)
4.7	wet kissing (i.e. deep or French kissing)	4.7	oral intercourse not to orgasm
4.8	anal intercourse using a condom	4.8	hugging and caressing
4.9	non-penetrative sexual activity (assuming no body fluid exchange)	4.9	oral intercourse to orgasm

Table 4.11 (continued)

Item #	Original Section A Item	Item #	Modified Section A Item
5.1	Properly used, condoms provide an effective AIDS prevention method.	5.1	Properly used, condoms provide a reasonably effective method of reducing the risk of HIV transmission
5.2	If condoms are used to reduce the risk of exposure to the "AIDS virus" they need to be worn every time one has sexual intercourse	5.2	If condoms are used to reduce the risk of HIV exposure they need to be worn every time a person has sexual intercourse
5.3	Properly used, condoms provide an effective birth control method	5.3	If condoms are used for birth control:
5.4	If condoms are used for birth control:	5.3.1	they must be worn every time sexual intercourse occurs
5.4.1	they must be worn every time	5.3.2	they need not be used for the week prior to a woman's period
5.4.2	they need not be used for the week prior to a woman's period	5.3.3	they need not be used during a woman's period
5.4.3	they need not be used during a woman's period	5.3.4	they need not be used for a couple of days after a woman's period has ended
5.4.4	they need not be used for a couple of days after a woman's period has ended		
5.5	A condom should be worn so that it is snug at the tip.	5.4	A condom should be worn so that it is snug at the tip.
5.6	A condom should be unrolled before attempting to put it on the man's erect penis.	5.5	A condom should be unrolled before attempting to put it on the man's erect penis.
5.7	It is not a good idea to use Vaseline for lubrication when using a condom.	5.6	When using a condom it is better to use an oil-based lubricant than a water-based lubricant

Table 4.12: Table of specifications[1].

THE KNOWLEDGE INSTRUMENT (KI)						
Content Outline of APP	**Time Devoted to Instruction**	**Item Numbers**			**Original # of Items in KI**	**Final # of Items in Refined KI**
PHASE I: Knowledge about HIV and AIDS	90 minutes	1.1	1.2	1.3	25	8
		1.4	**1.5**	1.6.1		
		1.6.2	1.7.1	1.7.2		
		1.7.3	1.8	1.9		
		1.10	**1.11.1**	1.11.2		
		1.11.3	1.11.4	**1.11.5**		
		1.11.6	2.1	**2.2**		
		2.3	**2.4**	**2.5**		
		2.6				
PHASE II: Understanding	90 minutes	3.1	**3.2**	3.3.1	17	7
		3.3.2	3.3.3	3.4		
		3.7	**3.9**	**3.13.1**		
		3.13.2	**3.13.3**	**3.13.4**		
		3.14	4.1	4.2		
		4.3	4.9			
PHASE III: Life Style Options in the "Era of AIDS"	75 minutes	3.5	3.6	3.8	12	5
		3.10	3.11	**3.12.1**		
		3.12.2	4.4	**4.5**		
		4.6	4.7	4.8		
PHASE IV: Life Skills for Coping in a Responsible Manner	60 minutes	5.1	5.2	5.3.1	9	3
		5.3.2	5.3.3	5.3.4		
		5.4	**5.5**	**5.6**		
TOTALS:	315 minutes	63 items (23 items[1])			63	23

[1]Numbers in **bold** refer to those items remaining following the final refinement of the Knowledge Instrument.

Directives sent to St Stithians College for the test-retest administration of the Comprehensive Questionnaire

Tel.# (Res) (021) 6854050.

The Woolsack
Middle Campus
University of Cape Town
Private Bag
RONDEBOSCH
7700

November 29, 1991.

Dear Mr. Watson,

Following our discussion on Friday, November 22, may I again thank you very much for kindly agreeing to administer my HIV/AIDS questionnaire to your Standard 9 students at St Stithians early next year.

As I indicated during our telephone conversation, by retesting the same Standard 9 individuals with the same questionnaire we will obtain 2 sets of measurements. By comparisons of these measurements we hope to establish whether the questionnaire is reliable - i.e. whether the responses to the questionnaire are stable over a period of two weeks.

In order not to bias the responses made by the students at the second administration of the questionnaire (i.e. at retesting) I would like to request that the subject of HIV/AIDS is not discussed by any staff members (in either formal or informal ways), with these students between the first and second administration of the questionnaire. Should a staff member be asked questions in this regard, perhaps s/he could postpone responding by suggesting that it will be dealt with in a subsequent lesson or at a later time (i.e. after February 4th)?
[Obviously it is important not to let the students know that they can expect to be retested in the process.]

As the test-retest method of establishing the reliability of a questionnaire is affected by differences in administration - either through variations in physical factors such as noise, temperature; or in psychological factors such as variations in the technique of different administrators (which is most likely to happen if different people administer the questionnaire on the two different occasions), I would greatly appreciate it if you could arrange circumstances such that:

1. the Standard 9 students do the questionnaire in the **same** venue at both times (i.e. Tuesday, January 21 and Tuesday, February 4, 1992);

2. that seating be arranged for the Standard 9 students such that their desks are far enough apart to protect their privacy (and make it difficult to interact with their peers in any fashion!);

3. that the **same** staff members administer the questionnaire at both points in time.

In the interests of protecting the identity of your Standard 9 students please would you assign each of them a 3-digit computer code number starting from #131 onwards? Probably the easiest method would be to take the school's Standard 9 roster, which I assume is most probably arranged by boarding and non-boarding houses, and simply assign the first student the number 031, the second student 032, and so on. This then assists one in finding the student's name in the listings, when you need to fill in his 3-digit computer code number on his questionnaire, at the end of each session.

It is important that every student participates **fully** when answering the questionnaire i.e. that each student makes a response to every item in the questionnaire - the **only possible** exceptions to this are in **Section E, page 13 and/or Section F, pages 15 and 16. In Section H, page 18,** although the instructions to the students state "You are encouraged to provide the following details to allow us to assess accurately the range of students who have responded to this questionnaire" - i.e. implying that it is not obligatory to respond to the questions asked in this section - we designed this phrasing especially to "weed out" those students not responding to this section. We believe their non-response to these more personal questions, which may identify them, may indicate a lack of trust/honesty/motivation in their responses to other questions in the questionnaire. At Bishops all students, bar one (who also failed to respond to other sections of the questionnaire), did respond to this section, so I don't believe it will be a significant problem.

When I spoke to Mr David Gear, prior to speaking to you, he said that you expect to have about 130 Standard 9 students next year. I have thus sent up 2 sets of 140 copies of the HIV/AIDS questionnaire - I hope this quantity suffices. **The one set, labelled "SET A", is to be used for the first test on January 21st - these questionnaires either have no date on the facing page (118 copies) or the date September, 1991 on the facing page (22 copies). The other set, labelled "SET B", is to be used for the retest on February 4th - all these copies have the date February, 1992 on the facing page and on the last page (page 18), an additional question i.e. question #6.**

Prior to assembling on the testing days the Standard 9 students need to be told to bring a pen/pencil with them to the venue.

It is obviously extremely important that no questionnaires "go astray" or are left lying around at any time:- either before the first administration, or between administrations, or after the second administration.

The attached sheet is for your use when administering the questionnaires. From our experience at Bishops, at the beginning of the second administration of the questionnaire, when the students realise that they are being asked to do the same questionnaire again, you can anticipate some of the students voicing objections. **Please impress upon them the need to respond to all the questions as carefully, and as honestly, as they did previously, as it is in the interests of helping others to develop effective HIV/AIDS prevention programmes for schools in the future.**

I trust that this letter and its contents have supplied you with all the necessary details to assist you in the organisation and administration of the questionnaires in January and February, 1992. Before you parcel up the 2 x 140 questionnaires to return them to me after February 4th, would you please include the following information:

1. **a list of all the Standard 9 students' code numbers** - opposite which they have been marked as either present or absent on each of the two testing days;
   [By the way, should any student not be present for testing on January 21, there is no need to ask them to be present on the second day of testing on February 4th. Of course if it would be easier to have everyone there, to obviate having to organise someone to supervise those students who fall into this category, that won't be a problem either. All I'm getting at is that the only data I shall be able to use in my analysis will be taken from those students who have completed questionnaires at both testing times.]

2. information regarding the school's ethos; demographic information pertaining to the Standard 9 population with respect to socio-economic level, ethnicity, and intellectual level;

3. the conditions under which testing occured on both occasions including the circumstances under which the students took the test, and their levels of motivation.

Should you need to query any details with me I may be contacted at my parents home:- Address - **22, Third Avenue, Fish Hoek, 7975; Telephone # - (021) 7822693** during the **whole of December, 1991 and January 1 to 28, 1992. After January 28, 1992** I shall be available at the address and 'phone number (as per my letterhead).

Compliments of the Season - and many thanks again!

Yours most sincerely,

Gill Mitchell (Ms)

DIRECTIONS FOR QUESTIONNAIRE ADMINISTRATION

N.B. ***Please make sure that ALL the questionnaires are collected in BEFORE you allow the students to leave the venue at the end.***

Today you will be asked to complete a comprehensive questionnaire on HIV/AIDS. This questionnaire has been designed by a post-graduate research student at The University of Cape Town. Your answers will be used in the planning of HIV/AIDS prevention education programmes in the future. Thus, by answering **carefully and honestly**, you will be helping others.

You may find some of the questions very direct and explicit. However, we would hope that by now they will neither offend nor threaten you.

In the interests of **preserving your anonymity** we have been asked to assign you a **3-digit computer code number** which we will enter on your questionnaire upon its completion. This 3-digit code is **purely for statistical purposes as the identity of the individual is not important** to the researcher. When we send your completed questionnaires back, the researcher will only receive your questionnaires with a 3-digit code number on them - we give you our assurance that your name and code number will not be disclosed to anyone. Furthermore, the researcher undertakes to treat the data she obtains from your questionnaires with complete confidentiality.

The questionnaire is to be done under **normal examination conditions** i.e. no talking or other form of interaction with any other person during the completion of the questionnaires.

There is no need to feel pressurized, time-wise, to complete this questionnaire as you have been given a **GENEROUS amount of time in which to complete it** (i.e. up until ____ ie. +/- 55 minutes).

You may begin the questionnaire immediately you are issued with it.

Once you have completed your questionnaire:

1. **please scan through it carefully - between page 1 and page 18 -** to ensure that you have completed all the questions in all of the sections (unless indicated otherwise i.e. Section E and Section F); **and**

2. then hand it to either myself or _____ or _____(other assisting staff members' names). We will all be available to supply you with your 3-digit computer number. Please give us your name and class/house and we will enter the 3-digit computer code number, which we have assigned to you, in the space reserved for this on your questionnaire.

   Prior to accepting a completed questionnaire from each student please ask them whether they have checked their questionnaire to see that they have responded to all sections of it - from page 1 through page 18.

N.B. ***Please make sure that ALL the questionnaires are collected in BEFORE you allow the students to leave the venue. Thank You.***

Table 4.13: Item coding and scoring memorandum for Q1 & 2 of Section A - the Knowledge Instrument (KI)

ORIGINAL CODING		(1)	(2)	(3)
Question #	Item #	SCORING OF RESPONSES		
		True	False	Do not know, not sure
1.	1.1	+1	-1	0
	1.2	+1	-1	0
	1.3	+1	-1	0
	1.4	+1	-1	0
	1.5	+1	-1	0
	1.6.1	-1	+1	0
	1.6.2	+1	-1	0
	1.7.1	-1	+1	0
	1.7.2	-1	+1	0
	1.7.3	-1	+1	0
	1.8	+1	-1	0
	1.9	-1	+1	0
	1.10	-1	+1	0
	1.11.1	+1	-1	0
	1.11.2	+1	-1	0
	1.11.3	-1	+1	0
	1.11.4	+1	-1	0
	1.11.5	+1	-1	0
	1.11.6	+1	-1	0

ORIGINAL CODING		(1)	(2)	(3)	(4)
Question #	Item #	High Conc	Low Conc	None	Do not know, not sure
2.	2.1	+1	-1	-1	0
	2.2	-1	+1	-1	0
	2.3	+1	-1	-1	0
	2.4	-1	+1	-1	0
	2.5	-1	+1	-1	0
	2.6	+1	-1	-1	0

Table 4.14: ***Item coding and scoring memorandum for Q3 of Section A - the Knowledge Instrument (KI)***

ORIGINAL CODING		(1)	(2)	(3)
Question #	Item #	SCORING OF RESPONSES		
		True	False	Do not know, not sure
3.	3.1	-1	+1	0
	3.2	+1	-1	0
	3.3.1	+1	-1	0
	3.3.2	+1	-1	0
	3.3.3	+1	-1	0
	3.4	+1	-1	0
	3.5	+1	-1	0
	3.6	-1	+1	0
	3.7	+1	-1	0
	3.8	+1	-1	0
	3.9	+1	-1	0
	3.10	-1	+1	0
	3.11	-1	+1	0
	3.12.1	+1	-1	0
	3.12.2	+1	-1	0
	3.13.1	-1	+1	0
	3.13.2	-1	+1	0
	3.13.3	-1	+1	0
	3.13.4	-1	+1	0
	3.14	+1	-1	0

Table 4.15: Item coding and scoring memorandum for Q4 of Section A - the Knowledge Instrument (KI)

ORIGINAL CODING		(1)	(2)	(3)	(4)	(5)
Question #	Item #	SCORING OF RESPONSES				
		High Risk	Low Risk	Remote Risk	No Risk	Do not know, not sure
4.	4.1	+1	-1	-1	-1	0
	4.2	+1	-1	-1	-1	0
	4.3	+1	-1	-1	-1	0
	4.4	-1	-1	+1	-1	0
	4.5	-1	+1	-1	-1	0
	4.6	-1	-1	-1	+1	0
	4.7	-1	+1	-1	-1	0
	4.8	-1	-1	-1	+1	0
	4.9	+1	-1	-1	-1	0

Table 4.16: Item coding and scoring memorandum for Q5 of Section A - the Knowledge Instrument (KI)

ORIGINAL CODING		(1)	(2)	(3)
Question #	Item #	SCORING OF RESPONSES		
		True	False	Do not know, not sure
5.	5.1	+1	-1	0
	5.2	+1	-1	0
	5.3.1	+1	-1	0
	5.3.2	-1	+1	0
	5.3.3	-1	+1	0
	5.3.4	-1	+1	0
	5.4	-1	+1	0
	5.5	-1	+1	0
	5.6	-1	+1	0

Table 4.17: ***Cutoff points used to define the top- and bottom-scoring groups used for the item analysis of seven CQ measures***

Section, Measure and Group Size	Cut-Off Score for Top -Scoring Group	# and % of Respondents in Top -Scoring Group	Cut-Off Score for Bottom -Scoring Group	# and % of Respondents in Bottom -Scoring Group
A: Knowledge Instrument (KI) n=180	32	50 students 28%	20	45 students 25%
B: Attitude towards People with AIDS Scale (APWA Scale) n=180	37	52 students 29%	30	55 students 31%
C: Self-Efficacy Scale - Question 1 (SE1 Scale) n=180	23	52 students 29%	18	59 students 33%
C: Self-Efficacy Scale - Question 2 (SE2 Scale) n=180	32	56 students 31%	28	65 students 36%
D: Perceived Social Norms Scale (PSN Scale) n=96	37	28 students 29%	30	32 students 33%
E: Perceived Threat Scale (PT Scale) n=96	30	21 students 22%	21	22 students 23%
F: Attitude towards Alcohol Use Scale - Question 2 (ATAU Scale) n=147	28	44 students 30%	21	35 students 24%

Table 4.18: ***The difficulty and discrimination indices of KI items relating to Phase I of the APP: Knowledge about HIV and AIDS, together with the derived p values obtained from the pre- and post-tested comparison of groups***

Item #	Pretest comparison of groups			(D)[3] (n=180)	(V)[4] (n=180)	Post-test comparison of groups[2]		
	A, C, E and SSF[1]	A, C and E[1]	A and C[2]			A vs C	B vs D	AB vs CD
1.1	0.68	0.52	0.23	0.44	0.44	0.91	0.20	0.50
1.2	0.60	0.43	0.36	0.99	0.03	-	0.21	0.29
1.3	0.18	0.92	0.96	0.94	0.05	-	-	-
1.4	0.22	0.58	0.36	0.94	0.01	0.28	0.83	0.36
1.5	0.12	0.12	0.64	0.74	0.28	0.05	0.42	0.13
1.6.1	0.57	0.50	0.68	0.04	0.08	0.18	-	0.13
1.6.2	0.55	0.48	0.22	0.33	0.30	0.46	0.89	0.69
1.7.1	0.35	0.53	0.28	0.91	0.18	-	0.42	0.35
1.7.2	0.73	0.50	-	0.93	0.14	-	0.42	0.35
1.7.3	0.79	0.58	0.64	0.79	0.25	0.87	0.42	0.61
1.8	0.01	0.09	0.05	0.95	0.03	-	0.42	0.35
1.9	0.47	0.29	0.36	0.84	0.16	0.10	-	0.06
1.10	0.66	0.74	0.43	0.52	0.24	0.98	0.00	0.02
1.11.1	0.88	0.75	0.66	0.65	0.37	0.30	0.09	0.05
1.11.2	0.96	0.87	0.96	0.58	0.36	0.39	0.66	0.32
1.11.3	0.76	0.57	0.77	0.70	0.28	0.93	0.06	0.18
1.11.4	0.75	0.96	0.78	0.62	0.31	0.36	0.14	0.71
1.11.5	0.74	0.59	0.52	0.68	0.24	0.42	0.02	0.02
1.11.6	0.41	0.50	0.30	0.67	0.22	0.46	0.02	0.29
2.1	0.57	0.40	-	0.95	0.07	-	-	-
2.2	0.00	0.16	0.10	0.71	0.35	0.02	0.33	0.01
2.3	0.89	0.79	0.91	0.83	0.27	-	0.21	0.29
2.4	0.37	0.70	0.41	0.27	0.27	0.01	0.02	0.00
2.5	0.44	0.30	0.96	0.26	0.44	0.00	0.02	0.00
2.6	0.75	0.66	0.43	0.79	0.30		0.21	0.29

[1] Kruskal Wallis Test

[2] Mann-Whitney U-Test

[3] Item difficulty index

[4] Item discrimination index

DC Groups
A: Pre-/Post-test (n=12)
B: Post-test (n=14)
C: Pre-/Post-test (n=14)
D: Post-test (n=9)
E: Pretest (n=58)

St Stithians College Group

SSF: First testing (n=96)

Table 4.19: The difficulty and discrimination indices of KI items relating to Phase II of the APP: Understanding, together with the derived p values obtained from the pre- and post-tested comparison of groups

Item #	Pretest comparison of groups			(D)[3] (n=180)	(V)[4] (n=180)	Post-test comparison of groups[2]		
	A, C, E and SSF[1]	A, C and E[1]	A and C[2]			A vs C	B vs D	AB vs CD
3.1	0.00	0.03	0.01	0.08	0.01	0.12	0.33	0.70
3.2	0.37	0.33	0.12	0.88	0.20	-	0.02	0.06
3.3.1	0.72	0.91	0.68	0.86	0.16	0.92	0.42	0.88
3.3.2	0.01	0.79	0.50	0.63	0.29	0.28	0.62	0.25
3.3.3	0.67	0.46	0.28	0.43	0.23	0.25	0.64	0.59
3.4	0.06	0.48	0.46	0.89	0.14	0.87	0.21	0.52
3.7	0.88	0.71	0.50	0.77	0.34	-	0.13	0.26
3.9	0.67	0.46	0.64	0.80	0.32	0.28	0.04	0.31
3.13.1	0.08	0.36	0.83	0.88	0.12	0.18	0.07	0.03
3.13.2	0.01	0.41	0.91	0.90	0.12	0.18	0.07	0.03
3.13.3	0.00	0.80	0.51	0.54	0.15	0.01	0.00	0.00
3.13.4	0.07	0.64	0.84	0.87	0.10	0.36	0.02	0.03
3.14	0.04	0.19	0.52	0.61	0.25	0.96	0.02	0.11
4.1	0.11	0.11	0.05	0.89	0.14	0.36	0.02	0.03
4.2	0.06	0.03	0.05	0.02	0.04	0.46	0.25	0.15
4.3	0.80	0.64	-	0.98	0.04	0.28	-	0.35
4.9	0.16	0.95	0.93	0.41	0.34	0.91	0.89	0.95

[1] Kruskall-Wallis Test

[2] Mann-Whitney U-Test

[3] Item difficulty index

[4] Item discrimination index

DC Groups
A: Pre-/Post-test (n=12)
B: Post-test (n=14)
C: Pre-/Post-test (n=14)
D: Post-test (n=9)
E: Pretest (n=58)

St Stithians College Group

SSF: First testing (n=96)

Table 4.20: ***The difficulty and discrimination indices of KI items relating to Phase III of the APP: Life Style Options in the "Era of AIDS", together with the derived p values obtained from the pre- and post-tested comparison of groups***

Item #	Pretest comparison of groups			(D)[3] (n=180)	(V)[4] (n=180)	Post-test comparison of groups[2]		
	A, C, E and SSF[1]	A, C and E[1]	A and C[2]			A vs C	B vs D	AB vs CD
3.5	0.38	0.58	0.87	0.87	0.10	0.21	0.21	0.06
3.6	0.17	0.43	0.29	0.40	0.27	0.68	0.51	0.41
3.8	0.29	0.38	0.18	0.32	0.32	0.95	0.00	0.02
3.10	0.46	0.46	0.28	0.04	0.00	0.12	0.15	0.03
3.11	0.09	0.11	0.08	0.60	0.23	0.86	0.48	0.59
3.12.1	0.66	0.46	0.29	0.51	0.39	0.01	0.00	0.00
3.12.2	0.34	0.21	0.39	0.73	0.34	0.05	0.20	0.06
4.4	0.09	0.05	0.56	0.45	0.42	0.28	0.29	0.81
4.5	0.51	0.33	1.00	0.38	0.36	0.68	0.11	0.20
4.6	0.13	0.09	0.12	0.71	-0.01	0.18	0.70	0.15
4.7	0.23	0.11	0.23	0.24	0.36	0.35	0.60	0.89
4.8	0.66	0.58	0.28	0.93	-0.01	0.91	0.42	0.63

[1] Kruskal-Wallis Test

[2] Mann-Whitney U-Test

[3] Item difficulty index

[4] Item discrimination index

DC Groups
A: Pre-/Post-test (n=12)
B: Post-test (n=14)
C: Pre-/Post-test (n=14)
D: Post-test (n=9)
E: Pretest (n=58)

St Stithians College Group

SSF: First testing (n=96)

Table 4.21: ***The difficulty and discrimination indices of KI items relating to Phase IV of the APP: Life Skills for Coping in a Responsible Manner, together with the derived p values obtained from the pre- and post-tested comparison of groups***

Item #	Pretest comparison of groups			(D)[3] (n=180)	(V)[4] (n=180)	Post-test comparison of groups[2]		
	A, C, E and SSF[1]	A, C and E[1]	A and C[2]			A vs C	B vs D	AB vs CD
5.1	0.92	0.80	-	0.99	0.02	-	-	-
5.2	0.36	0.19	-	0.90	0.12	-	0.57	0.87
5.3.1	0.26	0.95	0.87	0.80	0.13	0.64	0.21	0.25
5.3.2	0.36	0.63	1.00	0.65	0.46	0.20	0.63	0.14
5.3.3	0.05	0.02	0.55	0.51	0.30	0.88	0.79	0.82
5.3.4	0.05	0.64	0.44	0.49	0.35	0.20	1.00	0.32
5.4	0.71	0.80	0.52	0.35	0.30	0.68	0.19	0.53
5.5	0.90	0.78	0.49	0.79	0.25	0.82	0.14	0.25
5.6	0.52	0.44	0.57	0.23	0.10	0.06	0.12	0.01

[1] Kruskal-Wallis Test

[2] Mann-Whitney U-Test

[3] Item difficulty index

[4] Item discrimination index

DC Groups
A: Pre-/Post-test (n=12)
B: Post-test (n=14)
C: Pre-/Post-test (n=14)
D: Post-test (n=9)
E: Pretest (n=58)

St Stithians College Group

SSF: First-testing (n=96)

KI Items relating to Phase I of the APP:
Knowledge about HIV and AIDS

- **Item 1.8 - ELIMINATED**

  The pretested groups were not found to be equivalent on this item therefore it was eliminated.

- **Items 1.2, 1.3, 1.4, 1.7.1, 1.7.2, 1.9, and 2.1 - ELIMINATED**

  All these items were found to have unacceptably high item difficulty values (i.e. they were too easy); failed to meet the 0.20 level of item discrimination; and also failed to discriminate between the experimental and control groups at post-testing. They were therefore eliminated.

- **Items 1.1, 1.6.2, 1.7.3, 1.11.2, 1.11.3, 1.11.4, and 2.6 - ELIMINATED**

  All these items were found to have item difficulty and discrimination indices within the acceptable limits. However, none of them discriminated between the experimental and control groups at post-testing and they were therefore eliminated.

- **Item 2.3 - ELIMINATED**

  This item was found to be too easy and failed to discriminate between the experimental and control groups at post-testing. It was therefore eliminated.

- **Item 1.6.1 - ELIMINATED**

  This item was found to be too difficult, failed to obtain an acceptable item discrimination index and failed to discriminate between the experimental and control groups at post-testing. Furthermore it was found to be highly ambiguous and was therefore eliminated.

- **Items 1.5, 1.10, 1.11.1, 1.11.5, 1.11.6, 2.2, 2.4, and 2.5 - RETAINED**

  These items were retained as their item difficulty and discrimination indices were all within the acceptable range and discriminated between the experimental and control groups at post-testing.

Eight items relating to knowledge about HIV and AIDS were retained in the refined KI.

Figure 4.3: ***Rationale for the retention or elimination of KI items relating to Phase I of the APP: Knowledge about HIV and AIDS***

KI Items relating to Phase II of the APP:
Understanding

- **Items 3.1, 4.1, and 4.2 - ELIMINATED**

  These items were eliminated as the groups were not equivalent at pretesting of this item.

- **Items 3.3.1 and 4.3 - ELIMINATED**

  These items were found to be too easy; showed poor item discrimination and failed to discriminate between the experimental and control groups at post-testing. Thus they were eliminated.

- **Items 3.3.2, 3.3.3, 3.7, 3.9, 3.14 and 4.9 - ELIMINATED**

  These items all had item difficulty and discrimination indices within the acceptable range. However they all failed to discriminate between the experimental and control groups at post-testing. They were therefore eliminated.

- **Items 3.9 and 3.14 - RETAINED**

  Both these items had acceptable item difficulty and discrimination indices and appeared to discriminate between the experimental and control groups at post-testing. They were therefore retained.

- **Item 3.2 - RETAINED**

  Although item 3.2 appeared too easy, it did obtain an acceptable item discrimination index and did discriminate between the experimental and control groups at post-testing. It was therefore retained.

- **Item 3.13.3 - RETAINED**

  This item had an acceptable item difficulty level. However although its discrimination index was low, it did discriminate between the experimental and control groups at post-testing. The item was therefore retained.

- **Item 3.4 - ELIMINATED**

  This item's difficulty and discrimination index fell outside the acceptable range and failed to discriminate between the experimental and control groups at post-testing. It was therefore eliminated.

- **Items 3.13.1, 3.13.2 and 3.13.4 - RETAINED**

  All these items had unacceptable item difficulty and discrimination indices. However, because they did appear to discriminate between the experimental and control groups at post-testing they were retained.

Seven items relating to the understanding of HIV and AIDS were retained in the refined KI.

Figure 4.4: ***Rationale for the retention or elimination of KI items relating to Phase II of the APP: Understanding***

KI Items relating to Phase III of the APP:
Life Style Options in the "ERA of AIDS"

- **Item 4.4 - ELIMINATED**

  This item was eliminated as it appeared that the groups were not equivalent at pretesting on this item.

- **Item 4.8 - ELIMINATED**

  This item was too easy, did not discriminate either between the top- and bottom scoring groups or between the experimental and control groups at post-test comparison. It was therefore eliminated.

- **Item 3.10 - RETAINED**

  Although this item appeared to be very difficult and non-discriminating in the item analysis, it did discriminate between the experimental and control groups at post-testing. It was therefore retained.

- **Item 3.5 - ELIMINATED**

  This item appeared to be too easy and to have poor discrimination in the item analysis. Additionally it was seen to favour the control group at post-testing. It was therefore eliminated.

- **Items 3.6, 3.11, and 4.7 - ELIMINATED**

  These items obtained acceptable item difficulty and discrimination indices. However they all failed to discriminate between the experimental and control groups at post-testing. They were therefore eliminated.

- **Item 4.5 - RETAINED**

  This item had an acceptable item difficulty and discrimination index. The post-test comparison of the instructed and uninstructed groups indicated that it might be showing a slight degree of discrimination (p value = 0.11 for Group B versus D). It was retained in order to keep the number of items in this section of the KI in proportion to that shown in the Table of Specifications.

- **Item 4.6 - ELIMINATED**

  This item had an acceptable difficulty level but a negative discrimination index and did not appear to discriminate between the experimental and control groups at post-testing. It was therefore eliminated.

- **Items 3.8, 3.12.1 and 3.12.2 - RETAINED**

  These items obtained acceptable item difficulty and discrimination indices and appeared to discriminate between the experimental and control groups at post-testing. They were all retained.

Five items relating to Life Style options in the "Era of AIDS" were retained in the refined KI.

Figure 4.5: ***Rationale for the retention or elimination of KI items relating to Phase III of the APP: Life Style Options in the "Era of AIDS"***

KI Items relating to Phase IV of the APP:
Life Skills for Coping in a Responsible Manner

- **Item 5.3.3 - ELIMINATED**

  At pretest comparison of the groups, this item was not found to be equivalent. It was therefore eliminated.

- **Items 5.1 and 5.2 - ELIMINATED**

  These items were found to be too easy, and to have low discrimination indices. Furthermore, neither of them appeared to discriminate between the experimental and control groups at post-test comparison. They were therefore eliminated.

- **Item 5.3.1 - ELIMINATED**

  This item obtained a low index of discrimination value and failed to discriminate between the experimental and control groups at post-testing. It was therefore eliminated.

- **Items 5.3.2, and 5.5 - RETAINED**

  These items obtained satisfactory difficulty and discrimination indices. Additionally they failed to discriminate clearly between the experimental and control groups when a post-test comparison was made (i.e. obtain p values of </= .05). However, the p value they obtained at post-test comparison was </=.14 which perhaps indicates that they were showing some discrimination. In the interests of keeping the number of items in this section equivalent to the proportion of instructional time spent in this area of the intervention they were retained.

- **Items 5.3.4 and 5.4 - ELIMINATED**

  These items obtained satisfactory difficulty and discrimination indices. However they did not appear to discriminate between the instructed and uninstructed groups at post-testing and were therefore eliminated.

- **Item 5.6 - RETAINED**

  This items appeared to be relatively difficult and to have poor discrimination. However, at post-test comparison of the experimental and control groups it item did appear to discriminate well. It was therefore retained.

Three items relating to life skills for coping with the threat of HIV infection were retained in the refined KI.

Figure 4.6: ***Rationale for the retention or elimination of KI items relating to Phase IV of the APP: Life Skills for Coping in a Responsible Manner***

QUESTIONNAIRE A

GENDER: | MALE | FEMALE | (please place a cross over the relevant box)

There are no right or wrong answers to the following questions. Please pick the answer that most closely describes how YOU <u>feel</u> about each statement and indicate your response by ticking [✓] or crossing[x] the appropriate box, using the following key:

KEY

SA	=	strongly agree
A	=	agree
NS	=	not sure
D	=	disagree
SD	=	strongly disagree

		SA	A	NS	D	SD
1.	I am afraid of catching AIDS from someone who has AIDS	[ ]	[ ]	[ ]	[ ]	[ ]
2.	I believe that if it weren't for gays, there wouldn't be an AIDS epidemic	[ ]	[ ]	[ ]	[ ]	[ ]
3.	I would stop being friends with a person if I discovered that he/she had AIDS	[ ]	[ ]	[ ]	[ ]	[ ]
4.	If would not want to hug someone with AIDS	[ ]	[ ]	[ ]	[ ]	[ ]

KEY

SA	=	strongly agree
A	=	agree
NS	=	not sure
D	=	disagree
SD	=	strongly disagree

		SA	A	NS	D	SD
5.	I would stop going to my barber/hairdresser if I suspected that he/she had AIDS	[ ]	[ ]	[ ]	[ ]	[ ]
6.	I believe that children with AIDS should be allowed to attend school and mix with other children as normal	[ ]	[ ]	[ ]	[ ]	[ ]
7.	I believe that people with AIDS must have done something wrong	[ ]	[ ]	[ ]	[ ]	[ ]
8.	I would be anxious working alongside someone with the HIV	[ ]	[ ]	[ ]	[ ]	[ ]
9.	If one of my friends got AIDS, I would not want them to tell me	[ ]	[ ]	[ ]	[ ]	[ ]
10.	I would be willing to share a drink with someone who has AIDS	[ ]	[ ]	[ ]	[ ]	[ ]

****

QUESTIONNAIRE B

GENDER: | MALE | FEMALE | (please place a cross over the relevant box)

There are no right or wrong answers to the following questions. Please pick the answer that most closely describes how YOU feel about each statement and indicate your response by ticking [✓] or crossing[x] the appropriate box, using the following key:

KEY

SA	=	strongly agree
A	=	agree
NS	=	not sure
D	=	disagree
SD	=	strongly disagree

		SA	A	NS	D	SD
1.	I would avoid anyone I knew who had AIDS	[ ]	[ ]	[ ]	[ ]	[ ]
2.	I believe that anyone who gets AIDS must be gay	[ ]	[ ]	[ ]	[ ]	[ ]
3.	I would be willing to be friends with someone who has AIDS	[ ]	[ ]	[ ]	[ ]	[ ]
4.	If I were introduced to a person with AIDS I would try to avoid shaking their hand	[ ]	[ ]	[ ]	[ ]	[ ]

KEY

SA	=	strongly agree
A	=	agree
NS	=	not sure
D	=	disagree
SD	=	strongly disagree

		SA	A	NS	D	SD
5.	I believe that doctors who get the HIV should be allowed to go on working with their patients	[ ]	[ ]	[ ]	[ ]	[ ]
6.	I believe that people with the HIV should be allowed to live in the community normally	[ ]	[ ]	[ ]	[ ]	[ ]
7.	People who have AIDS as a result of receiving contaminated blood through transfusion are innocent victims	[ ]	[ ]	[ ]	[ ]	[ ]
8.	I would hesitate to sit close to somebody with the HIV	[ ]	[ ]	[ ]	[ ]	[ ]
9.	I would feel uncomfortable around someone with AIDS	[ ]	[ ]	[ ]	[ ]	[ ]
10.	I believe that AIDS patients should not be isolated from society	[ ]	[ ]	[ ]	[ ]	[ ]

****

Table 4.22: *Item coding and scoring memorandum for Section B - the Attitude towards People with AIDS Scale (APWA Scale)*

ORIGINAL CODING	(1)	(2)	(3)	(4)	(5)
Item #	SCORING OF RESPONSES				
	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
1.	1	2	3	4	5
2.	1	2	3	4	5
3.	1	2	3	4	5
4.	1	2	3	4	5
5.	1	2	3	4	5
6.	5	4	3	2	1
7.	5	4	3	2	1
8.	5	4	3	2	1
9.	1	2	3	4	5
10.	5	4	3	2	1

Table 4.23: *Item coding and scoring memorandum for Section C, Question 1 - the Self-Efficacy Scale (avoiding HIV) - (SE1 Scale)*

ORIGINAL CODING	(1)	(2)	(3)	(4)
Item #	SCORING OF RESPONSES			
	Very Certain	Certain	Uncertain	Very Uncertain
1.1	4	3	2	1
1.2	4	3	2	1
1.3	4	3	2	1
1.4	4	3	2	1
1.5	4	3	2	1
1.6	4	3	2	1
1.7	4	3	2	1

Table 4.24: 1991 modifications and additions[1] to Keen's (1990) Self-Efficacy Scale[2]

Item #:	Item wording:
Modified Original	**Modified wording** Keen's original wording
2.1	**I would not be embarrassed to go to a supplier and obtain condoms.**
9.	I can go to the store and buy condoms.
2.2	**I would be willing to carry a condom at all times for use whenever I had sexual intercourse.**
2.	I can carry a condom at all times for use whenever I have sexual intercourse.
2.3	**I would be able to learn how to use a condom properly.**
13.	I can learn to enjoy using condoms during sexual intercourse.
2.4	**I would be able to initiate a discussion about lower-risk sexual activities before a relationship became sexual.**
19.	I can initiate discussion about safer sex.
20.	I can talk about safer sex before my relationship(s) becomes sexual.
2.5	**I would be able to refuse to perform any high risk sexual behaviours even if my partner wanted me to perform them.**
18.	I can refuse to perform unsafe sexual activities even if my partner wants me to perform them.
2.6	**I would feel competent in negotiating lower-risk sexual activities with a partner who was not readily agreeable.**
15.	I can be assertive about using condoms for intercourse even in the heat of a passionate moment.
2.7	**I would be able to refuse to have sexual intercourse, without the use of a condom, with anyone I knew who was HIV-infected.**
5.	I can refuse to have sexual intercourse (anal or vaginal) without a condom with anyone whom I know is infected with the AIDS virus.
2.8	**I would be able to insist on condom use during every sexual encounter which involved sexual intercourse.**
11.	I can insist on using a condom during every sexual encounter that involves intercourse.
2.9	**I would be able to explain to my sexual partner the need for condom use to reduce the risk of HIV exposure for both of us.**
6.	I can explain to my sexual partners that we should use condoms to protect both of us from AIDS.

[1]Response options offered in modified scale (1991): a 4-point scale very certain to very uncertain

[2]Response options offered in Keen's (1990) scale: a 6-point scale quite uncertain to quite certain

Table 4.25: 1991 modifications and additions[3] to Keen's (1990) Social Support Scale[4]

Item #:	Item wording:
Modified Original	Modified wording Keen's original wording
1. 1.	**My friends do not think HIV is something to worry about.** My friends don't think AIDS is something to worry about.
Item 2. added	**My friends would support my decision to avoid all sexual activities that would put me at any risk for HIV exposure.**
3. 14.	**My friends and I discuss our questions and feelings about HIV transmission.** My friends and I discuss our feelings and questions about AIDS.
Item 4. added	**My friends would agree that to be sexually active proves one's manliness.**
5. 12.	**My friends would support my decision to practice only low-risk sexual activities.** My friends would support my decision to practice safer sex.
Item 6. added	**My friends would agree that it is important for a person to remain sexually abstinent until s/he was ready to commit him/herself to a lifelong, mutually monogamous relationship.**
Item 7. added	**My friends would laugh if I tried to convince them to avoid sexual intercourse because of the likelihood of HIV infection.**
Item 8. added	**My friends believe that being concerned about HIV transmission is inconsistent with their "machismo" values.**
Item 9. added	**My friends would sanction those who do not practice HIV-preventive behaviour.**
10. 22.	**My friends would laugh if I tried to convince them to use condoms during sexual intercourse.** My friends would laugh if I tried to convince them to use condoms.

[3]Response options offered in the Perceived Social Norms Scale (1991) - modified after Keen's Social Support Scale (1990): a 4-point scale strongly agree to strongly disagree

[4]Response options offered in Keen's (1990) scale: a 6-point scale strongly disagree to strongly agree

Table 4.26: 1991 modifications and additions[5] to Keen's (1990) Perceived Threat Scale[6]

Item #:	Item wording:
Modified Original	Modified wording Keen's original wording
1. 19.	**I do not know anyone who has AIDS or who has died of AIDS.** I don't know anyone who has AIDS or who has died of AIDS.
2. 10.	**I believe a cure for HIV infection and AIDS is just around the corner.** I believe a cure for AIDS is just around the corner.
3. 12.	**It is very unlikely that I will become infected with the HIV.** It is very unlikely that I will get AIDS.
Item 4 added	**I believe that I am not at risk of HIV infection as I have never had any form of sexual intercourse.**
Item 5 added	**I have never received blood by transfusion, before the Blood Transfusion Services begun screening donated blood, and believe I am therefore not in danger of contracting the HIV.**
6. 7.	**AIDS and HIV infection are not as big a problem as the media suggests.** AIDS is not as big a problem as the media suggests.
7. 17.	**I have never participated in any high-risk sexual behaviours so I am not personally vulnerable to HIV infection.** I am not currently participating in any high risk sexual behaviors so am not personally vulnerable to AIDS.
8. 20.	**I have carefully followed HIV risk-reduction guidelines so I am not worried about contracting the HIV.** I am carefully following safer sex preventive guidelines so I am not worried about contracting the AIDS virus.
9. 19.	**It is likely that someone I know is infected with the HIV.** It is likely that someone I know is infected with the AIDS virus.
10. 2.	**I am at risk because my sexual behaviour has possibly exposed me to the HIV.** I believe my sexual behaviors may be putting me at risk for contracting the AIDS virus.

[5]Response options offered in modified scale (1991): a 4-point scale strongly agree to strongly disagree

[6]Response options offered in Keen's (1990) scale: a 6-point rating scale strongly disagree to strongly agree

Table 4.27: Item coding and scoring memorandum for Section C, Question 2 - the Self-Efficacy Scale (reducing HIV) - (SE2 Scale)

ORIGINAL CODING	(1)	(2)	(3)	(4)
Item #	SCORING OF RESPONSES			
	Very Certain	Certain	Uncertain	Very Uncertain
2.1	4	3	2	1
2.2	4	3	2	1
2.3	4	3	2	1
2.4	4	3	2	1
2.5	4	3	2	1
2.6	4	3	2	1
2.7	4	3	2	1
2.8	4	3	2	1
2.9	4	3	2	1

Table 4.28: Item coding and scoring memorandum for Section D - the Perceived Social Norms Scale (PSN Scale)

ORIGINAL CODING	(1)	(2)	(3)	(4)	(5)
Item #	SCORING OF RESPONSES				
	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
1.	1	2	3	4	5
2.	5	4	3	2	1
3.	5	4	3	2	1
4.	1	2	3	4	5
5.	5	4	3	2	1
6.	5	4	3	2	1
7.	1	2	3	4	5
8.	1	2	3	4	5
9.	1	2	3	4	5
10.	1	2	3	4	5

The Pilot Trial: respondent's verbatim comments made in response to the open statement on page 22 of the pretest comprehensive questionnaire:

"This space is reserved for any comments you may wish to make"

- I feel that a lot of the question answer were not all right because some of the questions I could have answered with a 'maybe' but not just 'agree' or 'disagree'.
- * please try and make the questions more 'airtight'
  * many have ambiguous statements.

  Thank-you!
- Obviously in certain cases the question are not quite precise enough, and tend to confuse the idea.
- Many of the questions are ambiguous or do not have enough choice because none of the options are totally true or totally false. I think more options should be added for a greater variety and for a more true assessement of the individual.
- Some answers I half agree with & half do not.
- Please get an English professor or someone of that nature to compile your questions - many of them have several different answers - and are not totally specific.
- In question five, the possibility is not acknowledged that one may never have had a blood transfusion.

Figure 4.7: Justification for the changes made to the CQ between pretesting and post-/follow-up-testing (refer to Table 4.29 in this Appendix)

Table 4.29: Minor changes made to the questionnaire between pretesting and post-testing.

Original Wording at Pretest	Modified Wording at Post-test
SECTION A	**SECTION A**
The questions in this section relate to your knowledge and understanding of the subject and to your confidence in your answers. An informed response scores +2 points; an incorrect response scores -2 points; and a "do not know, not sure" response scores 0 points. A "do not know, not sure" response is not wrong - it is an important measuring tool. *Please indicate your answer to the following questions by placing a TICK [✓] or a CROSS [x] in the appropriate box.* *If you do not know an answer please do not guess, simply tick or cross the option "do not know, not sure".*	*The items in this section relate to your current impressions and understanding of the subject and to your confidence in your views.* *Please indicate your answer to the following questions by placing a TICK [✓] or a CROSS [x] in the appropriate box.* *If you do not know the answer to a question please do NOT guess, but just tick or cross the option "do not know, not sure". A "do not know, not sure" response is not wrong - it can be an important indicator of public opinion.*
SECTION D	**SECTION D**
Response options: **Strongly agree, Agree, Disagree, and Strongly disagree.**	Response options: **Strongly Agree, Agree, Not Sure, Disagree, and Strongly Disagree**
SECTION E	**SECTION E**
There are no right or wrong answers to the following questions. Please tick [✓] or cross [x] the answer which indicates how strongly you agree or disagree with each statement.	*There are no right or wrong answers to the following questions. Please tick [✓] or cross [x] the answer that indicates how strongly you agree or disagree with each statement. Leave blank any questions which are NOT applicable to you, or which you are unable to answer.*
Response options: **Strongly agree, Agree, Disagree and Strongly disagree.**	Response options: **Strongly Agree, Agree, Not Sure, Disagree and Strongly Disagree.**

Table 4.30: Item coding and scoring memorandum for Section E - the Perceived Threat Scale (PT Scale)

ORIGINAL CODING	(1)	(2)	(3)	(4)	(5)
Item #	SCORING OF RESPONSES				
	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
1.	1	2	3	4	5
2.	1	2	3	4	5
3.	1	2	3	4	5
4.	1	2	3	4	5
5.	1	2	3	4	5
6.	1	2	3	4	5
7.	1	2	3	4	5
8.	1	2	3	4	5
9.	5	4	3	2	1
10.	5	4	3	2	1

Table 4.31: Item coding and scoring memorandum for Section F - the Attitude towards Alcohol Use Scale (ATAU Scale)

ORIGINAL CODING	(1)	(2)	(3)	(4)	(5)
Item #	SCORING OF RESPONSES				
	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
2.1	1	2	3	4	5
2.2	1	2	3	4	5
2.3	1	2	3	4	5
2.4	1	2	3	4	5
2.5	1	2	3	4	5
2.6	5	4	3	2	1
2.7	1	2	3	4	5

Table 4.32: Modification of item wording in Section F, Question 1, after piloting at UCT in 1991

Item #	Original Section F Item	Item #	Modified Section F Item
1.1	How often during the past December/January school holidays did you have drinks containing alcohol? *(Please circle the* one *closest answer)* [1] Every day [2] More than twice week [3] Once or twice a week [4] Once or twice a month [5] Never	1.1	How **often** during the past holidays/weekends have you had drinks containing alcohol? 1 ☐ Every day 2 ☐ More than twice a week 3 ☐ Once or twice a week 4 ☐ Once or twice a month 5 ☐ Never
1.2	Where do you normally go to drink? *(Please circle the* one *closest answer)* [1] Home [2] A friend's place [3] A restaurant or hotel [4] A bar [5] A shebeen [6] The beach	1.2	Where do you **normally** go to drink? 1 ☐ Home 2 ☐ A friend's place 3 ☐ A restaurant or hotel 4 ☐ A bar or pub 5 ☐ A shebeen 6 ☐ The beach
1.4	Is your girlfriend (or regular partner) usually with you when you drink? *(Please circle the* one *closest answer)* [1] Always [2] Almost always [3] Sometimes [4] Seldom [5] Never	1.3	How **often** is your regular partner with you when you drink? 1 ☐ Always 2 ☐ Almost always 3 ☐ Sometimes 4 ☐ Seldom 5 ☐ Never

Table 4.33: ***Modification of item wording in Section F, Question 2, after piloting at UCT in 1991***

Item #	Original Section F Item	Item #	Modified Section F Item
	Please indicate your answer to the following questions by placing a TICK or a CROSS in the appropriate box using the key below. KEY **SA strongly agree** **A agree** **NO no opinion** **D disagree** **SD strongly disagree**		*Please indicate your answer to the following questions by placing a TICK or a CROSS in the appropriate box using the key below.* KEY **SA strongly agree** **A agree** **NO no opinion** **D disagree** **SD strongly disagree**
2.	**Drinking helps me to:**	2.	**Drinking helps me to:**
2.1	meet new friends	2.1	meet new friends
2.2	find girlfriends	2.2	find girlfriends (or boyfriends)
2.3	be more sociable	2.3	be a man
2.4	relax	2.4	cope with stress and/or anxiety
2.5	cope with stress and/or anxiety	2.5	sharpen my control over events
2.6	to gain self-confidence	2.6	reduce my sexual inhibitions
2.7	"be a Man"	2.7	forget my problems
2.8	sharpen my control over events		
2.9	relieve my depression		
2.10	escape from life's problems		
2.11	reduce my sexual inhibitions		

REFINEMENT OF THE ATTITUDE TOWARDS PEOPLE WITH AIDS SCALE

Table 4.34: Summary of properties and item analysis for the APWA Scale (n=180)

Item #	Direction of Item Phrasing	Mean	Standard Deviation	Adjusted Item-Total Correlation (r)	% Neutral Responses	Item Retained (✓) or Eliminated (x)
1.	Negative	3.12	1.26	0.48	23	✓
2.	Negative	2.39	1.01	0.51	24	x
3.	Negative	4.01	0.86	0.52	22	x
4.	Negative	3.54	1.12	0.66	20	✓
5.	Negative	2.82	1.22	0.47	23	✓
6.	Positive	3.52	1.24	0.49	17	x
7.	Positive	1.84	1.04	0.18	12	x
8.	Positive	4.03	0.95	0.54	10	x
9.	Negative	3.57	1.16	0.47	14	✓
10.	Positive	3.92	1.12	0.38	8	x

Table 4.35: Item discrimination data for the APWA Scale: the percentage response distribution of the top-scoring group[1] (n=52) and bottom-scoring group[2] (n=55)

NEGATIVELY PHRASED STATEMENTS					
Item #	**% Strongly Agree**	**% Agree**	**% Not Sure**	**% Disagree**	**% Strongly Disagree**
1.	40 **(2)**	20 **(4)**	24 **(12)**	216 **(60)**	-- **(23)**
2.	53 **(4)**	36 **(29)**	6 **(35)**	6 **(27)**	-- **(6)**
3.	4 **(--)**	9 **(--)**	44 **(4)**	35 **(32)**	9 **(64)**
4.	16 **(--)**	38 **(--)**	27 **(8)**	16 **(40)**	2 **(52)**
5.	44 **(2)**	33 **(10)**	15 **(29)**	6 **(40)**	4 **(19)**
9.	16 **(2)**	38 **(2)**	16 **(4)**	24 **(46)**	6 **(46)**
POSITIVELY PHRASED STATEMENTS					
Item #	**% Strongly Agree**	**% Agree**	**% Not Sure**	**% Disagree**	**% Strongly Disagree**
6.	7 **(56)**	27 **(33)**	13 **(8)**	31 **(--)**	22 **(4)**
7.	2 **(8)**	-- **(14)**	7 **(21)**	31 **(23)**	60 **(35)**
8.	11 **(65)**	46 **(50)**	24 **(2)**	11 **(--)**	9 **(--)**
10.	9 **(71)**	47 **(23)**	16 **(2)**	18 **(--)**	9 **(4)**

[1]***Bold numerals** (in brackets) refer to the percentages obtained by the top-scoring group*

[2]*Non-bold numerals refer to the percentages obtained by the bottom-scoring group*

Item 1 (negatively-phrased statement) - **RETAINED**

"I would avoid all forms of contact with anyone I knew who had AIDS"

Rationale:

- Data spreads across available range (a.r.)
- Data shows a bipolar distribution
- Mean: 3.12 - acceptable
- Standard deviation: 1.26 - acceptable
- Adjusted item-total correlation: 0.48 - good
- Neutral responses: 23% - acceptable
- Although it contains the universal word "all" this item did not appear to be ambiguous to the students.
- The majority of the high-scoring group disagreed with the statement; whereas the majority of the low-scoring group endorsed the statement. Thus, among this population, the item appears to discriminate between those with a positive attitude and those with a negative attitude towards people with AIDS (PWA).

Item 2 (negatively phrased statement) - **ELIMINATED**

"I would feel uncomfortable around someone with AIDS"

Rationale:

- Data spreads across a.r.
- Data skewed in the strongly agree/agree direction:
- Mean: 2.39 - slightly low
- Standard deviation: 1.01 - acceptable
- Adjusted item-total correlation: 0.51 - good
- Neutral response: 24% - acceptable
- The majority of the low-scoring group endorsed the statement. However, among the high-scoring group, 35% gave a neutral response, and the remainder were ambivalent in their response. Thus, among this population, the item does not appear to discriminate between those with a negative attitude and those with a positive attitude towards PWA.

Figure 4.8: ***Rationale for the retention or elimination of items in the APWA Scale***

Item 3 (negatively phrased statement) - **ELIMINATED**

"I would stop being friends with a person if I discovered that s/he had AIDS"

Rationale:

- Data spreads across a.r.
- Data skewed in the disagree/strongly disagree direction:
- Mean 4.01 - high
- Standard deviation 0.86 - low
- Adjusted item-total correlation 0.52 - good
- Neutral responses 22% - acceptable
- The majority of respondents, in both the top- and bottom-scoring groups, disagreed with the statement. Additionally, 44% of the low-scoring group gave "not sure" responses. Thus, among this population, the item did not appear to discriminate between those with a positive and those with a negative attitude towards PWA.

Item 4 (negatively phrased statement) - **RETAINED**

"I would not want to hug someone with AIDS"

Rationale:

- Data spreads across a.r.
- Data clusters at both ends of the a.r.
- Mean 3.54 - acceptable
- Standard deviation 1.12 - acceptable
- Adjusted item-total correlation 0.66 - very good
- Neutral responses 20% - acceptable
- The majority of the high-scoring group disagreed with the statement; whereas the majority of the low-scoring group endorsed the statement. Thus, among this population, the item appears to discriminate between those with a positive attitude and those with a negative attitude towards PWA.

Figure 4.8: (continued)

Item 5 (negatively phrased statement) - **RETAINED**

"I would stop going to my barber/hairdresser if I suspected that s/he had AIDS"

Rationale:

- Data spreads across a.r.
- Data shows a bipolar distribution
- Mean 2.82 - acceptable
- Standard deviation 1.22 - acceptable
- Adjusted item-total correlation 0.47 - good
- Neutral responses 23% - acceptable
- The majority of the high-scoring group disagreed with the statement; whereas the majority of the low-scoring group endorsed the statement. Thus, among this population, the item appears to discriminate between those with a positive attitude and those with a negative attitude towards PWA.

Item 6 (positively phrased statement) - **ELIMINATED**

"I believe that children with AIDS should be allowed to attend school and mix with other children as normal"

Rationale:

- Data spreads across a.r.
- Data slightly skewed in the strongly agree/agree direction:
- Mean 3.52 - acceptable
- Standard deviation 1.24 - acceptable
- Adjusted item-total correlation 0.49 - good
- Neutral responses 17% - acceptable
- The majority of the high-scoring group endorsed the statement, whereas responses from the low-scoring group were ambivalent. Therefore, for this population, the item does not appear to discriminate between those with a positive and those with a negative attitude towards PWA.

Figure 4.8: (continued)

Item 7 (positively phrased statement) - **ELIMINATED**

"I believe that doctors who get the HIV should be allowed to go on working with their patients"

Rationale:

- Data spreads across the a.r.
- Data skewed in the disagree/strongly disagree direction
- Mean 1.84 - low
- Standard deviation 1.04 - acceptable
- Adjusted item-total correlation 0.18 - too low
- Neutral responses 12% - acceptable
- Only 3% of respondents strongly endorsed the statement, and 6% slightly endorsed the statement.
- The majority of respondents, in both the high-scoring and low-scoring groups, disagreed with the statement. Thus, among members of this population, the item did not appear to discriminate between those with a positive and those with a negative attitude towards PWA.

Item 8 (positively phrased statement) - **ELIMINATED**

"I believe that people with the HIV should be allowed to live in the community normally"

Rationale:

- Data spreads across a.r.
- Data skewed in the strongly agree/agree direction:
- Mean 4.03 - high
- Standard deviation 0.95 - slightly low
- Adjusted item-total correlation 0.54 - good
- Neutral responses 10% - acceptable
- A majority of respondents, in both the high- and low-scoring groups, endorsed the statement. Thus, among members of this population, the item did not appear to discriminate between those with a positive and those with a negative attitude towards PWA.

Figure 4.8: (continued)

Item 9 (negatively phrased statement) - **RETAINED**

"I would hesitate to sit next to somebody with the HIV"

Rationale:

- Data spread across a.r.
- Data clustered at both ends of the a.r.
- Mean 3.57 - slightly high
- Standard deviation 1.16 - acceptable
- Adjusted item-total correlation 0.47 - good
- Neutral responses 14% - acceptable
- The majority of the high-scoring group disagreed with the statement; whereas the majority of the low-scoring group endorsed the statement. Thus, among this population, the item appeared to discriminate between those with a positive and those with a negative attitude towards PWA.

Item 10 (positively phrased statement) - **ELIMINATED**

"I believe that AIDS patients should not be isolated from society"

Rationale:

- Data spread across a.r.
- Data skewed in the disagree/strongly disagree direction:
- Mean 3.92 - high
- Standard deviation 1.12 - acceptable
- Adjusted item-total correlation 0.38 - acceptable
- Neutral response 8% - acceptable
- The majority of respondents, in both theh high- and low-scoring groups, endorsed the statement. Therefore, among members of this population, the item did not appear to discriminate between those with a positive attitude and those with a negative attitude towards PWA.

Figure 4.8: (continued)

REFINEMENT OF THE SELF-EFFICACY SCALES

Table 4.36: Summary of properties and item analysis for the SE1 Scale (n=180)

Item #	Direction of Item Phrasing	Mean	Standard Deviation	Adjusted Item-Total Correlation (r)	Item Retained (✓) or Eliminated (x)
1.1	Positive	2.93	0.89	0.34	✓
1.2	Positive	2.16	0.88	0.41	✓
1.3	Positive	2.92	0.87	0.41	✓
1.4	Positive	2.72	0.86	0.53	✓
1.5	Positive	3.03	0.81	0.49	✓
1.6	Positive	3.36	0.71	0.46	✓
1.7	Positive	3.01	0.78	0.46	✓

Table 4.37: ***Item discrimination data for the SE1 Scale: the percentage response distribution of the top-scoring group[5] (n=52) and the bottom-scoring group[6] (n=59)***

POSITIVELY PHRASED STATEMENTS								
Item #	**% Very Certain**		**% Certain**		**% Uncertain**		**% Very Uncertain**	
1.1	5	**(0)**	52	**(6)**	38	**(39)**	5	**(56)**
1.2	42	**(4)**	56	**(44)**	2	**(25)**	--	**(27)**
1.3	10	**(--)**	48	**(12)**	37	**(27)**	5	**(62)**
1.4	19	**(--)**	63	**(6)**	17	**(39)**	2	**(56)**
1.5	3	**(--)**	54	**(6)**	37	**(21)**	5	**(73)**
1.6	2	**(--)**	31	**(--)**	48	**(12)**	20	**(89)**
1.7	2	**(2)**	58	**(4)**	34	**(27)**	7	**(67)**

[5]***Bold numerals*** *(in brackets) refer to the percentages obtained by the top-scoring group*

[6]*Non-bold numerals refer to the percentages obtained by the bottom-scoring group*

Items: 1.1; 1.3; 1.4; 1.5; and 1.7 - RETAINED

All these items generated adjusted item-total correlations above 0.30; and had acceptable standard deviations and means. In addition, they all appeared to discriminate between those respondents with strong self-efficacy towards avoiding the sexual transmission of the HIV (more than 86% of the high-scoring group responded on the certain side of the range) and those respondents with weak self-efficacy towards avoiding the sexual transmission of the HIV (in all cases a greater percentage of the low-scoring group responded on the uncertain side of the range than on the certain side of the range).

Item 1.2 - RETAINED

The generated mean, standard deviation and adjusted item-total correlation were all acceptable and it discriminated between those with a weak self-efficacy towards avoiding the sexual transmission of the HIV (98% of the low-scoring group responded on the uncertain end of the range) and those with a strong self-efficacy towards avoiding the sexual transmission of the HIV (a greater percentage of the high-scoring group responding on the certain side of the range than on the uncertain side of the range).

Item 1.6 - RETAINED

Despite its rather high mean and slightly low standard deviation. All respondents in the high-scoring group gave answers on the certain side of the range. However, in the low-scoring group, 68% responded on the certain side of the range, and 38% on the uncertain side of the range.

All items were retained in this scale. The range of adjusted item-total correlations was 0.34 to 0.53. Standard deviations ranged from 0.71 to 0.89. Means ranged from 2.16 to 3.36. Table 4.36 in this Appendix lists the item analysis data generated for items in this scale.

Figure 4.9: Rationale for the retention or elimination of items in the SE1 Scale

Table 4.38: Summary of properties and item analysis for the SE2 Scale (n=180)

Item #	Direction of Item Phrasing	Mean	Standard Deviation	Adjusted Item-Total Correlation (r)	Item Retained (✓) or Eliminated (x)
2.1	Positive	3.11	0.93	0.36	✓
2.2	Positive	3.54	0.65	0.35	x
2.3	Positive	3.73	0.51	0.43	x
2.4	Positive	2.94	0.76	0.48	✓
2.5	Positive	2.92	0.87	0.35	✓
2.6	Positive	2.88	0.73	0.27	✓
2.7	Positive	3.86	0.55	0.03	x
2.8	Positive	3.37	0.77	0.29	✓
2.9	Positive	3.44	0.70	0.44	x

Table 4.39: Item discrimination data for the SE2 Scale: the percentage response distribution of the top-scoring group[7] (n=56) and the bottom-scoring group[8] (n=65)

POSITIVELY PHRASED STATEMENTS								
Item #	**% Very Certain**		**% Certain**		**% Uncertain**		**% Very Uncertain**	
2.1	14	(--)	32	(6)	40	(16)	14	(79)
2.2	2	(--)	14	(--)	48	(14)	37	(86)
2.3	--	(--)	8	(--)	40	(4)	52	(96)
2.4	2	(--)	54	(5)	45	(34)	--	(61)
2.5	2	(--)	48	(5)	50	(38)	--	(57)
2.6	2	(2)	43	(11)	52	(46)	3	(41)
2.7	5	(--)	2	(--)	9	(2)	85	(98)
2.8	--	(--)	25	(2)	52	(11)	23	(88)
2.9	2	(--)	19	(--)	66	(11)	14	(89)

[7] ***Bold numerals*** *(in brackets) refer to the percentages obtained by the top-scoring group*

[8] *Non-bold numerals refer to the percentages obtained by the bottom-scoring group*

Item 2.4 - RETAINED

It discriminated between those with strong self-efficacy towards reducing the sexual transmission of HIV and those with a weak perception of self-efficacy.

Item 2.5 - RETAINED

Of the high-scoring group 95% responded on the certain side of the range. Among the low-scoring group 50% gave responses on the certain side of the range and 50% on the uncertain side of the range.

Items 2.1 and 2.6 - RETAINED

More than 87% of the high-scoring group gave responses on the certain side of the range; and although the low-scoring group gave somewhat ambivalent responses there was less than 11% difference between those on the certain and those on the uncertain sides of the range.

Item 2.8 - RETAINED

Although it did not strongly discriminate between those with a strong perception of self-efficacy and those with a weak perception of self-efficacy, it was retained in the scale.

Items 2.2; 2.3; 2.7 and 2.9 - ELIMINATED

Item 2.7 not only had an extremely low adjusted item-total correlation (0.03), but practically all students responded "very certain" to this behaviour statement. Although the adjusted item-total correlation values for 2.2; 2.3; and 2.9 were all acceptable, they all generated very low standard deviations (0.70 or less); and had means which were too high (3.44 to 3.73).

Figure 4.10: Rationale for the retention or elimination of items in the SE2 Scale

REFINEMENT OF THE PERCEIVED SOCIAL NORMS SCALE

Table 4.40: Summary of properties and item analysis for the PSN Scale (n=96)

Item #	Direction of Item Phrasing	Mean	Standard Deviation	Adjusted Item-Total Correlation (r)	% Neutral Responses	Item Retained (✓) or Eliminated (x)
1.	Negative	3.88	1.10	0.00	14	x
2.	Positive	3.70	1.09	0.21	24	x
3.	Positive	2.96	1.17	0.44	11	x
4.	Negative	2.65	1.20	0.48	18	✓
5.	Positive	3.70	0.82	0.35	28	x
6.	Positive	2.60	1.12	0.59	23	✓
7.	Negative	3.04	1.17	0.35	27	✓
8.	Negative	3.54	0.97	0.36	24	x
9.	Positive	3.25	0.94	0.59	38	x
10.	Negative	4.23	0.77	0.52	11	x

Table 4.41: *Item discrimination data for the PSN Scale: the percentage response distribution of the top-scoring group[1] (n=28) and bottom-scoring group[2] (n=32)*

NEGATIVELY PHRASED STATEMENTS					
Item #	**% Strongly Agree**	**% Agree**	**% Not Sure**	**% Disagree**	**% Strongly Disagree**
1.	-9 **(--)**	19 **(4)**	25 **(--)**	41 **(29)**	6 **(68)**
4.	28 **(--)**	50 **(14)**	19 **(21)**	3 **(43)**	-- **(21)**
7.	22 **(--)**	47 **(4)**	28 **(32)**	3 **(25)**	-- **(39)**
8.	-- **(--)**	44 **(--)**	31 **(7)**	25 **(46)**	-- **(46)**
10.	-- **(--)**	6 **(--)**	25 **(4)**	50 **(36)**	19 **(61)**
POSITIVELY PHRASED STATEMENTS					
Item #	**% Strongly Agree**	**% Agree**	**% Not Sure**	**% Disagree**	**% Strongly Disagree**
2.	3 **(68)**	23 **(29)**	45 **(4)**	19 **(--)**	10 **(--)**
3.	-- **(14)**	16 **(50)**	9 **(14)**	59 **(14)**	16 **(7)**
5.	6 **(29)**	19 **(61)**	56 **(7)**	19 **(4)**	-- **(--)**
6.	3 **(18)**	9 **(25)**	13 **(39)**	53 **(14)**	22 **(4)**
9.	3 **(--)**	16 **(21)**	41 **(32)**	38 **(32)**	3 **(14)**

[1]***Bold numerals*** *(in brackets) refer to the percentages obtained by the top-scoring group*

[2]*Non-bold numerals refer to the percentages obtained by the bottom-scoring group*

Item 1 (negatively-phrased statement) - **ELIMINATED**

"My friends do not think HIV is something to worry about"

Rationale:

- Data spreads across the available range (a.r.)
- Data skewed in the disagree/strongly disagree direction
- Mean 3.88 - high
- Standard deviation 1.10 - acceptable
- Adjusted item-total correlation 0.002 - not acceptable
- Neutral responses 14% - acceptable
- Practically all the high-scoring group and most of the low-scoring group disagreed with the statement. Thus, for this sample, the item does not appear to discriminate between those with a strong perception of social support for AIDS-preventive behaviour and those with a weak perception. Furthermore, the extremely low adjusted item-total correlation indicated that the item was not associated with the other items in the scale.

Item 2 (positively-phrased statement) - **ELIMINATED**

"My friends would support my decision to avoid all sexual activities that would put me at any risk for HIV exposure"

Rationale:

- Data spreads across the a.r.
- Data skewed in the strongly agree/agree direction
- Mean 3.70 - high
- Standard deviation 1.09 - acceptable
- Adjusted item-total correlation 0.21 - too low
- Neutral responses 24% - acceptable
- Most of the high-scoring group endorsed the statement. However 45% of the low-scoring group were undecided in their response. The use of the universal term "all", and the conditioning phrase "my decision", in the statement may have introduced ambiguity - at least for the low-scoring group. Owing to its low adjusted item-total correlation and possible ambiguity, the item was eliminated.

Figure 4.11: Rationale for the retention or elimination of items in the PSN Scale

Item 3 (positively-phrased statement) - **ELIMINATED**

"My friends and I discuss our questions and feelings about HIV transmission"

Rationale:

- Data spreads across a.r.
- Data shows bipolar distribution
- Mean 2.96 - acceptable
- Standard deviation 1.17 - acceptable
- Adjusted item-total correlation 0.44 - acceptable
- Neutral responses 11% - acceptable
- The majority of the high-scoring group endorsed the statement while the majority of the low-scoring group disagreed with the statement. Among this sample, the item appears to discriminate between those with a strong perception of peer support for HIV-preventive behaviour, and those with a weak perception of peer support for HIV-preventive behaviour. However it is suggested that this item should form part of a factual, and not an attitudinal scale, as clearly one's response to this statement would be either "yes" or "no".

Item 4 (negatively-phrased statement) - **RETAINED**

"My friends would agree that to be sexually active proves one's manliness"

Rationale:

- Data spreads across a.r.
- Data shows bipolar distribution
- Mean 2.65 - acceptable
- Standard deviation 1.20 - acceptable
- Adjusted item-total correlation 0.48 - good
- Neutral responses 18% - acceptable
- The majority of low-scoring group endorsed the statement, whereas the majority of the high-scoring group disagreed with the statement. Thus, among this sample, the item appears to discriminate between those with a strong perception of peer support for HIV-preventive behaviour and those with a weak perception of peer support for HIV-preventive behaviour. However, in order to avoid the item possibly being interpreted as a factual, not an attitudinal question, it is suggested that the wording ought to be changed for future use to read "My friends believe that being sexually active proves one's manliness".

Figure 4.11: (continued)

Item 5 (positively-phrased statement) - **ELIMINATED**

"My friends would support my decision to practise only low-risk sexual activities"

Rationale:

- Data does not spread across the entire a.r.
- Data skewed in the strongly agree/agree direction
- Mean 3.70 - high
- Standard deviation 0.82 - low
- Adjusted item-total correlation 0.35 - acceptable
- Neutral responses 28% - high
- The use of the key term "only", and the conditioning phrase "my decision", possibly introduced ambiguity - particularly for the low-scoring group amongst whom 56% responded "not sure".

Item 6 (positively-phrased statement) - **RETAINED**

"My friends would agree that it is important for a person to remain sexually abstinent until s/he was ready to commit him/herself to a lifelong, mutually monogamous relationship"

Rationale:

- Data spreads across a.r.
- Data clusters at both ends of the range
- Mean 2.60 - acceptable
- Standard deviation 1.12 - acceptable
- Adjusted item-total correlation 0.59 - good
- Neutral responses 23% - acceptable
- Although the statement contains 30 words, thus exceeding Edward's (1954) suggested limit of 20 words, it was not possible to communicate this idea in a simpler, more concise way. Amongst the high-scoring group 39% gave a neutral response to the statement. However among those respondents in the high- and low-scoring groups who made a definite response to this statement, it did appear to discriminate between those with a strong perception, and those with a weak perception of peer support for HIV-preventive behaviour.

Figure 4.11: (continued)

Item 7 (negatively-phrased statement) - **RETAINED**

"My friends would laugh if I tried to convince them to avoid sexual intercourse because of the likelihood of HIV infection"

Rationale:

- Data spreads across a.r.
- Data shows bipolar distribution
- Mean 3.04 - acceptable
- Standard deviation 1.17 - acceptable
- Adjusted item-total correlation 0.35 - acceptable
- Neutral responses 27% - a little high
- Amongst the high-scoring group 32% gave neutral responses, and amongst the low-scoring group 28% gave neutral responses to the statement. Nevertheless, among those who made a definite response, a majority of the low-scoring group endorsed the statement whereas a majority of the high-scoring group disagreed with the statement. Thus, among this sample, the item appears to discriminate between those with a strong perception of peer support for HIV-preventive behaviour and those with a weak perception of peer support for HIV-preventive behaviour.

Item 8 (negatively-phrased statement) - **ELIMINATED**

"My friends believe that being concerned about HIV transmission is inconsistent with their "machismo" values"

Rationale:

- Data spreads across a.r.
- Data clusters at both ends of a.r.
- Mean 3.54 - acceptable
- Standard deviation 0.97 - slightly low
- Adjusted item-total correlation 0.36 - acceptable
- Neutral responses 24% - acceptable
- The use of the term "machismo" may not have been clearly understood by the respondents - particularly those in the low-scoring group. Amongst this low-scoring group 31% gave neutral responses, and the remaining 69% gave cautious responses i.e. "agree" or "disagree". The item was eliminated owing to its possible lack of clarity.

Figure 4.11: (continued)

Item 9 (negatively-phrased statement?) - **ELIMINATED**

"My friends would sanction those who do not practise HIV-preventive behaviour"

Rationale:

- Data spread across the a.r.
- Data shows bipolar distribution
- Mean 3.25 - acceptable
- Standard deviation 0.94 - slightly low
- Adjusted item-total correlation 0.59 - good
- Neutral responses 38% - very high
- Thirty-eight percent of the 96 students gave a "not sure" response, and both high- and low-scoring groups also gave unacceptably high neutral responses. It is believed that the use of the term "sanction" may have made this item ambiguous, which may explain the unacceptably high percentage of "not sure" responses. As this item received a high adjusted item-total correlation (0.59), it is suggested that the item is valid and ought to be reworded for future use.

Item 10 (negatively-phrased statement) - **ELIMINATED**

"My friends would laugh if I tried to convince them to use condoms during sexual intercourse"

Rationale:

- Data does not spread across available range
- Data skewed in the disagree/strongly disagree direction
- Mean 4.23 - high
- Standard deviation 0.77 - low
- Adjusted item-total correlation 0.52 - acceptable
- Neutral responses 11% - acceptable
- This statement was endorsed by almost no-one - only 3% of the 96 students agreed with the statement.

Figure 4.11: (continued)

REFINEMENT OF THE PERCEIVED THREAT SCALE

Table 4.42: Summary of properties and item analysis for the PT Scale (n=96)

Item #	Direction of Item Phrasing	Mean	Standard Deviation	Adjusted Item-Total Correlation (r)	% Neutral Response	Item Retained (✓) or Eliminated (x)
1.	Negative	1.88	1.15	0.31	5	x
2.	Negative	3.34	0.96	0.09	41	x
3.	Negative	2.59	0.97	0.18	34	x
4.	Negative	2.44	1.36	0.02	15	x
5.	Negative	1.97	1.17	0.40	9	x
6.	Negative	4.44	0.88	0.44	1	x
7.	Negative	2.00	1.12	0.36	11	x
8.	Negative	2.06	1.13	0.05	16	x
9.	Positive	2.78	1.17	0.31	31	x
10.	Positive	2.24	1.61	0.31	11	x

Table 4.43: Item discrimination data for the PT Scale - the percentage response distribution of the top-scoring group[3] (n=21) and bottom-scoring group[4] (n=22)

NEGATIVELY PHRASED STATEMENTS					
Item #	**% Strongly Agree**	**% Agree**	**% Not Sure**	**% Disagree**	**% Strongly Disagree**
1.	67 **(29)**	33 **(38)**	-- **(5)**	-- **(14)**	-- **(14)**
2.	14 **(--)**	27 **(14)**	23 **(33)**	23 **(48)**	14 **(5)**
3.	32 **(--)**	59 **(10)**	9 **(52)**	-- **(33)**	-- **(5)**
4.	68 **(--)**	23 **(14)**	-- **(14)**	5 **(52)**	5 **(19)**
5.	67 **(14)**	24 **(33)**	10 **(5)**	-- **(38)**	-- **(10)**
6.	-- **(--)**	18 **(--)**	5 **(--)**	27 **(38)**	50 **(62)**
7.	86 **(--)**	14 **(55)**	-- **(10)**	-- **(30)**	-- **(5)**
8.	50 **(5)**	40 **(33)**	10 **(24)**	-- **(33)**	-- **(5)**
POSITIVELY PHRASED STATEMENTS					
Item #	**Strongly Agree**	**Agree**	**Not Sure**	**Disagree**	**Strongly Disagree**
9.	5 **(--)**	5 **(50)**	36 **(40)**	14 **(10)**	41 **(--)**
10.	-- **(--)**	-- **(18)**	5 **(18)**	14 **(47)**	81 **(18)**

[3]***Bold numerals*** *(in brackets) refer to the percentages obtained by the top-scoring group*

[4]*Non-bold numerals refer to the percentages obtained by the bottom-scoring group*

- **Item 1 - ELIMINATED**
  This item a factual statement, not an attitudinal one.

- **Item 2 - ELIMINATED**
  This statement contains the phrase "just around the corner" which is believed to have introduced vagueness, and which led to 41% of the entire group of 96 respondents, and 33% of the high-scoring group giving neutral responses.

- **Item 3 - ELIMINATED**
  Although future-oriented this item obtained a high percentage of neutral responses and a very low adjusted item-total correlation.

- **Item 5 - ELIMINATED**
  This statement is irrelevant to the attitude object under consideration.

- **Item 6 - ELIMINATED**
  This statement is not future-oriented. Its response distribution was strongly skewed in the disagree direction indicating that the item failed to discriminate between those with a strong and those with a weak perception of personal vulnerability to HIV-infection.

- **Item 9 - ELIMINATED**
  This statement is not future-oriented. It attracted an unacceptably high percentage of neutral responses.

- **Items: 4, 7, 8 and 10 - ELIMINATED**
  None of these statements is future-oriented. All appear to be attempting to gauge an individual's current perception of his risk of HIV-infection, by asking them to react to statements relating to their past sexual behaviours. Thus these items are all conditioned upon facts unknown to the researcher.

Thus no items in this scale met the criteria for inclusion in this scale.

Figure 4.12: Rationale for the retention or elimination of items in the PT Scale

REFINEMENT OF THE ATTITUDE TOWARDS ALCOHOL USE SCALE

Table 4.44: Summary of properties and item analysis for the ATAU Scale (n=147)

Item #	Direction of Item Phrasing	Mean	Standard Deviation	Adjusted Item-Total Correlation (r)	% Neutral Response	Item Retained (✓) or Eliminated (x)
2.1	Negative	2.81	1.73	0.87	20	✓
2.2	Negative	2.89	1.74	0.87	18	✓
2.3	Negative	3.34	1.77	0.88	14	x
2.4	Negative	3.11	1.79	0.85	13	✓
2.5	Negative	3.58	1.82	0.88	10	x
2.6	Positive	3.09	1.77	-0.83	20	x
2.7	Negative	2.81	1.77	0.84	10	✓

Table 4.45: Item discrimination data for the ATAU Scale: the percentage response distribution of the top-scoring group[1] (n=44) and bottom-scoring group[2] (n=35)

Negatively Phrased Statements					
Item #	**% Strongly agree**	**% Agree**	**% Not Sure**	**% Disagree**	**% Strongly disagree**
2.1	17 (--)	51 (--)	31 (2)	-- (32)	-- (66)
2.2	17 (--)	51 (--)	17 (7)	14 (30)	-- (64)
2.3	-- (--)	17 (--)	34 (12)	34 (25)	14 (68)
2.4	3 (--)	37 (5)	31 (--)	26 (18)	3 (77)
2.5	-- (--)	3 (--)	29 (--)	51 (11)	17 (89)
2.7	11 (--)	63 (--)	20 (2)	6 (32)	-- (66)
Positively Phrased Statement					
Item #	**% Strongly agree**	**% Agree**	**% Not Sure**	**% Disagree**	**% Strongly disagree**
2.6	-- (7)	23 (11)	26 (14)	37 (7)	14 (61)

[1]**Bold numerals** (in brackets) refer to the percentages obtained by the top-scoring group

[2]Non-bold numerals refer to the percentages obtained by the bottom-scoring group

Item 2.1 (negatively-phrased statement) - **RETAINED**

"Drinking helps me to meet new friends"

Rationale:

- Data spreads across the a.r.
- Data shows bipolar distribution
- Mean 2.81 - acceptable
- Standard deviation 1.73 - high
- Adjusted item-total correlation 0.87 - excellent
- Neutral response 20% - acceptable
- Apart from those respondents (in both high- and low-scoring groups) who gave a neutral response to the statement, all members of the high-scoring group disagreed with the statement; while all members of the low-scoring group endorsed the statement. Thus, among this population, at least, the item appeared to discriminate between those with a healthy, and those with a less healthy, attitude toward alcohol use.

Item 2.2 (negatively-phrased statement) - **RETAINED**

"Drinking helps me to find girlfriends (or boyfriends)"

Rationale:

- Data spreads across the a.r.
- Data shows bipolar distribution
- Mean 2.89 - acceptable
- Standard deviation 1.74 - high
- Adjusted item-total correlation 0.87 - excellent
- Neutral response 18% - acceptable
- The majority of the high-scoring group disagreed with the statement, while the majority of the low-scoring group endorsed the statement. Therefore, among this population, the item appeared to discriminate between those with a healthy, and those with a less healthy, attitude toward alcohol use.

Figure 4.13: Rationale for the retention or elimination of items in the ATAU Scale

Item 2.3 (negatively-phrased statement) - **ELIMINATED**

"Drinking helps me to be a man"

Rationale:

- Data failed to spread across the a.r.
- Data strongly skewed in the disagree direction
- Mean 3.34 - acceptable
- Standard deviation 1.77 - high
- Adjusted item-total correlation 0.88 - excellent
- Neutral responses 14% - acceptable
- Only 6% of the entire group of 147 students endorsed the statement.
- The majority of the high-scoring group disagreed with the statement. However among the low-scoring group 34% gave neutral responses and the remaining 66% were ambivalent in their responses. Thus, among this population, the item did not appear to discriminate between those with a healthy, and those with a less healthy, attitude toward alcohol use.

Item 2.4 (negatively-phrased statement) - **RETAINED**

"Drinking helps me to cope with stress and/or anxiety"

Rationale:

- Data spreads across a.r.
- Data clustered at both ends of the available range (a.r.)
- Mean 3.11 - acceptable
- Standard deviation 1.79 - high
- Adjusted item-total correlation 0.85 - excellent
- Neutral response 13% - acceptable
- In the top-scoring group, ninety-five percent disagreed with the statement, and none gave a neutral response. In the low-scoring group 31% gave a neutral response. The distribution of responses, from the remaining 69% of the low-scoring group, showed a certain amount of ambivalence. However the majority of this low-scoring group endorsed the statement. Therefore, among this population, the item appeared to discriminate between those with a healthy, and those with a less healthy, attitude toward alcohol use.

Figure 4.13: (continued)

Item 2.5 (negatively-phrased statement) - **ELIMINATED**

"Drinking helps me to sharpen my control over events"

Rationale:

- Data failed to spreads across the a.r.
- Data skewed in the disagree/strongly disagree direction
- Mean 3.58 - slightly high
- Standard deviation 1.82 - high
- Adjusted item-total correlation 0.88 - excellent
- Neutral responses 10% - acceptable
- All members of the high-scoring group disagreed with the statement. In the low-scoring group, a majority disagreed with the statement, and 29% gave neutral responses. Thus, among this population, the item did not appear to discriminate between those with a healthy, and those with a less healthy, attitude toward alcohol use.

Item 2.6 (positively-phrased statement) - **ELIMINATED**

"Drinking helps me to reduce my sexual inhibitions"

Rationale:

- Data spreads across a.r.
- Data skewed in the disagree/strongly disagree direction
- Mean 3.09 - acceptable
- Standard deviation 1.77 - high
- Adjusted item-total correlation -0.83 - excellent (but negative)
- Neutral responses 20% - acceptable
- The majority of the members of both the high- and low-scoring groups disagreed with the statement. Therefore, among this population, the item does not appear to discriminate between those with a healthy, and those with a less healthy, attitude toward alcohol use.

Figure 4.13: (continued)

Item 2.7 (negatively-phrased statement) - **RETAINED**

"Drinking helps me to forget my problems"

Rationale:

- Data spreads across the a.r.
- Data shows bipolar distribution
- Mean 2.81 - acceptable
- Standard deviation 1.77 - high
- Adjusted item-total correlation 0.84 - excellent
- Neutral response 10% - acceptable
- The majority of the high-scoring group disagreed with the statement, while the majority of the low-scoring group endorsed the statement. Therefore the item does appear to discriminate between those members of the population with a healthy, and those with a less healthy, attitude toward alcohol use.

Figure 4.13: (continued)

A Critical Evaluation of Keen's (1990) Perceived Threat Scale

Keen's Perceived Threat Scale (1990) was reportedly based on a part of the Health Belief Model (HBM). Empirical research applying the HBM provides a strong argument in support of the HBM's ability to help explain, and predict, an individual's acceptance of health care recommendations (refer to Chapter 2). The HBM includes an individual's perception of the threat of a disease. One's perception of the threat of a disease is reportedly determined by the interaction between two sets of beliefs: (1) beliefs regarding one's susceptibility to the condition; and (2) beliefs regarding the severity of the consequences of contracting the condition.

Using the HBM as a theoretical basis for developing a "Perceived Threat Scale" it therefore appears necessary to include statements which are entirely future-oriented.

However, the items in Keen's (1990) Perceived Threat Scale appear to investigate only a person's beliefs about their susceptibility to HIV and not beliefs about the severity of the consequences of contracting the HIV. Furthermore, although some statements are future-oriented, many statements refer to the past and present.

A Critical Evaluation of the PT Scale (modified after Keen's (1990) Scale)

The PT Scale used in this investigation (modified after Keen's PTS (1990)) similarly fails to investigate both sets of beliefs regarding an individual's subjective risk of contracting the HIV. Additionally, of the ten statements included in this scale, seven ask respondents to react to statements about the past; one statement refers to the present; and only two statements refer to the future.

Figure 4.14: ***Critical evaluation of the Perceived Threat Scale as a valid implementation of the Health Belief Model***

Table 4.46: Detailed summary of properties and parameters of the refined APWA Scale

Section B - Refined APWA Scale	**# of items: 4**
Test	**Results**
Item-total correlation (adj.)	Range of r-values: 0.45 to 0.58 Mean of r-values: 0.50
Evaluative quality	Range of neutral responses: 14% to 23% Range of mean scores: 2.82 to 3.57 Range of standard deviations: 1.12 to 1.26
Positive- negative balance	# of positive items: none # of negative items: 4
Internal consistency	Coefficient alpha: 0.71
Temporal stability over two weeks	Multiple regression coefficient: 0.74

Table 4.47: Detailed summary of properties and parameters of the unchanged SE1 Scale following refinement

Section C (Q1) - Unchanged SE1 Scale	**# of items: 7**
Test	**Results**
Item-total correlation (adj.)	Range of r-values: 0.34 to 0.53 Mean of r-values: 0.44
Evaluative quality	Range of mean scores: 2.16 to 3.36 Range of standard deviations: 0.71 to 0.89
Positive- negative balance	# of positive items: 7 # of negative items: none
Internal consistency	Coefficient alpha: 0.73
Stability coefficient over two weeks	Multiple regression coefficient: 0.64

Table 4.48: Detailed summary of properties and parameters of the refined SE2 Scale

Section C (Q2) - Refined SE2 Scale	# of items: 5
Test	**Results**
Item-total correlation (adj.)	Range of r-values: 0.17 to 0.50 Mean of r-values: 0.32
Evaluative quality	Range of mean scores: 2.88 to 3.37 Range of standard deviations: 0.73 to 0.93
Positive- negative balance	# of positive items: 5 # of negative items: none
Internal consistency	Coefficient alpha: 0.55
Stability coefficient over two weeks	Multiple regression coefficient: 0.67

Table 4.49: Detailed summary of properties and parameters of the refined PSN Scale

Section D - Refined PSN Scale	# of items: 3
Test	**Results**
Item-total correlation (adj.)	Range of r-values: 0.50 to 0.62 Mean of r-values: 0.54
Evaluative quality	Range of neutral responses: 18% to 27% Range of mean scores: 2.60 to 3.04 Range of standard deviations: 1.12 to 1.20
Positive- negative balance	# of positive items: 1 # of negative items: 2
Internal consistency	Coefficient alpha: 0.78
Stability coefficient over two weeks	Multiple regression coefficient: 0.74

Table 4.50: Detailed summary of properties and parameters of the refined ATAU Scale

Section F - Refined ATAU Scale	**# of items: 4**
Test	**Results**
Item-total correlation (adj.)	Range of r-values: 0.85 to 0.89 Mean of r-values: 0.87
Evaluative quality	Range of neutral responses: 10% to 20% Range of mean scores: 2.81 to 3.11 Range of standard deviations: 1.73 to 1.79
Positive- negative balance	# of positive items: none # of negative items: 4
Internal consistency	Coefficient alpha: 0.84
Stability coefficient over two weeks	Multiple regression value: 0.65

Table 4.51: ***A facsimile[1] of the cardboard cut-out marking key used to facilitate scoring of Section G - Rosenberg's Self-Esteem Scale (1965)***

Item #	RESPONSES				SCORING[2]
	Strongly Agree	Agree	Disagree	Strongly Disagree	
1.					3/3 or 2/3
2.					
3.					SCORE 1
4.					2/2 or 1/2
5.					SCORE 1
6.					SCORE 1
7.					SCORE 1
8.					SCORE 1
9.					2/2 or 1/2
10.					SCORE 1

[1]Cohen, L. (1976:107) Educational research in classrooms and schools: a manual of materials and methods. London: Harper & Row.

[2]High scores indicate *low* self-esteem

APPENDIX C

HIV/AIDS EDUCATION

IN SCHOOLS

QUESTIONNAIRE

Please complete all sections of this questionnaire. Your answers will be used in the planning of HIV/AIDS education programmes in the future. By answering CAREFULLY and HONESTLY you will be helping others.

This is NOT a test. The computer-coded number that you have been assigned will ensure your anonymity; in all instances the questions allow a range of responses to aid your FULL participation.

Please ignore the numbers and blocks in the right hand margin headed "FOR OFFICE USE ONLY"; they are for computer use.

Please insert the 3-digit computer-coded number which has been assigned to you in the space provided below:

2 3 4

FOR OFFICE USE ONLY

Card # 1

1

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SECTION A

The items in this section relate to your current impressions and understanding of the subject and to your confidence in your views.

Please indicate your answer to the following questions by placing a TICK [✓] or a CROSS [x] in the appropriate box.

If you do not know the answer to a question please do* NOT *guess, but just tick or cross the option "do not know, not sure". A "do not know, not sure" response is not wrong - it can be an important indicator of public opinion.

QUESTION 1

		TRUE	FALSE	DO NOT KNOW, NOT SURE	
1.1	In South Africa the HIV[1] is transmitted primarily through heterosexual contact	☐	☐	☐	5 ☐
1.2	A male can become infected with the HIV by having sex with a woman who has AIDS[2]	☐	☐	☐	6 ☐
1.3	A male can become infected with the HIV by having sex with a man who has AIDS	☐	☐	☐	7 ☐
1.4	The HIV attacks, and finally destroys part of the body's immune system.	☐	☐	☐	8 ☐
1.5	An HIV-infected person will always be contagious regardless of whether or not s/he has symptoms	☐	☐	☐	9 ☐

1 **HIV** is the acronym for the Human Immunodeficiency Virus commonly referred to as "the AIDS virus".

2 **AIDS** is the acronym for Acquired Immune Deficiency Syndrome.

		TRUE	FALSE	DO NOT KNOW, NOT SURE	FOR OFFICE USE ONLY
1.6	AIDS is diagnosed by:				10
	1. a blood test	☐	☐	☐	☐
	2. opportunistic infections[3]	☐	☐	☐	11 ☐
1.7	With present technology AIDS can be cured by:				12
	1. antibiotics (e.g. penicillin)	☐	☐	☐	☐
	2. vaccination	☐	☐	☐	13 ☐
	3. drugs (e.g. AZT)	☐	☐	☐	14 ☐
1.8	After initial infection with the HIV, a period of several years may elapse before the onset of AIDS	☐	☐	☐	15 ☐
1.9	An HIV-infected person only becomes contagious to others once s/he has developed symptoms	☐	☐	☐	16 ☐
1.10	One HIV antibody test can conclusively establish that a person is **not** infected with the HIV	☐	☐	☐	17 ☐
1.11	A person **with** antibodies to the HIV:				18
	1. may develop AIDS sometime in the future	☐	☐	☐	☐
	2. may have AIDS	☐	☐	☐	19 ☐
	3. is protected from AIDS	☐	☐	☐	20 ☐
	4. has come into contact with the HIV	☐	☐	☐	21 ☐
	5. can transmit the HIV to someone else	☐	☐	☐	22 ☐
	6. has the HIV in his/her blood	☐	☐	☐	23 ☐

[3] Opportunistic infections are caused by certain disease-causing organisms that would normally be resisted with ease.

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QUESTION 2

For each "body fluid", indicate whether that fluid would contain:
- a high concentration of the HIV [HIGH CONC.];
- a low concentration of the HIV [LOW CONC.]; or
- no HIV [NONE]
in a person infected with the HIV

If you do not know the answer to a question please indicate this by ticking or crossing the "do not know, not sure" box.

		HIGH CONC.	LOW CONC.	NONE	DO NOT KNOW, NOT SURE	
2.1	blood	☐	☐	☐	☐	24 ☐
2.2	saliva	☐	☐	☐	☐	25 ☐
2.3	semen	☐	☐	☐	☐	26 ☐
2.4	sweat	☐	☐	☐	☐	27 ☐
2.5	tears	☐	☐	☐	☐	28 ☐
2.6	vaginal fluid	☐	☐	☐	☐	29 ☐

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QUESTION 3

		TRUE	FALSE	DO NOT KNOW, NOT SURE	
3.1	Infection by the HIV usually occurs if any HIV-infected "body fluid" gains entrance into another person's blood stream.	☐	☐	☐	30 ☐
3.2	In theory the risk of HIV transmission through saliva is possible, but in practise is extremely unlikely.	☐	☐	☐	31 ☐
3.3	If a pregnant woman is infected with the HIV her baby is at risk:				
	1. during pregnancy	☐	☐	☐	32 ☐
	2. during birth	☐	☐	☐	33 ☐
	3. after birth (from mother's breast milk)	☐	☐	☐	34 ☐
3.4	The HIV **cannot** pass through intact skin	☐	☐	☐	35 ☐
3.5	Knowing a person's sexual history will indicate his/her HIV risk exposure	☐	☐	☐	36 ☐
3.6	Asking a potential sex partner for his/her sexual history is a reliable method on which to base a decision, and will therefore reduce the likelihood of HIV exposure.	☐	☐	☐	37 ☐
3.7	The HIV can gain easier entrance into a person's bloodstream through damaged mucous membranes[4]	☐	☐	☐	38 ☐
3.8	The use of protective gloves and a 1 in 10 solution of Jik is a safe and effective way of cleaning up any "body fluid" spills of an HIV-infected person	☐	☐	☐	39 ☐
3.9	A mucous membrane could be damaged without a person being aware of it	☐	☐	☐	40 ☐
3.10	One method of reliably reducing the risk of HIV exposure is to use caution in the choice of a sexual partner	☐	☐	☐	41 ☐
3.11	Reducing the number of sexual partners in a population with small numbers of HIV-infected people will contribute little or nothing to reducing the risk for HIV exposure	☐	☐	☐	42 ☐

[4] **mucous membrane** is the soft tissue found lining the inside of the mouth, vagina, anus, eyes, and around the head of the penis.

		TRUE	FALSE	DO NOT KNOW, NOT SURE	FOR OFFICE USE ONLY
3.12	The only certain way of avoiding the sexual transmission of the HIV is:				43
	1. celibacy (ie. sexual abstinence)	☐	☐	☐	☐
	2. a strictly monogamous lifelong relationship when neither partner has ever been exposed to the HIV	☐	☐	☐	44 ☐
3.13	The HIV can be **spread** by:				45
	1. sharing eating utensils with an HIV-infected person	☐	☐	☐	☐
	2. using the same toilet as an HIV-infected person	☐	☐	☐	46 ☐
	3. being bitten by a blood-sucking insect (e.g. a mosquito) after it has bitten an infected person)	☐	☐	☐	47 ☐
	4. breathing in airborne particles from an infected person's coughing or sneezing	☐	☐	☐	48 ☐
3.14	When a person has sex with a partner, s/he effectively has indirect contact with all the people with whom the partner has had sexual intercourse over the past 8 to 10 years.	☐	☐	☐	49 ☐

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QUESTION 4

For each activity mentioned below assume that one participating partner is HIV-infected. Please indicate the risk of HIV exposure for the other participating partner.

If you do not know the answer to a question please tick or cross the "do not know, not sure" option and please do* NOT *guess.

		HIGH RISK	LOW RISK	REMOTE RISK	NO RISK	DO NOT KNOW, NOT SURE	
4.1	unprotected anal intercourse	☐	☐	☐	☐	☐	50 ☐
4.2	anal intercourse using a condom	☐	☐	☐	☐	☐	51 ☐
4.3	unprotected vaginal intercourse	☐	☐	☐	☐	☐	52 ☐
4.4	deep kissing (French or wet kissing)	☐	☐	☐	☐	☐	53 ☐
4.5	vaginal intercourse using a condom	☐	☐	☐	☐	☐	54 ☐
4.6	mutual masturbation (assuming no "body fluid" exchange)	☐	☐	☐	☐	☐	55 ☐
4.7	oral intercourse not to orgasm	☐	☐	☐	☐	☐	56 ☐
4.8	hugging and caressing	☐	☐	☐	☐	☐	57 ☐
4.9	oral intercourse to orgasm	☐	☐	☐	☐	☐	58 ☐

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QUESTION 5

		TRUE	FALSE	DO NOT KNOW, NOT SURE	
					59
5.1	Properly used, condoms provide a reasonably effective method of reducing the risk of HIV transmission	☐	☐	☐	☐
					60
5.2	If condoms are used to reduce the risk of HIV exposure they need to be worn every time a person has sexual intercourse	☐	☐	☐	☐
5.3	If condoms are used for birth control				61
	1. they must be worn every time sexual intercourse occurs	☐	☐	☐	☐
					62
	2. they need not be used for the week prior to a woman's period	☐	☐	☐	☐
					63
	3. they need not be used during a woman's period	☐	☐	☐	☐
					64
	4. they need not be used for a couple of days after a woman's period has ended	☐	☐	☐	☐
					65
5.4	A condom should be worn so that it is snug at the tip.	☐	☐	☐	☐
					66
5.5	A condom should be unrolled before attempting to put it on the man's erect penis.	☐	☐	☐	☐
					67
5.6	When using a condom it is better to use an oil-based lubricant than a water-based lubricant	☐	☐	☐	☐

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Card # 2
1

S E C T I O N B

There are no right or wrong answers to the following questions. Please pick the answer that most closely describes how YOU feel about each statement and indicate your response by ticking [✓] or crossing [×] the appropriate box.

		Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree	
1.	I would avoid all forms of contact with anyone I knew who had AIDS	☐	☐	☐	☐	☐	2 ☐
2.	I would feel uncomfortable around someone with AIDS	☐	☐	☐	☐	☐	3 ☐
3.	I would stop being friends with a person if I discovered that s/he had AIDS	☐	☐	☐	☐	☐	4 ☐
4.	I would not want to hug someone with AIDS	☐	☐	☐	☐	☐	5 ☐
5.	I would stop going to my barber/hairdresser if I suspected that s/he had AIDS	☐	☐	☐	☐	☐	6 ☐
6.	I believe that children with AIDS should be allowed to attend school and mix with other children as normal	☐	☐	☐	☐	☐	7 ☐
7.	I believe that doctors who get the HIV should be allowed to go on working with their patients	☐	☐	☐	☐	☐	8 ☐
8.	I believe that people with the HIV should be allowed to live in the community normally.	☐	☐	☐	☐	☐	9 ☐
9.	I would hesitate to sit next to somebody with the HIV	☐	☐	☐	☐	☐	10 ☐
10.	I believe that AIDS patients should not be isolated from society	☐	☐	☐	☐	☐	11 ☐

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S E C T I O N C

QUESTION 1

There are no right or wrong answers to the following questions. Please tick [✓] or cross [×] the answer which indicates how certain you are that you would have the confidence to carry out the following behaviours to AVOID the risk of HIV infection.

		Very Certain	Certain	Uncertain	Very Uncertain	
1.	I would feel comfortable about initiating a discussion with a partner, before our relationship became intimate, about limiting our intimate behaviour to avoid any exposure to the HIV.	☐	☐	☐	☐	12 ☐
2.	I would be able to remain sexually abstinent until I was in a committed lifelong mutually monogamous relationship.	☐	☐	☐	☐	13 ☐
3.	I would be able to effectively resist peer pressure to engage in sexual intercourse.	☐	☐	☐	☐	14 ☐
4.	I would be able to refuse to perform **any** risky sexual behaviour even if my partner wanted me to.	☐	☐	☐	☐	15 ☐
5.	I would be able to insist on only practising sexual activities which **avoided** any risk of exposure to the HIV.	☐	☐	☐	☐	16 ☐
6.	I would be able to explain to my partner the need to avoid the risk of HIV transmission for both of us.	☐	☐	☐	☐	17 ☐
7.	I would feel competent in negotiating with a partner, who was not readily agreeable, the necessity of only practising those sexual behaviours which did not put us at risk of exposure to the HIV.	☐	☐	☐	☐	18 ☐

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QUESTION 2

There are no right or wrong answers to the following questions. Please tick [✓] or cross [×] the one answer which indicates how certain you would feel that you would be able to carry out the following behaviours to REDUCE the risk of HIV transmission, assuming that you were sexually active.

		Very Certain	Certain	Uncertain	Very Uncertain	
1.	I would not be embarrassed to go to a supplier and obtain condoms.	☐	☐	☐	☐	19 ☐
2.	I would be willing to carry a condom at all times for use whenever I had sexual intercourse.	☐	☐	☐	☐	20 ☐
3.	I would be able to learn how to use a condom properly.	☐	☐	☐	☐	21 ☐
4.	I would be able to initiate a discussion about lower-risk sexual activities before a relationship became sexual.	☐	☐	☐	☐	22 ☐
5.	I would be able to refuse to perform any high risk sexual behaviours even if my partner wanted me to perform them.	☐	☐	☐	☐	23 ☐
6.	I would feel competent in negotiating lower-risk sexual activities with a partner who was not readily agreeable.	☐	☐	☐	☐	24 ☐
7.	I would be able to refuse to have sexual intercourse, without the use of a condom, with anyone I knew who was HIV-infected.	☐	☐	☐	☐	25 ☐
8.	I would be able to insist on condom use during every sexual encounter which involved sexual intercourse.	☐	☐	☐	☐	26 ☐
9.	I would be able to explain to my sexual partner the need for condom use to reduce the risk of HIV exposure for both of us.	☐	☐	☐	☐	27 ☐

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SECTION D

There are no right or wrong answers to the following questions. Please tick [✓] or cross [x] the answer which indicates how strongly you agree or disagree with each statement.

		Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree	
1.	My friends do not think HIV is something to worry about.	☐	☐	☐	☐	☐	28 ☐
2.	My friends would support my decision to avoid all sexual activities that would put me at any risk for HIV exposure.	☐	☐	☐	☐	☐	29 ☐
3.	My friends and I discuss our questions and feelings about HIV transmission.	☐	☐	☐	☐	☐	30 ☐
4.	My friends would agree that to be sexually active proves one's manliness.	☐	☐	☐	☐	☐	31 ☐
5.	My friends would support my decision to practise only low-risk sexual activities.	☐	☐	☐	☐	☐	32 ☐
6.	My friends would agree that it is important for a person to remain sexually abstinent until s/he was ready to commit him/herself to a lifelong, mutually monogamous relationship.	☐	☐	☐	☐	☐	33 ☐
7.	My friends would laugh if I tried to convince them to avoid sexual intercourse because of the likelihood of HIV infection.	☐	☐	☐	☐	☐	34 ☐
8.	My friends believe that being concerned about HIV transmission is inconsistent with their "machismo" values.	☐	☐	☐	☐	☐	35 ☐
9.	My friends would sanction those who do not practise HIV-preventive behaviour.	☐	☐	☐	☐	☐	36 ☐

	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree	FOR OFFICE USE ONLY
						37
10. My friends would laugh if I tried to convince them to use condoms during sexual intercourse.	☐	☐	☐	☐	☐	☐

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S E C T I O N E

There are no right or wrong answers to the following questions. Please tick [✓] or cross [x] the answer that indicates how strongly you agree or disagree with each statement. ***Leave blank any questions which are NOT applicable to you, or which you are unable to answer.***

		Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree	
1.	I do not know anyone who has AIDS or who has died of AIDS.	☐	☐	☐	☐	☐	38 ☐
2.	I believe a cure for HIV infection and AIDS is just around the corner.	☐	☐	☐	☐	☐	39 ☐
3.	It is very unlikely that I will become infected with the HIV.	☐	☐	☐	☐	☐	40 ☐
4.	I believe that I am not at risk of HIV infection as I have never had any form of sexual intercourse.	☐	☐	☐	☐	☐	41 ☐
5.	I have never received blood by transfusion, before the Blood Transfusion Services begun screening donated blood, and believe I am therefore not in danger of contracting the HIV.	☐	☐	☐	☐	☐	42 ☐
6.	AIDS and HIV infection are not as big a problem as the media suggests.	☐	☐	☐	☐	☐	43 ☐
7.	I have never participated in any high-risk sexual behaviours so I am not personally vulnerable to HIV infection.	☐	☐	☐	☐	☐	44 ☐
8.	I have carefully followed HIV risk-reduction guidelines so I am not worried about contracting the HIV.	☐	☐	☐	☐	☐	45 ☐
9.	It is likely that someone I know is infected with the HIV.	☐	☐	☐	☐	☐	46 ☐
10.	I am at risk because my sexual behaviour has possibly exposed me to the HIV.	☐	☐	☐	☐	☐	47 ☐

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This space is reserved for any comments you may wish to make

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SECTION F

QUESTION 1

Please tick or cross the ONE block which most closely corresponds to the answer you wish to make.

1.1 How **often** during the past holidays/weekends have you had drinks containing **alcohol**? 48

☐ Every day ☐ More than twice a week ☐ Once or twice a week ☐ Once or twice a month ☐ Never

If you do not "drink":- please go on to Section G

1.2 Where do you **normally** go to drink? 49

☐ Home ☐ A friend's place ☐ A restaurant or hotel ☐ A bar or pub ☐ A shebeen ☐ The beach

1.3 How often is your girlfriend/boyfriend with you when you drink? 50

☐ Always ☐ Almost always ☐ Sometimes ☐ Seldom ☐ Never

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QUESTION 2

Please indicate your answer to the following questions by placing a tick [✓] or a cross [×] in the appropriate box.

		Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree	
2.	**Drinking helps me to:**						51
1.	meet new friends	☐	☐	☐	☐	☐	☐
2.	find girlfriends (or boyfriends)	☐	☐	☐	☐	☐	52 ☐
3.	be a man	☐	☐	☐	☐	☐	53 ☐
4.	cope with stress and/or anxiety	☐	☐	☐	☐	☐	54 ☐
5.	sharpen my control over events	☐	☐	☐	☐	☐	55 ☐
6.	reduce my sexual inhibitions	☐	☐	☐	☐	☐	56 ☐
7.	forget my problems	☐	☐	☐	☐	☐	57 ☐

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Card # 3

1

SECTION G

Put a TICK [✓] or a CROSS [x] in the appropriate box to show how you feel about yourself

		Strongly Agree	Agree	Disagree	Strongly Disagree	
1.	I feel that I am a person of worth, at least on an equal plane with others	☐	☐	☐	☐	2 ☐
2.	All in all, I am inclined to feel that I am a failure	☐	☐	☐	☐	3 ☐
3.	I feel that I have a number of good qualities	☐	☐	☐	☐	4 ☐
4.	I am able to do things as well as most other people	☐	☐	☐	☐	5 ☐
5.	I feel I do not have much to be proud of	☐	☐	☐	☐	6 ☐
6.	I take a positive attitude toward myself	☐	☐	☐	☐	7 ☐
7.	On the whole, I am satisfied with myself	☐	☐	☐	☐	8 ☐
8.	I wish I could have more respect for myself	☐	☐	☐	☐	9 ☐
9.	I certainly feel useless at times	☐	☐	☐	☐	10 ☐
10.	At times I think I am no good at all	☐	☐	☐	☐	11 ☐

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S E C T I O N H

You are encouraged to provide the following details to allow us to assess accurately the range of students who have responded to this questionnaire.

Please place a tick [✓] or a cross [x] in the appropriate box (or fill in details where necessary)

1. How old are you? (in years only) 12 13

   15 ☐ 16 ☐ 17 ☐ 18 ☐ 19 ☐ 20 ☐

2. What is/are your home language/s?

   English ☐ Afrikaans ☐ Xhosa ☐ Zulu ☐
   Sotho ☐ Chinese ☐ French ☐ German ☐ 14 15
   Netherlands ☐ Other (Please Specify) _____

3. Are you a boarder or day scholar? 16

   Boarder ☐ Day Scholar ☐

4. Are you currently studying Biology at the Standard 9 level? 17

   Yes ☐ No ☐

5. How many years have you been at your current school? 18 19

   1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐
   7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12+ ☐

Please scan pages 1 to 18 to ensure that you have completed all of the questions.

THANK YOU VERY MUCH FOR PARTICIPATING IN THIS SURVEY.

APPENDIX D

SUPPLEMENTARY QUESTIONNAIRE

Kindly complete the questions on this sheet. Your responses will be completely anonymous. We wish you to CAREFULLY and HONESTLY evaluate your personal satisfaction with the various phases of the HIV/AIDS programme you received last term.

S E C T I O N A

Please assign a value on a ten-point scale, from 1 (little value) to 10 (very valuable) *to each phase of the programme outlined below. Please indicate your evaluation points (in whole numbers) in the space supplied* i.e. _____ opposite the named phase.

1. **Knowledge about and understanding of HIV and AIDS**
   (Presented by the Planned Parenthood Association personnel) _____

2. **Talk by and discussion with a Person living with AIDS** _____

3. **Awareness session about condoms**
   (Presented by the Planned Parenthood Association personnel) _____

4. **Lecture on Sexuality outside Marriage**
   (Presented by Dr. A. Grazioli, the sexologist) _____

5. **Life Skills for Coping in the Era of AIDS**
   (Presented by a clinical psychologist) _____

S E C T I O N B

Please give the ENTIRE programme a rating for the degree to which you perceived it as being personally helpful to you in reducing HIV risk exposure either now and/or in the future. _____

P.T.O.

S E C T I O N C

Please read through this section. If, upon reflection, you feel unable to make a contribution to any question, you may leave the space blank.

Based upon your experience of the HIV/AIDS programme which you received last term, assume that you were now being asked to design an HIV/AIDS education programme for your peers.

1. What PHASES of the programme you received would you EXCLUDE? Please supply the REASONS.

.....
.....
.....
.....
.....

2. What PHASES of the programme you received could have been IMPROVED UPON, and HOW would you improve them?

.....
.....
.....
.....
.....

3. Are there OTHER SECTIONS you would include? If yes, please supply a BRIEF OUTLINE of the section's CONTENT and the REASONS for its inclusion.

.....
.....
.....
.....
.....

ONCE AGAIN THANK YOU VERY MUCH FOR YOUR SINCERE PARTICIPATION

APPENDIX E

LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ANOVA	Analysis of variance
APB	HIV/Aids Preventive Behaviour
APP	ten hour HIV/AIDS Prevention Programme (the experimental treatment)
APWA	Attitude towards People With AIDS
a.r.	available range
ATAU	Attitude Towards Alcohol Use
AZT	Zidovudine (drug used in treatment of HIV-infected patients)
BMDP	Bio-Medical Data Processing
CQ	Comprehensive Questionnaire
D	Item Difficulty Index
DC	Diocesan College
HBM	Health Belief Model (Becker *et al.* 1974)
HIV	Human Immunodeficiency Virus
HRB	High Risk Behaviour
KI	Knowledge Instrument
PLWA	People Living With AIDS
PPA	Planned Parenthood Association of the Western Cape
PSN	Perceived Social Norms
PT	Perceived Threat
PTS	Perceived Threat Scale (Keen 1990)
PWA	People With AIDS
Q1	Question 1
Q2	Question 2
RSE	Rosenberg's Self-Esteem Scale (1965)
SCT	Social Cognitive Theory (Bandura 1986)
SE1	Self-Efficacy scale (§ C, Q1, of the CQ)
SE2	Self-Efficacy scale (§ C, Q2, of the CQ)
SQ	Supplementary Questionnaire
SSF	St Stithians College students at First testing
SSG	St Stithians College students at second testing
SSS	Social Support Scale (Keen 1990)
STD	Sexually Transmitted Diseases
Std	Standard
TRA	Theory of Reasoned Action (Fishbein and Ajzen 1975)
UCT	University of Cape Town
V	Item Validity
vs	versus
WHO	World Health Organisation

Table 2.2: Detailed overview of three evaluated sex education programmes conducted among adolescents in the United States (published prior to June 1991)

Reference	Experimental Design	Country/Area	Sample (n)	Age Range (years)	Site/Setting	Treatment(s)	Measuring Instruments	Properties	Statistical Tests Performed	Results
Hoch (1971)	Classical 1 experimental group 1 control group pre/post-test	USA N.Indiana	100 Experimental = 50 Control = 50 (adolescents)	not reported	High School (x 1)	Experimental treatment: Non-judgemental sex education unit 10 x 50 minute class periods over 2 teaching weeks Control treatment: no programme	Factual knowledge: Reiss permissiveness scale: Sexual decision-making confidence: Attitude towards: - Population control - Family planning - Birth control - Sexual deviates (*sic*)	58 items Last 3 scales "developed by author and validated by a panel of experts" No reliability or validity coefficients reported.	t-test on pretest scores t-test pre/post intervention for control t-test pre/post intervention for control 2 x 2 ANOVA (treatment, gender, IQ)	established groups equivalent at pretest no significant differences - (pretest did not sensitize students) Significant differences found: Factual knowledge (0.01) Confidence in decision-making (0.05) Attitudes: Population control (0.01) Family planning (0.01) Birth control (0.01) Sexual deviates (*sic*) (0.01) Treatment significant at 0.01 level Interaction between treatment and gender (females > at 0.01 level) Interaction between treatment and IQ (0.05) those with IQ>103 changed their attitude towards sexual deviates (*sic*) more than those with IQ<103.
Finkel and Finkel (1985)	Quasi-experimental 1 group pre/post-test	USA New York (the Bronx)	416 (82%) 33% male 67% female (adolescents)	14 - 21 Mean 16.2	High School (x 4)	Experimental treatment: One semester "Family Living/Sex Education" course	Responsibility Peer Pressure Attitudes towards Self Interpersonal Attitudes Gender Roles Knowledge: Personal Hygiene Birth Control Human Reproduction STD	"most statements had been used in other studies and had been tested and validated" No reliability or validity coefficients reported.	Statistical tests performed on group mean pre/post-intervention Further analysis conducted on gender differences over time	Significant changes: responsibility for behaviour less traditional gender role orientations more knowledgable on all 4 measures (no *p* values reported) Trends (non-significant): peer pressure - greater movement away by males self-esteem - improved attitude towards others - slight improvement in females No significant gender differences found on any measure (no *p* values reported)
Gilchrist and Schinke (1983)	Classical 1 experimental 1 control	USA	107 61% male 39% female 95% white	Mean 15.65 (SD=0.804) 7th grade = 56% 8th grade = 36% 9th grade = 8%	Subjects enrolled in required speech classes in large middle-class suburban public high school	Experimental treatment: 2 groups of 27 students met daily for two weeks (10x50 minute sessions) - led by team of male and female masters-level social workers. 2 factual sessions on reproduction and birth control; 1 session on problem-solving; 1 session on modelling verbal and non-verbal components of effective interpersonal communication; 6 practice sessions requiring problem-solving and good communication - role plays. Control treatment: no programme	Knowledge inventory: Contraception attitudes and intentions inventory: Performance test: Self-efficacy scales:	Multiple choice questions testing understanding of basic processes involved in conception and contraception. To assess S's opinions re desirability of contraceptive use; communication with partner about contraceptive use; evaluations of their ability to do so; perceptions of the likelihood of engaging in such communication and contraceptive behaviour. S's videotaped in 3 vignettes with opposite gender confederate: to refuse sexual advances; initiate and sustain discussion of birth control in face of partner's opposition; assessing means-end thinking. to assess how comfortable they were during the performance test and how effectively they thought they performed.	Chi-square tests: for pretest differences btw exp. and control groups on S's age, sex, race, sexual activity, contraceptive use, pregnancy history, and previous sex education *t*-tests between experimental and control group post-test scores on: Knowledge inventory Attitudes and intentions inventory Wilcoxon rank sum test to cf. exp. and control group results on videotaped role plays which were scored in separate viewings by two independent raters: Problem solving performance: Communication skill: Social adequacy score: Data from 4 self-efficacy scales collapsed into 2 areas of interest (self-perceived anxiety and feelings of competency and success)	No pretreatment differences found $p<0.001$ favouring S's in experimental condition $p<0.001$ favouring S's in experimental condition Experimental subjects: engaged in more effective problem-solving ($p<0.0001$); had better communication skill ($p<0.0001$) when cf. with control S's. In addition experimental S's showed significantly greater skills in: overt problem-solving ability ($p<0.001$); communication skill ($p<0.001$); social adequacy score ($p<0.001$); when compared with control S's. Experimental S's reported feeling less anxious ($p<0.001$) and more successful in handling the test situations ($p<0.001$) when cf. with control S's.

Table 2.3: Detailed overview of two empirically evaluated controlled HIV/AIDS prevention programmes conducted among adolescents in the United States (published after June 1991)

Reference	Experimental Design	Country/Area	Sample (n)	Age Range (years)	Site/Setting	Treatment(s)	Measuring Instruments	Properties	Statistical Analysis	Results
Jemmott III *et al.* (1992)	Extended classical 1 experimental group 1 control group pre/post/follow-up-test	USA Philadelphia (adolescents)	157 Experimental = 85 Control = 72 All inner-city Black males	Mean 14.64 (SD=1.66)	Recruited from: outpatients medical clinic (44%) 10-12th grade school assembly attenders at local high school (32%) local YMCA (24%)	Experimental: 5 hour intervention (providing information on risks of HIV from IVDU and sexual activities) 14 small groups Control: 5 hour intervention (career opportunities) 13 small groups Both treatments were similarly structured and used videotapes, games, exercises, and other culturally and developmentally appropriate materials to reinforce learning and encourage active participation. All 27 facilitators had 6 hours of training a week before the intervention.	AIDS and STD Knowledge: Attitudes re risk behaviours: Intentions re risk behaviours: Marlowe-Crowne Social Desirability Scale Risky sexual behaviour during: past 3 months (at pretest) previous 3 months (at follow-up-test).	57 true/false items Coefficient alpha: pretest=0.73; post-test=0.89; follow-up-test=0.82 9 items (7 point rating scale from "extremely negative" to "extremely positive" Coefficient alpha: pretest=0.63; post-test=0.68; follow-up-test=0.63 9 items (7 point rating scale from "extremely likely" to "extremely unlikely" Coefficient alpha: pretest=0.68; post-test=0.72; follow-up-test=0.70 9 items Coefficient alpha: 0.67 Coefficient alpha: 0.72	ANCOVAS performed - condition x gender of facilitator: Immediate post-intervention Knowledge about AIDS and STDs Less favourable attitudes toward risk behaviours Weaker intentions to engage in risk behaviours *Interaction between condition and gender of facilitator* Three-month follow-up Knowledge about AIDS and STDs Less favourable attitudes toward risk behaviours Weaker intentions to engage in risk behaviours *Interaction between condition and gender of facilitator* Controlling for preintervention reports of risky sexual behaviour Risky sexual behaviour at follow-up assessment (3 months later) *Interaction between condition and gender of facilitator*	*p* values: <0.000 <0.004 <0.0001 *<0.04 indicating that the degree of increase in knowledge caused by the experimental intervention was greater with male facilitators than with female facilitators* <0.003 <0.10 <0.007 *<0.003 indicated that the effect of the experimental intervention on lowering attitudes toward risky behaviours was greater with female facilitators than with male facilitators* <0.01 experimental subjects reported engaging in less risky sexual behaviour in the 3 months following the intervention (cf. control S's) *<0.04 indicating that a reduction in risky sexual behaviour caused by the experimental intervention was greater among those who had female facilitators than those who had male facilitators*
Walter and Vaughan (1993)	Classical 1 experimental group 1 control group pre/post-test (3 months)	USA New York (adolescents)	1,316 (91.3%) Experimental = 667 Control = 534 41.5% male 58.5% female Classes randomly assigned to treatments	12 - 20 Mean 15.7 41.5% male 72.1% Black/Hispanic 27.9% White/Asian 9th and 11th grade	4 academic high schools: 2 sets of demographically similar high schools	Experimental treatment: 6 x 1-class-lesson-periods implemented on consecutive days by specially trained teachers: 2 - HIV transmission and prevention facts 2 - values clarification re sexual behaviour; empowerment via role plays with negotiation skills 2 - negotiation skills for consistent condom use and knowledge and skills necessary for obtaining and using condoms correctly. Control: no programme	Knowledge (HIV transmission and prevention Beliefs: Susceptibility Benefits Barriers Peer norms (APBs) Self-efficacy Behaviours: Sexual intercourse Consistent condom use # partners Sex with HRG partner STD diagnosis	12 items 2 items 9 items 12 items 4 items 13 items AIDS Risk Behaviour Index: 1 item 1 item 1 item 1 item 1 item [alpha range: 0.76 to 0.85 (mean 0.80); test-retest over 2 wks: alpha range: 0.61 to 0.88 (mean 0.72) n=120]	*t*-test of differences in the observed change score (follow-up minus baseline) of exp. vs control: Knowledge Beliefs: Susceptibility Benefits Barriers Values Norms Self-efficacy Behaviour risk index Adjusted standardized linear regression (age, gender, race/ethnicity) for treatment effects on outcome variables: Knowledge Beliefs: Susceptibility Benefits Barriers Values Norms Self-efficacy Chi-square (experimental vs control): Behaviour risk index	*p* values: 0.0001 0.14 0.0001 0.22 0.50 0.003 0.03 0.006 *p* values: 0.001 0.01 0.01 0.05 0.01 0.01 0.01

Table 2.4: Summary of a selection of North American and South African surveys, conducted among adolescents and young adults, which explored HIV/AIDS-related knowledge, beliefs and behaviours (published prior to June 1991)

Reference	Survey Type	Country/Area	Site	Sample (response)	Age Range (years)	% Sexually Active	HIV/AIDS Knowledge (K), Personal Relevance of HIV threat (PR), Health Beliefs (HB), and Condom Use (*among sexually active students*)(CU).
Price et al. (1985)	Descriptive	USA, Ohio	School	250	Jnr & Snr high school	-	K: 50-75% knew certain characteristics of AIDS; not able to identify all risk groups (sic); did not understand HIV transmission; Best - only 47% knowledge questions correct. PR: 27% "personally worried about contracting AIDS" (fewer males than females).
DiClemente et al. (1986)	Descriptive	USA, San Francisco	School	1,326	14 -18	-	K: Majority correctly identified major characteristics of AIDS - sex and needle-sharing as transmission modes. 75% thought vaccine may have been developed to treat AIDS. Only 60% knew condoms could help prevent AIDS (sic). Considerable confusion about transmission. 60% knew condoms could help prevent AIDS (sic). PR: 78.7% "afraid of getting AIDS"; 61.5% "not the kind of person" likely to get AIDS.
Strunin and Hingson (1987)	Descriptive	USA, Massachusetts	Adolescents 'Phone	963 (86%)	16 - 19	70%	KI: 96% heard of AIDS; 98% knew of homosexual transmission; 8% did not know of heterosexual transmission. Considerable confusion about transmission. PR: "46% "worried about AIDS"; 61% do "not think at all likely" they would get AIDS in their lifetime. PR and CU: Of those reporting that they were "concerned about AIDS only 15% reported changing their behaviour as a result. However of these only 10% using condoms and 10% abstaining.
Hoffmann (1989)	Descriptive	USA, Maryland	?	534	Young male army recruits	-	HB: moderate susceptibility; high severity; moderate to high benefits; very high barriers CU: Only 23% reported practicing safer sex
Baldwin and Baldwin (1988)	Cross-sectional	USA, S.California	University Mail	1,462 (66%)	17 - 49 (82% 18-21)	78.6%	KI: 26% answered 18/19 out of 19 correctly; 38% answered 15-17 out of 19 correctly; 22% answered 12-14 out of 19 correctly; 15% answered 0-11 out of 19 correctly. KI and CU: those with more knowledge use less caution about engaging in sexual relationships. Furthermore, knowledge was not found to be related to condom use. PR and CU: those "worried about contracting AIDS" scored significantly higher on APB. CU: <20% of sexually active students reported using condoms 75% or more of the time.
Allard (1989)	Cross-sectional	Canada, Montreal	Public 'Phone	1,712 (63%)	18 - 65 (18% 18-24)	-	KI: 98.6% had heard of AIDS; 81% scored the maximum possible score on HIV transmission; knowledge of high risk groups (sic) intermediate. KI and APB: not significantly related. HB and APB: significant association was found between those who perceived AIDS as a particulary severe illness, felt particularly susceptible to AIDS, or had high general health motivation, with having carried out at least one HIV preventive practice. CU: 10% reported condom use to avoid HIV transmission
Hingson *et al.* (1990a)	Cross-sectional	USA, Massachusetts	Adolescents 'Phone	1,773 (82%)	16 - 19	61%	HB and CU: those concerned about acquiring AIDS; and believed condoms to be effective in preventing HIV transmission were the strongest predictors of their use. Severity beliefs were not predictors of condom use. Barriers highly predictive of condom's non-use. Health beliefs about AIDS predicted only one tenth variation in use of condoms. CU: 31% always; 32% sometimes; and 37% never used condoms.
Kegeles *et al.* (1990)	Longitudinal time-series	USA, San Francisco	Clinic Self-administered then 'phone	325 204	14 - 19	40.3% ♀ 69.4% ♂ reported >1 sexual partner	HB and CU: Subjects placed great value and importance on avoiding STDs, and believed condoms effective in preventing STDs. However only 23% females reported condom use in the last month (vs 27% during first survey); whereas 49% of the males reported using condoms in last month (vs 41% during first survey). PR: beliefs not explored CU: Only 2.1% of the females, and 8.2% of the males report consistent condom use over the study year.
Hingson *et al.* (1990b)	Longitudinal trend	USA, Massachusetts	Adolescents 'Phone	2,154 (82%)	16 - 19	Significant increase in % sexually active	K: 1988 - much better informed (cf.1986). Only 1% still unaware of heterosexual transmission (cf.8% in 1986). Some misconceptions persisted. PR and HB: significant increase in those "worried about AIDS"(46-74%), and believing it "somewhat likely" they would contract AIDS in their lifetime (9-18%). 64% believed condoms effective. HB and CU: Those adopting condom use significantly more likely to worry a great deal, or know someone with AIDS, and/or less likely to perceive barriers to condom use. CU: 37% never used condom; 33% used condoms sometimes. Only 20% likely to discuss HIV/AIDS risk with a partner.
Mathews *et al.* (1990)	Descriptive	South Africa, Cape Town	4 township high schools	377	13 - 26 Stds 6, 7, 8/9	75.4%	K: HIV/AIDS knowledge very poor and superficial. Either confused or ignorant of transmission modes. PR: Only 3.4% believed anyone can get AIDS. Did not perceive AIDS as an immediate or future problem in township; many attribute problem to "promiscuous" people. CU: Only 11.4% reported ever using a condom.
Robinson (1991)	Descriptive	South Africa, E. Cape	4 private schools	363	13 - 18 Stds 5, 7 & 9	?	K: of transmission "generally good", although some misconceptions. Many feared not knowing how to protect themselves.
Strebel and Perkel (1991)	Cross-sectional	South Africa, Cape Town	University of W.Cape	1,663	18 - 65 (60% 18 - 25)	72%	K: Generally reasonably good. Several misconceptions about transmission. K and CU: not significantly related PR: 53% believed it not at all likely, and 22% somewhat likely that they had a chance of becoming infected. PR and CU: significant association HB and APB: Of those who said AIDS can be avoided, most effective changes: limiting partners (74%); using condoms (21%). Actual/intended behaviour changes reflected similar %s.

Table 2.5: Detailed overview of three empirically evaluated controlled HIV/AIDS prevention programmes conducted among "high risk groups" in the United States (published prior to June 1991)

Reference	Experimental Design	Country/Area	Sample (n)	Age Range (years)	Site/Setting	Treatment(s)	Measuring Instruments	Properties	Statistical Analysis	Results
Solomon and DeJong (1989)	Two-groups: 1 experimental group 1 control group post-test only	USA, Boston	129 (79.8%) Experimental = 51 Control = 51 random assignment 81.6% male 79.6% Black (inner city STD patients - 64% with history of prior STDs)	18 - 51 Median 24 77.5% < 30 years English-speaking	STD clinic	Experimental treatment: Soap-opera style video (on condom use) + brief oral recall session. Individually viewed. Control treatment: no programme	Knowledge and beliefs Attitude towards condoms Strategies to persuade partner to use a condom	13 true/false items (alpha=0.64:12 items) 14 true/false items (alpha=0.66) 1 open-ended question	95% CI of difference on post-test scores Series of regression models: knowledge & beliefs ..... attitudes toward condoms	Experimental S's scored higher than control S's: Knowledge and beliefs, and attitudes towards condoms, and cited more strategies for persuading a partner to use a condom Treatment most effective for S's: with less formal education; who had never used condoms; with only one sexual partner in last month Treatment most effective for S's: with less formal education; who were not native born.
Kelly *et al.* (1989)	Extended classical: 1 experimental group 1 control group pre/post-/ follow-up test (8 months)	USA Medium sized city of 400,000	104 Experimental = 51 Control = 53 random assignment (homosexual men with a history of frequent HRB)	Mean 31 (SD=8.3) 87% White 13% Black/Hispanic 45% completed College	not reported	Experimental treatment: 12 sessions (75 - 90 minutes each) 2 - AIDS risk education 3 - behavioural self-management 3 - assertiveness training 3 - relationship skills and social support development 3 groups of 17 each Implemented by 2 clinical psychologists and 2 project assistants. Control treatment: no programme	Sexual risk history Risk behaviour self-monitoring Black Depression Inventory Health Locus of Control Inventory AIDS risk knowledge Sexual assertiveness role plays Anonymous questionnaire to evaluate: - satisfaction with the intervention - found it personally helpful in reducing HRB	 33 true/false and MCQ x 8 10 pt rating scale 10 pt rating scale	MANOVAS on pretest data experimental vs control: ANOVA and chi-square comparisons Hotelling's T^2 MANOVAS on pre- and post-intervention data of three exp.grps One-way ANCOVA with pretest scores as covariates: cf.exp. & control on AIDS risk knowledge One-way MANCOVA with pretest scores as covariates: cf.exp. & control on assertiveness role plays Satisfaction rating with intervention: Found it helpful in reducing HRB:	no significant differences on dependent measures confirmed equivalence of groups on age, education and race no significant differences between 3 small groups exp.sig.different (p<0.0001); some recidivism between post-/follow-up but still significantly higher than at pre-intervention (p<0.001). exp.sig.different (p<0.0001). Treatment significantly improved behavioural skills for effective handling of APBs. Behaviour change maintained at 8 month follow-up. Mean = 9.8 Mean = 8.9
Valdiserri *et al.* (1987)	Extended classical 1 experimental group 1 control group pretest before intervention; post-test 2wks after intervention; follow-up test 4-6 months later.	USA Pittsburgh	1,700 (38% = 1,050) Experimental = 545 (85%=464) Control = 105 (100%=105) (MACS cohort bisexual and homosexual men)	Mean 32 Mean 33	not reported	Experimental treatment: 60 - 75 minute informal education session promoting AIDS risk reduction to increase knowledge about HIV transmission and understanding of relative HIV transmission risk associated with various behaviours; instruction about appropriate condom use. Led by gay (peer) health worker Small groups = 5 - 10 Control treatment: no programme	Knowledge Attitudes: - HRBs and LRBs - condom use - # sexual partners - anonymous sexual partners - perceived vulnerability - perceived acceptance of APBs by peers Self-reported sexual behaviour	17 multiple choice items 38 items - 5 point Likert	Wilcoxon matched-pairs signed-ranks test on pre- vs post-intervention scores of treatment group: Knowledge: Attitudes:	 No change in knowledge levels - but high at pretest. Improved significantly (p<0.05) for all attitude scores (with the exception of # of anonymous partners). The greatest change away from "mixed feelings" and the endorsement of risky practices, toward the endorsement of risk reduction practices was found for attitudes about condom use (10%) and discussion of AIDS prevention with partners (9%).

Table 2.6: Detailed overview of two empirically evaluated controlled HIV/AIDS prevention programmes conducted among adolescents in the United States (published prior to June 1991)

Reference	Experimental Design	Country/Area	Sample (n)	Age Range (years)	Site/Setting	Treatment(s)	Measuring Instruments	Properties	Statistical Analysis	Results
DiClemente *et al.* (1989)	Classical 1 experimental group 1 control group pre/post-test	USA, San Francisco	639 Experimental = 366 Control = 273	Experimental: Mean=13.6 (SD=0.09) Control: Mean=13.9 (SD=0.09) Males: Experimental 56.6% Control 50.6% Black/Latinos: Experimental 12.3% Control 16.8% White/Asian: Experimental 76.8% Control 71% Other: Experimental 10.7% Control 12%	3 middle high (n=366) and 3 high schools (n=273)	Experimental treatment: Teacher-delivered 3 day AIDS Education Curricula: focusing on cause, transmission and prevention of AIDS and other STDs. Employed a variety of instructional techniques: video, class exercises focusing on decision-making skills; response rehearsal; and group discussion to enhance learning and student interaction. Control treatment: no programme.	AIDS Information Survey: General knowledge: . . . . . . Misconceptions re transmission . . Attitudinal tolerance of PWA . . .	46 items 48 true/false items 38 items(?) (alpha 0.83) 5 items (?) (alpha 0.71) 3 items (?) ?	General Knowledge: 95% CI computed for difference in adjusted post-test means (i.e. adjusted for baseline knowledge scores) experimental versus control Difference between post-test knowledge scores, adjusted for pretest knowledge scores in exp.grp: Gender differences Ethnic differences Misconceptions: 95% CI for post-test - exp. vs control for individual items Change in attitudes about AIDS relevant to school environment experimental vs control for individual items:	$p<0.0001$ for combined groups and separate groups $p<0.031$ - females significantly better than males Whites and Asians $p<0.0001$; Blacks $p<0.0006$; Hispanic $p<0.002$ significant decrease in misconceptions among exp. group on 4 out of the 5 items. positive improvement on two of the three items shown by the experimental group.
Huszti *et al.* (1989)	Two experimental groups 2 experimental groups 1 control group pretest - 1 week before intervention; post-test - immediately after treatment; follow-up test - 1 month later.	USA Oklahoma City (adolescents)	600 (75%) Experimental groups - (lecture) = 153 (film) = 131 Control group = 164 44.4% males 55.6% females Classes randomly assigned to treatments 93% parents gave permission	14 - 17 Mean 15.6 44% male 10th grade	2 suburban public schools	Experimental treatments: Exp.1: 18 min. AIDS film Exp.2: 18 min. AIDS lecture Both followed by 8 min. lecture and 15 min. question time Implemented during regular science classes. Control treatment: no programme	AIDS knowledge . . . . . . Attitude towards: Patients with AIDS . . . . . . Practicing APB	16 items 5 response options: "definitely yes" to "definitely no" (alpha=0.75 n=98) 12 items (alpha=0.83) 14 items (alpha=0.60) Both Likert scales with 5 response options: "strongly agree" to "strongly disagree"	One way ANOVA on pretest scores 2 x 3 x 3 repeat measures ANOVA on gender, condition and time Knowledge and Attitude towards AIDS patients: Attitude towards APBs:	no significant differences $p<0.0001$ for gender, condition, time condition and time, time and gender Post-test: exp.grps. sig.increase; Follow-up: recidivism in both exp.grps. but still greater than at pre-intervention. On knowledge lecture more effective than the film. Control group (knowledge scores decreased). Post-test: significant improvement in exp.grps; Follow-up: recidivism to pre-intervention levels.