Evaluation of a computerised cognitive behavioural therapy program for depressive symptoms in sexual minority youth

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Abstract

In this thesis I have described a body of work designed to address the problem of depression in sexual minority youth. I started by determining whether sexual minority youth have unique mental health and help-seeking needs. Subsequently the primary aim of my doctoral project was to design and evaluate the acceptability of a self-help program, specifically a computerised cognitive behavioural therapy (CCBT) program specially adapted for sexual minority youth with mild to moderate depressive symptoms. This thesis comprises four studies.

In Study One I used multiple logistic regression to examine the associations between sexual attraction and depressive symptoms, suicidality, self-harming and help-seeking behaviours, in data collected from a nationally representative secondary school health and well-being survey (Youth'07). Sexual minority students consistently had higher prevalence estimates of depressive symptoms ($p=<0.0001$), suicide attempts ($p=<0.0001$) and self-harming ($p=<0.0001$) than students attracted to the opposite sex. Students who reported they were attracted to both sexes had the highest odds ratios for depressive symptoms (OR 3.7, 95% CI 2.8–4.7), suicide attempts (OR 7.0, 95% CI 5.2–9.4) and self-harm (OR 5.8, 95% CI 4.4–7.6). Non-heterosexual students were more likely to report having seen a health professional for an emotional worry and having difficulty accessing help for emotional concerns.

For Study Two, I used thematic analysis based on the general inductive approach to analyse the results of three focus groups. In these groups nine sexual minority participants discussed the unique challenges they face and whether these challenges could usefully be addressed in a CCBT program. Participants also provided feedback on prototypes of a 3D fantasy-based role-play CCBT program (SPARX), designed for a general youth population, and made suggestions about how SPARX could be adapted for sexual minority youth. Participants reported experiencing a number of challenges in their day-to-day life including living within a homophobic and gender-stereotyped world. They highlighted issues unlikely to be experienced by their heterosexual or opposite-sex attracted peers related to discrimination and mistreatment due to their sexuality. As a result of participants' feedback a specially modified version of SPARX, called SPARX: The Rainbow Version, was developed for sexual minority youth.

In Study Three I conducted an open trial to assess the acceptability and feasibility of SPARX: The Rainbow Version (or Rainbow SPARX) amongst 21 sexual minority youth with depressive symptoms. I also collected preliminary data on the efficacy of Rainbow SPARX. The depressive symptoms of sexual minority youth (assessed using the Child Depression Rating Scale – Revised) decreased significantly post intervention ($p<0.0001$), with a large pre- to post-effect size ($d=1.01$) and this positive change was maintained at three-month follow-up. There were also significant improvements on secondary outcomes including self-rated symptoms of depression and anxiety, and a reduction in hopelessness. Over 80% of the sexual minority youth completing SPARX: The Rainbow Version thought CCBT would appeal to other young people. The results from the open trial were compared with those of a randomised controlled trial, where 154 exclusively opposite-sex attracted youth were equally randomised to SPARX and treatment as usual (TAU). With the exception of mean age of participants, open trial and RCT participants did not differ significantly in terms of baseline demographic data, baseline clinical characteristics and changes in assessment scores over time. However, open trial participants were more likely to complete treatment when compared with RCT participants ($p=0.007$).

Study Four was a qualitative study which involved analysing the results of semi-structured interviews using the general inductive approach. Interviews were conducted with 25 youth immediately after they completed SPARX: The Rainbow Version. Twenty of these interviews were with open trial participants from Study Three. Of the remaining five interviews, four interviewees did not have depressive symptoms at baseline and one interviewee identified as being "straight". Seventeen participants reported that SPARX: The Rainbow Version helped them feel better or less depressed and most of the participants reported that the program included useful messages or content. The majority liked the look and feel of the program. Eighteen participants highlighted minor technical issues that they thought needed to be addressed. Participants in Study Four also identified suggestions or tips that would help encourage sexual minority youth to participate in future research.

I have shown that, relative to their peers, sexual minority youth are more likely to have depressive symptoms and to experience difficulty accessing appropriate healthcare. To address these issues I sought the views of sexual minority individuals and then incorporated their views into an adapted form of CCBT for sexual minority youth. Taken together the results of my open trial (Study Three) and the qualitative study (Study Four) indicate that SPARX: The Rainbow Version shows promise as an intervention for mild to moderate depressive symptoms in sexual minority youth and that this intervention was acceptable to participants and that delivery was feasible.

Dedication

"…I lived there for a year and that's when I went through my depression. And I faced everything like beatings, discrimination, not even being able to get work because of who I was." (Razz, 16 years old)

This thesis is dedicated to queer young people like Razz.
They flourish despite the adversity they are forced to face.
They make New Zealand a better place.

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List of abbreviations

AHRG	Adolescent Health Research Group
CBT	Cognitive Behavioural Therapy
CCBT	Computerised Cognitive Behavioural Therapy
CDRS-R	Child Depression Rating Scale – Revised
CES-D	Centre for Epidemiological Studies Depression Scale
Kazdin HPLS	Kazdin Hopelessness Scale
LGB	Lesbian, Gay and Bisexual
LGBT	Lesbian, Gay, Bisexual and Transgender
LI	Local Investigator
MFQ	Mood and Feelings Questionnaire – Long Form
OR	Odds Ratio
OSA	Opposite Sex Attracted
PQ-LES-Q	Paediatric Quality of Life and Satisfaction Questionnaire
RA	Research Assistant
RADS-2	Reynolds Adolescent Depression Scale - 2
RCT	Randomised Control Trial
SCAS	Spence Children's Anxiety Scale
SD	Standard Deviation
SSA	Same Sex Attracted
TAU	Treatment As Usual
YP	Young People

Glossary

Coming out/come out	Is defined as self-disclosure of a sexual minority orientation to someone else, and 'staying in the closet' is defined as an attempt to appear heterosexual (when one is not) and a failure to disclose one's 'true' sexuality (Ford, 2003).
Gender/Gender identity	Refers to an individual's self-identification as male (a man/a boy) or female (a woman/a girl). For instance, someone can be born male (i.e. their biological sex at birth), but identify as female (i.e. their gender/gender identity).
Non-heterosexual	Refers to individuals who are not exclusively attracted to the opposite sex (i.e. LGB or asexual individuals or people who feel attraction to the same sex or both sexes, those not sure of their sexual attractions and people who are attracted to neither sex).
Queer	A reclaimed word which is used positively as an umbrella term to include all people who are non-heterosexual and/or identify as being outside a conventional gender binary (e.g. LGB and transgender individuals).
Sex	Refers to the biological sex of an individual at birth (i.e. almost everyone is born either male or female).
Sexual minority youth	Includes all adolescents who: identify as lesbian, gay or bisexual; feel attraction to the same sex or both sexes; and those not sure of their sexual attractions.
Transgender/Trans	Refers to individuals whose biological sex at birth is discordant with their true gender identity. For example, a young person who identifies strongly as being male (and lives his life as a man) but his biological sex at birth was female.

Note on language

All participants have been given pseudonyms. None are referred to by their actual names in this thesis.

Table of contributions

Aspect of the PhD	***Primary contributor(s) - (Contribution)***	***Secondary Contributor(s) - (Contribution)***
PhD literature review	Mathijs Lucassen – (*I conducted the literature review and completed the review write-up).*	A/Profs Sally Merry & Simon Hatcher, Kim Mariu and Theresa Fleming – *(Supervised the literature review and provided feedback on the write-up* (SM & SH) *or performed an accuracy check on the articles selected for review* (KM & TF)*).*
Secondary analysis of Youth'07 data (i.e. Study One)	Mathijs Lucassen – *(I participated in the design, conception and co-ordination of the study, carried out data analyses and completed the study write-up).*	A/Prof Sally Merry, Elizabeth Robinson, Dr Simon Denny, Dr Terryann Clark, Prof Shanthi Ameratunga, Dr Sue Crengle, Dr Fiona Rossen – *(Participated in the conception & design of the study, helped draft a manuscript for publication, were co-investigators of Youth'07* (SM, ER, SD, TC, SA & SC) *and carried out* (FR) *or supervised data analyses* (ER)*)*.
Development of SPARX: The Rainbow Version (i.e. Study Two)	Mathijs Lucassen – *(I designed the study, facilitated the focus groups, analysed the data and completed the study write-up).*	Metia Interactive, A/Profs Sally Merry & Simon Hatcher, Dr Andrea Green, Dr Mark Henrickson, Theresa Fleming, Dr Karolina Stasiak & Kim Mariu – *(Supervised the study* (SM & SH)*, suggested improvements for SPARX: The Rainbow Version* (AG & MH), *co-developed the computer program* (Metia Interactive), *co-facilitated focus groups* (TF & KS) *and cross-checked the interpretation of data* (TF & KM)*)*.
Quantitative evaluation of SPARX: The Rainbow Version (i.e. Study Three)	Mathijs Lucassen – *(I designed the study, collected the data, analysed the results and completed the study write-up).*	A/Profs Sally Merry, Simon Hatcher & Chris Frampton, Dr Andrea Green and Dr Mark Henrickson – *(Participated in the conception & design of the study, supervised the study* (SM & SH)*, supervised data analyses* (CF) *and provided feedback on the study write-up* (SM, SH & AG)*)*.
RCT of CCBT (SPARX) compared with TAU	A/Prof Sally Merry, Dr Karolina Stasiak, A/Prof Simon Hatcher, Dr Robyn Whittaker and A/Prof Chris Frampton – *(Participated in the conception, design & over-sight of the study,* SM *was the principal investigator*, KS *was the study manager* & CF *carried out data analyses).*	Dr Matt Shepherd, Theresa Fleming, Kim Mariu, Grace Wang, Levon Wigglesworth, RAs, LIs and Mathijs Lucassen – *(Helped manage study sites* (MS, TF & KM)*, supported research assistants, collected data* (ML), *entered data* (GW & LW) *and analysed some of the results* (LW & KM)*)*.
Development of SPARX	Metia Interactive and A/Prof Sally Merry, Dr Karolina Stasiak, Dr Matt Shepherd, Theresa Fleming, Mathijs Lucassen – *(*SM *led the content design group* (SM, KS, MS, TF & ML) *which co-created SPARX together with* Metia Interactive*).*	Dr Iain Doherty, Dr Andrea Green, Tania Cargo and Kim Mariu – *(Provided expertise on e-learning constructs* (ID)*, informed the Cognitive Behavioural Therapy content of the program* (AG & TC) *and provided feedback on prototypes of SPARX* (KM)*).*
Qualitative evaluation of SPARX: The Rainbow Version (i.e. Study Four)	Mathijs Lucassen – *(I designed the study, conducted the interviews, analysed the data and completed the study write-up).*	A/Profs Sally Merry & Simon Hatcher and Kim Mariu – *(Supervised the study and provided feedback on the write-up* (SM & SH) *and cross-checked the interpretation of data* (KM)*)*.

Overview of the thesis

This thesis comprises six chapters. In the first two chapters I provide a rationale for treating depressive symptoms in sexual minority youth. In the remaining four chapters I describe the development and evaluation of a self-help program for sexual minority youth with depressive symptoms and the implications of the findings.

In Chapter One I define selected terminology in relation to sexuality, highlight the developmental challenges sexual minority youth face and introduce the issue of depression in sexual minority youth.

In Chapter Two I present the methods and findings of Study One, which is a secondary analysis of the Youth'07 data. In this study I investigated the associations between sexual attraction, depressive symptoms, self-harm, suicidality and help-seeking behaviour in a representative sample of New Zealand secondary school students.

In Chapter Three I briefly describe the treatment of adolescent depression and the advantages of computerised cognitive behavioural therapy (CCBT) for young people with depressive symptoms. I also detail the development of a specially adapted form of CCBT for sexual minority youth with depressive symptoms (called SPARX: The Rainbow Version). In this chapter I primarily focus on how the results of three focus groups, conducted with sexual minority participants, informed the creation of SPARX: The Rainbow Version.

In Chapter Four I present the methods and findings from a small open trial with sexual minority youth attempting SPARX: The Rainbow Version. The open trial results are compared with those of the exclusively opposite-sex attracted youth from a RCT, where young people were randomised to SPARX (CCBT) or treatment as usual (TAU).

In Chapter Five I summarise the qualitative user feedback on the acceptability and perceived usefulness of SPARX: The Rainbow Version amongst open trial participants. The results are compared with other evaluations of CCBT programs designed to treat depressive symptoms in adolescents.

In Chapter Six I conclude by reviewing my research questions and then discussing ideas for subsequent work that would assist in addressing the mental health needs of sexual minority youth.

Research questions

My overarching aims were to:

- Determine whether sexual minority youth have specific mental health needs in relation to overcoming depressive symptoms; and to
- Design and assess the acceptability and feasibility of a specially adapted CCBT program (SPARX: The Rainbow Version) and collect preliminary data on its efficacy.

By carrying out this research I sought to answer the following questions:

1. Are sexual minority youth at an increased risk of depression?
2. Do non-heterosexual youth experience more difficulty accessing professional help for emotional worries?
3. What are the unique challenges faced by sexual minority youth?
4. Should these unique challenges be addressed in a CCBT program?
5. How do sexual minority participants perceive prototypes of SPARX?
6. Do young people who use SPARX: The Rainbow Version experience a change in depressive symptoms?
7. Do sexual minority youth perceive SPARX: The Rainbow Version to be acceptable and is delivery feasible?
8. How do the outcome and satisfaction results for sexual minority youth with depressive symptoms completing SPARX: The Rainbow Version compare with exclusively opposite-sex attracted youth with depressive symptoms from a RCT completing an intervention designed for young people generally?
9. How can future research be conducted with sexual minority youth?

Chapter One – INTRODUCTION & LITERATURE REVIEW

Sexuality & definitions

Defining sexuality

Socio-cultural views define what sexuality is, its manner of expression, and what it means to be sexual (Troiden, 1989). In modern twenty-first century Western countries, like New Zealand, certain terms assist us in conceptualising human sexuality. Terms like sexual orientation, sexual behaviour and sexual identity help us to categorise and make sense of it. However these terms require considered definition, as they are often confused (Martell, Safren, & Prince, 2004).

Sexual orientation refers to the direction of a person's sexual longings and/or fantasies and sexual attraction toward a male or female partner (Bell & Weinberg, 1978). Sexual orientation is considered a multi-dimensional aspect of a person's identity which includes emotional, cognitive and behavioural dimensions (Saewyc et al., 2004) as well as biological and physiological features (Hird, 2006). Sexual identity is thought to be different from sexual orientation, as sexual identity has to do with a person's self-recognition of his/her sexual orientation and sexual behaviour and the meanings he/she places on them (Savin-Williams, 1990). Therefore each person's identity is theirs to define and a person could identify as heterosexual, straight, lesbian, gay, bisexual, queer, and so forth. Sexual behaviour includes all the sexual activities that a person engages in irrespective of the sex of their sexual partner. A person's sexual behaviour does not always 'neatly fit' their sexual orientation or sexual identity, for example, a man whose sexual attraction is primarily to women may engage in sexual behaviour with a man because he enjoys this, but he may still identity himself as heterosexual (Martell et al., 2004).

Some researchers believe that sexual attraction and sexual identity are components of sexual orientation, whereas sexual behaviour is not (Chung & Katayama, 1996). For example, if a person acknowledges being attracted to people of the same sex or identifies as lesbian or gay, this is sexual orientation, but sexual behaviour can be influenced by unrelated issues, like the availability of sexual partners (Saewyc et al., 2004). However, other researchers believe that certain sexual identities (for instance 'lesbian', 'gay' or 'bisexual') are so strongly influenced by socio-cultural trends and stigma, that the labels tend to change over time, and may not be publicly claimed (Martin & Knox, 2000), even when sexual attraction or sexual behaviour remain stable (Chung & Katayama, 1996; Saewyc et al., 2004). This phenomenon has led to the use of terms such as, 'men who have sex with men (MSM)' and 'women who have sex with women (WSW)' in studies on sexual health (Saewyc et al., 2004).

Defining adolescent sexuality

Research in the area of adolescent sexuality requires an appreciation of developmental factors. Secondary school students in New Zealand mostly reported that they have not had sexual intercourse (Adolescent Health Research Group, 2008a) so using sexual behaviour as a means of determining an adolescent's sexuality is limited. In addition, many adolescents who are attracted to people of the same sex or both sexes do not necessarily identify themselves as lesbian, gay or bisexual (Savin-Williams, 2001) making it challenging to measure sexual identity in young people. Various reasons could account for why adolescents attracted to the same or both sexes do not identify as lesbian, gay, or bisexual (LGB). In research to date, many of those who will eventually identify as LGB have not yet come out to themselves or others (Savin-Williams, 2001). This is hardly surprising given that Savin-Williams and Diamond (2000) estimated that the average age of coming out to others is just after completing high school for both young men and women. Another reason why young people attracted to the same or both sexes are unlikely or unwilling to classify themselves as LGB is because they "do not believe that they fit the definition of that label, dislike the political or sexual associations with the label, or feel that the terms are too simplistic or reductionistic to describe their sexuality" (Savin-Williams, 2001, p. 10). Perhaps then the most useful approach when researching adolescent sexuality is to focus on sexual attractions (Savin-Williams, 2001). Saewyc and colleagues (2004) suggested that if only one sexuality item was allowed on a health survey, it should be a sexual attraction question, especially if the survey was to include younger adolescents. Saewyc and colleagues (2004) arrived at this recommendation after reviewing eight school-based adolescent health surveys in the United States and Canada between 1986 and 1999. This review found that adolescents appeared to be less willing to disclose a stigmatized sexual identity, even in anonymous and confidential surveys, than they were to disclose sexual attractions and sexual behaviours (Saewyc et al., 2004). Moreover, same-sex attraction is highly correlated with same-sex sexual behaviour and self identification as LGB (Hatzenbuehler, McLaughlin, & Nolen-Hoeksema, 2008).

Prevalence of same-sex attraction

It is difficult to obtain an exact number of young people attracted to the same or both sexes and those questioning their sexuality in any given country. One reason for this is that the validity of a young person's self-report is questionable, especially if their anonymity is not guaranteed, because of the social stigma associated with disclosing anything other than an opposite-sex attraction (Nelson, 1994). In a nationally representative sample of adults in America, 1.4 per cent of women and 2.8 per cent of men identified themselves as LGB (Laumann, Gagnon, Michael, & Michaels, 1994). However, the numbers increased when participants were asked whether they have ever felt same-sex desire for someone else (7.5% of women and 7.7% of men) (Laumann et al., 1994). Assuming a similar pattern is present in young people, any study of self-identified LGB adolescents will probably under-represent the overall population of young people with same-sex attractions (Savin-Williams, 2001).

In New Zealand the Christchurch Health and Development Study found that 2.8% of participants at age 21 years either self-identified as LGB (2%) or had experienced a sexual relationship with a same-sex partner since the age of 16 years (0.8%) (Fergusson, Horwood, & Beautrais, 1999). The

Christchurch Health and Development Study did not assess participants' same-sex attractions; however, its results are particularly valuable, as they are based on a longitudinal study of a birth cohort, with a very high retention rate (Fergusson & Horwood, 2001), of more than a thousand participants born in Christchurch in 1977. Another New Zealand study did ascertain the number of participants according to sexual attraction. The study was conducted by the University of Auckland's Adolescent Health Research Group (AHRG) and consisted of a representative sample of 8,997 New Zealand secondary school students in 2001. This study found that 0.7% of participants were attracted to the same sex, 3.1% were attracted to both sexes and a further 2.3% were not sure who they were sexually attracted to (Le Brun, Robinson, Warren, & Watson, 2004).

Terminology

The terminology used to define the sexuality of young people who are not heterosexual is fraught with difficulties for several reasons. Sexual identity labels such as "lesbian", "gay" and "bisexual" (LGB) are in common usage, but are associated with stigmatization and victimization (Safren & Heimberg, 1999) and as such they may not be used or claimed by all young people with same-sex attractions (Saewyc et al., 2004). Only using sexual identity labels to define an adolescent's sexual orientation is further limited, as doing so usually results in an under-representation of the overall population of adolescents with same-sex attractions (Savin-Williams, 2001). Utilising sexual attraction to establish a young person's sexuality has been recommended as the most useful method of determining sexual orientation, especially if younger adolescents are to participate in the research (Saewyc et al., 2004), but it can become cumbersome to succinctly use the associated terminology[1]. A developmental feature in relation to adolescence is young people who are questioning their sexuality., Adolescence is a time when young people are making sense of their sexual orientation, so it is not unusual for youth to be unsure of their sexuality or be questioning their sexual orientation (Udry & Chantala, 2005). Therefore, any definition of young people who are not entirely heterosexual should incorporate adolescents whom are questioning their sexuality.

As a result of the issues inherent in the terminology, and to ensure that my research was inclusive of all young people whom are not heterosexual, I have used the term 'sexual minority youth' throughout this document. 'Sexual minority youth' as a term has been used by other researchers (e.g. in Saewyc et al., 2004; Safren & Heimberg, 1999; Savin-Williams, 2001; Savin-Williams & Diamond, 2000) and for the purposes of this thesis will include all adolescents who: identify as lesbian, gay or bisexual (LGB); feel attraction to the same sex or both sexes; and are not sure of their sexual attractions. Throughout this thesis I also use the term 'non-heterosexual' youth. This term has been used by other researchers from the University of Auckland (i.e. Fleming, Merry, Robinson, Denny, & Watson, 2007)

[1] E.g. in a recent report on same/both-sex attracted young people participants were described as 'sexually attracted to others of the same sex or to both sexes' and 'not sure who they were sexually attracted to' (Rossen, Lucassen, Denny, & Robinson, 2009).

and I predominantly use this term in Study One[2]. I have defined non-heterosexual young people as individuals who are not exclusively attracted to the opposite sex (i.e. LGB or asexual individuals or people who feel attraction to the same sex or both sexes, those not sure of their sexual attractions and people who are attracted to neither sex).

The two terms, 'sexual minority' and 'non-heterosexual' differ in that non-heterosexual youth include adolescents who are attracted to neither sex (or are asexual).

Sexuality & development

Stigma & same-sex attraction

Sexual minority youth are a diverse group in regards to their socioeconomic status, religious expression, ethnicity and place of residence (Vincke, De Rycke, & Bolton, 1999). However, whatever their background, at some point in their life the majority will experience social adversity resulting from their sexuality (Vincke et al., 1999). Young people who are members of racial or religious minority groups usually share this status with their families so there are opportunities for affirming their identity (Hillier & Harrison, 2004), but this is hardly ever the case for sexual minority youth because their parents are almost always heterosexual (Hillier & Harrison, 2004). Moreover, sexual minority youth, unlike members of many other minority groups, can conceal their minority status (Lewis, Derlega, Berndt, Morris, & Rose, 2001) and they frequently do (Consolacion, Russell, & Sue, 2004; Jackson, Telingator, Pleak, & Pollack, 2005).

Whether or not sexual minority youth conceal their minority status, Hillier and Harrison (2004) found that these young people were well aware of society's predominantly negative views about homosexuality. When they reviewed 200 autobiographical stories from sexual minority youth in Australia, religion was often used to frame people's understanding of sexual difference (Hillier & Harrison, 2004). In this discourse, heterosexuality is God-given and hence good, whilst anything not heterosexual is, by default "equated with evil, the devil and hell" (Hillier & Harrrison, 2004, p. 84). The result of this is that sexual minority youth are labelled unnatural and abnormal which leaves many of these adolescents feeling unhappy and isolated (Hillier & Harrison, 2004). However, it is not just religious institutions that have led to the stigmatization of sexual minority youth. In recent history homosexuality was still considered a diagnosable mental disorder (American Psychiatric Association, 1968). Although it was finally removed as a disorder from the Diagnostic and Statistical Manual (DSM-II) in 1973, the legacy is that nearly 40 years later "many people still believe that same-sex attraction is an illness" (Hillier & Harrison, 2004, p. 84).

[2] Participants in Study One are combined into two categories (non-heterosexual and opposite-sex attracted) for the analyses on help-seeking. A single non-heterosexual category was created for pragmatic reasons because there were a number of very small cell sizes for analyses testing the associations between sexual attraction and help-seeking.

It is not surprising then, given society's negative perceptions of homosexuality, that many sexual minority youth will experience homophobia (Hatzenbuehler et al., 2008). As a construct, homophobia combines a negative attitude, an affective reaction and ill will towards people who are not exclusively attracted to the opposite sex and more specifically towards those who identify as lesbian or gay (Parrott, Adams, & Zeichner, 2002). Homophobia is commonly expressed by others in the form of peer victimization, physical assault (Hatzenbuehler et al., 2008) and more subtle means, such as name calling (Phoenix, Frosh, & Pattman, 2003). Unfortunately it is also frequently internalised by sexual minority youth (Rosario, Schrimshaw, Hunter, & Gwadz, 2002). Internalised homophobia is particularly insidious because, to a large degree, it is not conscious and is "continuously reinforced by societal laws, social policies, religious beliefs, and negative media imagery" (Radkowsky & Siegel, 1997, p. 199). As a result, internalised homophobia plays a major role in the development of sexual minority youth (Radkowsky & Siegel, 1997). For these young people incorporating a positive sense of self is very likely to be compromised when anything other than a heterosexual orientation is stigmatized by society (Consolacion et al., 2004). In addition to internalised homophobia other developmental issues are also noteworthy and merit discussing.

Developmental issues for sexual minority youth

Theorists suggest that to lead productive and psychologically healthy lives, everyone must master certain developmental tasks during adolescence (Radkowsky & Siegel, 1997). These tasks include adjusting to the physical and emotional changes of puberty, creating effective relationships with peers, achieving independence from parental figures, preparing for a vocation, establishing an intimate relationship and moving towards a personalised sense of values and definable self (Sullivan & Schneider, 1987). Like all young people, sexual minority youth must achieve the developmental tasks of their age group, but this process can be complicated for these young people because of the stigma they face (Espelage, Aragon, Birkett, & Koenig, 2008). Two particularly pertinent developmental issues associated with the stigmatization of sexual minority youth are to do with gender role non-conformity and accepting and disclosing a sexual minority orientation.

Gender roles are the patterns of behaviour regarded as appropriate for males and females in any given society and they provide the basic socio-cultural definitions of masculinity and femininity (Gerrig, Zimbardo, Campbell, Cumming, & Wilkes, 2008). Young toddlers typically know what sex they are and shortly after that time they are able to accurately identify the sex of other people (Sullivan & Schneider, 1987). Furthermore, a toddler's gender-stereotyped game and toy choices are present by age two and strengthen with age (Berk, 2001). While there is substantial overlap in which behaviours are regarded as typically masculine and feminine, there are differences (Sullivan & Schneider, 1987). Boys tend to be more active, assertive, and overtly aggressive, whilst girls tend to be more compliant, emotionally sensitive and relationally aggressive (Berk, 2001) and stereotypically speaking, it is more acceptable for boys to be rowdy and domineering than girls (Sigelman & Rider, 2006). By the time children start school they are aware of gender stereotypes and have come to prefer gender-appropriate activities (Sigelman & Rider, 2006).

Throughout adolescence most behavioural displays of gender non-conformity usually result in negative consequences (Bos, Sandfort, de Bruyn, & Hakvoort, 2008; Hatzenbuehler et al., 2008; Jackson et al., 2005; Sigelman & Rider, 2006). It has been suggested that many adults who identify as LGB did not conform to gender role expectations in childhood (Bailey & Zucker, 1995; Bos et al., 2008; Friedman, 1999; Sullivan & Schneider, 1987). The result is that 'gender non-conformists' are often labelled as lesbian or gay, whilst others (who are sexual minority youth and conform to gender role expectations) might "feel compelled to act out the stereotype of the homosexual by adopting cross-gender behaviour" (Sullivan & Schneider, 1987, p. 17). Whether the person is attracted to the same sex, both sexes or the opposite sex, if they do not conform to gender role expectations they are likely to be shunned by their peer group, with higher levels of gender atypical behaviour leading to a loss of protection from an adolescent's peer group, with potentially negative consequences for psychological adjustment (Bos et al., 2008).

It is difficult to determine when an individual's sexual orientation is 'set' (if indeed it is set); an individual's gender identity can be assessed in the preschool years (Bailey & Zucker, 1995) but by contrast sexual orientation is difficult to assess in childhood as a person's sexual interest and desires generally become more obvious after puberty (Bailey & Zucker, 1995; Ciro et al., 2005). Therefore, it is during the adolescent years that young people typically question their place along the sexuality spectrum (Williams, Connolly, Pepler, & Craig, 2005). It is not unusual for adolescents to have a tentative or ambivalent sexual orientation (Udry & Chantala, 2005). However, for about 90% of all young people, the outcome of adolescent experience is the acceptance of a heterosexual orientation and this is usually taken for granted by the young person and society (Udry & Chantala, 2005). A minority of young people will eventually come to accept a LGB identity and, like members of other minority groups, will be subjected to chronic and acute stress associated with their occupation of a stigmatized social position (Vincke & Van Heeringen, 2002).

Not surprisingly then, young people may elect not to disclose that they are attracted to the same or both sexes in order to protect themselves and to avoid homophobic reactions (D'Augelli & Patterson, 2001; Hegna & Wichstrom, 2007). They may also feel the need to deny, alter or hide their same-sex attractions and feelings (Garofalo & Katz, 2001). Issues associated with coming out to others are therefore particularly salient for sexual minority youth. The challenges around coming out or accepting a sexual minority orientation are further compounded by the fact that adolescents are typically very concerned about peer group conformity and peer group acceptance throughout this developmental stage (Sigelman & Rider, 2006). Differences that may be celebrated in later life are therefore especially difficult for adolescents to deal with because of their developmental stage. In some ways, it is therefore astonishing that so many sexual minority youth can maintain their 'homosexual identities' amid a "lifelong avalanche of exclusively heterosexual influences" (Rosenberg, 2003, p. 1519) and that the majority of sexual minority youth go on to lead happy, healthy and productive lives (Garofalo & Katz, 2001; Savin-Williams, 2001).

Hypothesized consequences of the developmental issues

In the mid-1980s researchers suggested that there may be increased rates of mental ill-health in LGB youth, and more specifically that suicide rates are dramatically higher for these young people than for the general adolescent population (Russell & Joyner, 2001). Most researchers since that time have attributed the increased incidence of psychopathology in sexual minority youth to environmental factors, in particular a milieu that is negative and/or unsupportive of sexual minority individuals (Galliher, Rostosky, & Hughes, 2004; Hatzenbuehler et al., 2008; Poteat & Espelage, 2007; Safren & Heimberg, 1999; Udry & Chantala, 2005; Williams et al., 2005). However, there is insufficient evidence to conclusively identify the causes of the apparently increased rates of mental ill-health in sexual minority youth (Bailey, 1999; Remafedi, 1999). Researchers and clinicians have instead suggested that more research is needed to distinguish between the causes and consequences of the associations between psychopathology and homosexuality (Friedman, 1999), with recent research only just starting to comprehensively explore these issues (e.g. Almeida, Johnson, Corliss, Molnar, & Azrael, 2009). Given that most studies in the field do not include a comparison group of heterosexual youth, or they rely on convenience-based sampling methods (Safren & Heimberg, 1999), it is important to review and critically appraise the relevant literature. However, before doing so, I will briefly define adolescent depression, as well as its prevalence and significance. Finally, I will discuss subthreshold depression and why adolescents with mild to moderate depressive symptoms require additional help or support.

Adolescent depression

Defining depression

Depressive phenomena have been recorded since antiquity and descriptions of what we now call mood disorders can be found in ancient documents (Kaplan & Sadock, 1991). Although most people will have heard of ‘depression’, the term means different things to different people; it can be used to identify a feeling, a symptom, a personality trait or a group of disorders (Joyce, Romans, Ellis, & Silverstone, 1995).

Every adolescent has periods when they feel sad or ‘down’, and learning to manage these feelings is an important part of growing up. Some lay-people would describe any periods of sadness and low mood as depression. However, the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition (DSM-IV) defines depression differently. In order for an adolescent to receive a diagnosis of a Major Depressive Disorder they must have a two-week history of a pervasive mood change manifested by either depressed or irritable mood, and/or loss of interest and pleasure. In addition, the adolescent must have other clinical characteristics including significant changes in patterns of appetite, sleep, activity, concentration, energy, self-esteem and motivation. The adolescent’s symptoms must represent a change from previous functioning and produce impairment in relationships or in performance of activities. Symptoms must not be entirely attributable to substance

abuse, use of prescribed medications, other psychiatric illness, bereavement, or medical illness (American Psychiatric Association, 2000; Bhatia & Bhatia, 2007).

Dysthymic Disorder is defined as a milder, chronic form of depression characterized by a depressed or irritable mood, present for more days than not in an adolescent for at least one year. Two of the following other symptoms are also required for a DSM-IV diagnosis of Dysthymic Disorder: changes in appetite, sleep difficulty, fatigue, low self-esteem, poor concentration or difficulty with making decisions, and feelings of hopelessness (American Psychiatric Association, 2000; Bhatia & Bhatia, 2007).

Prevalence and significance of adolescent depression

Depression is common amongst adolescents (S N Merry, McDowell, Hetrick, Bir, & Muller, 2004), and estimates suggest that at any given time up to 15% of adolescents have some symptoms of depression (Bhatia & Bhatia, 2007). Post-puberty depressive disorders are approximately twice as common in females as in males (Adolescent Health Research Group, 2008a; Bhatia & Bhatia, 2007; Hankin et al., 1998). Two longitudinal studies of birth cohorts in New Zealand reported the consistent finding that nearly one in five adolescents was depressed. For instance, at age 18 years 18.4% of 1,006 participants in the Christchurch Health and Development Study (Fergusson, Horwood, Ridder, & Beautrais, 2005) and 17.2% of 930 participants in the Dunedin Multidisciplinary Study met criteria for Major Depressive Disorder (Hankin et al., 1998). The prevalence rates reported in the Christchurch and Dunedin studies are comparable to findings from other western countries (Hankin et al., 1998; Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993; Lewinsohn, Rohde, & Seeley, 1998). Unfortunately, despite being fairly common the vast majority of young people with depression do not receive appropriate treatment (Kataoka, Zhang, & Wells, 2002).

The course of adolescent depression is often characterised by protracted episodes, frequent recurrence, and impairment in social and academic domains (Keller et al., 2001; Rao et al., 1995). Of particular concern, suicide is the third leading cause of death in adolescents, and the presence of a depressive disorder (such as Major Depressive Disorder or Dysthymic Disorder) is strongly correlated with the likelihood of attempting suicide (Bhatia & Bhatia, 2007; Eisenberg, 1984; Keller et al., 2001; Kovacs, Goldston, & Gatsonis, 1993). In addition, the depressive symptoms experienced by many adolescents persist into adulthood and individuals with a history of depression have increased rates of suicide, psychiatric and medical hospitalisations and impairment in their work, family relationships, and social lives (Keller et al., 2001; Weissman et al., 1999).

Mild to moderate depressive symptoms

Many young people experience mild to moderate depressive symptoms but do not meet the full diagnostic criteria for Major Depressive Disorder or Dysthymic Disorder. Adolescents experiencing mild to moderate depressive symptoms (or subthreshold depression) have been of recent interest to researchers. This is because evidence now suggests that adolescents with subthreshold depression

are at an increased risk of developing more severe difficulties with depression, as well as a range of other adverse outcomes (Angst & Merikangas, 1997; Cuijpers, de Graaf, & van Dorsselaer, 2004; Fergusson et al., 2005; Pine, Cohen, Cohen, & Brook, 1999). In particular, young people with mild to moderate depressive symptoms are thought to be at elevated risk of Major Depressive Disorder (Fergusson, et al., 2005; Pine et al., 1999) and suicidal behaviour (Fergusson, et al., 2005). Although the consequences of mild to moderate depressive symptoms seem to be less than those of Major Depressive Disorder, subthreshold depression is still a major problem from a public health perspective (Cuijpers et al., 2004), this is because the number of people with subthreshold depression is substantial and the number presumably seeking help for their depressive symptoms is thought to be considerable (Cuijpers et al., 2004). As such, it is important to develop treatments for subthreshold depression and to test their effects (Barrett et al., 2001; Cuijpers et al., 2004).

Literature review on sexual minority youth & depression

Objective

My objective for this piece of work was to determine whether depressive symptoms are elevated in adolescents who feel attraction to the same sex or both sexes (or identify as LGB) and those not sure of their sexual attractions (i.e. sexual minority youth) relative to their peers who are attracted to the opposite sex (or identify as heterosexual).

Literature search

Search strategy

In consultation with a subject librarian at the University of Auckland the databases PsycINFO (1806 to May 2010), Medline (1950 to May 2010), ERIC (1965 to May 2010) and EMBASE (1947 to May 2010) were searched using the Ovid platform to obtain articles in the area of sexual orientation and depression. The most relevant subject headings and key search terms with the appropriate truncation (i.e. "$") were used, specifically: "homosexual$" or "Homosexuality" or "Sexual Orientation" or "Sexual Behavior" or "Lesbianism" or "Homosexuality, Female" or "Bisexuality" or "Male Homosexuality" or "Homosexuality, Male" or "Homosexuality (Attitudes Toward)" or "Gay" or "same sex attract$" or "queer" AND "depress$" or "Major Depression" or "Depressive Disorder" or "Depressive Disorder, Major" or "Depression" or "Depression (Emotion)" or "major depressive disorder$" or "Dysthymia" or "Dysthymic Disorder".

The initial searches of the four databases yielded 6,094 articles. Most of the publications were from EMBASE (2,758 publications), followed by Medline (1,984 publications) and then PsycINFO (1,227 publications). ERIC produced the least number of articles (125 publications). After the initial searches were conducted, certain inclusion criteria were applied. In particular, articles from the initial search were included for further review if they:

- Were conducted with human participants (Medline & EMBASE);

- Were from peer-reviewed journals (PsycINFO & ERIC); and
- Included at least some adolescent participants (13 to 18 years old) (PsycINFO, Medline & EMBASE).

Over nine hundred articles met the inclusion criteria for further review (n=973), with the bulk of these articles being from either Medline (528 publications) or EMBASE (299 publications). An additional 97 publications were from PsycINFO and a further 49 were from ERIC.

The abstracts of the articles that met inclusion criteria were then checked against the exclusion criteria. Articles or publications were excluded from further review if they did not:

- Explicitly refer to non-heterosexual or sexual minority individuals;
- Refer to depression, depressive symptoms, depressive disorders or dysthmia; or
- Appear relevant in determining whether or not rates of depression are elevated in sexual minority youth (e.g. where the abstract almost entirely focused on Human Immunodeficiency Virus (HIV) or Acquired Immunodeficiency Syndrome (AIDS));

Where abstracts were not available the publication's title was used to determine its suitability for further review.

An independent researcher randomly selected 10% of the 973 articles (n=97) that met the inclusion criteria. They then checked whether or not any of these 97 articles should have been excluded from full review. The researcher concluded that 94% (n=91) of the abstracts were suitable, but she questioned the appropriateness of my decision to include or exclude six abstracts. Hence a second independent researcher was asked to review the six abstracts in question. This researcher was in agreement with my decisions around inclusion or exclusion for five out of the six abstracts, but she disagreed with me in regards to one abstract, which she thought should have been excluded from further review.

A total of 244 articles met criteria for full review; however there was some overlap of articles across the four databases (n=80) and as a result 164 unique publications were identified. Seventy two of the articles were from PsycINFO, with 71 additional articles from Medline, 14 additional articles from ERIC and 7 additional articles from EMBASE.

The 164 articles selected for further review were divided into three groups:

- Those that were conducted with population-based samples (e.g. with school samples or community samples of adolescents) (summarised in Table 1).
- Those that utilised convenience or clinic/clinical-based sampling methods (i.e. where purposive sampling methods were used) (summarised in Table 2).
- Those articles which were excluded upon further review because they did not assist me in determining whether rates of depression are elevated in sexual minority youth (summarised in Appendix A).

Of the 164 articles selected for further review, 160 were in English, one was in Spanish, and three were in Italian. Two of the four non-English articles were translated into English before further review. The remaining two (in Italian) were not translated, as they were easily identified as case studies or case reviews and were therefore excluded from more detailed review.

Table 1: Summary of population-based samples

School samples (n=24)					
(Authors & Year) Location	**Description of participants**	**Method**	**Main findings**	**Comment**	**Prevalence of Depression**
(Almeida et al., 2009) Boston, USA.	YP grades 9-12 (n=1,253). YP "mostly heterosexual, bisexual, mostly homosexual, or homosexual" = 'minority sexual orientation' (n=93), transgendered YP (n=17) with 'minority sexual orientation' = 'LGBT'.	YP surveyed re: discrimination, depression (Modified Depression Scale), self-harm & suicidal ideation.	↑ depressive symptoms (females p=0.0174 & males p=0.0346), suicidal ideation & self-harm in LGBT YP.	Study unique for identifying transgender YP.	Prevalence rates of depression not provided [self-harm = LGBT 14.3-41.7% vs. Heterosexuals 3.4-7.1%].
(Birkett, Espelage, & Koenig, 2009) Midwestern, USA.	7,376 YP (grades 7-8) 27 schools from 1 county. "Do you ever feel confused about whether you are lesbian, gay, or bisexual?" LGB (n=776) & sexually questioning (n=342).	Depression & suicidality assessed "How often have you…" a) "felt like killing yourself?" & b) "been depressed or sad?" (from 2005 Dane County Middle School Survey).	'Sexually questioning' ↑ depression/suicidal (p<0.01). LGB students didn't report ↑ depression.	+ve school climate & ↓ homophobic victimization moderated sexuality differences.	Depression prevalence rates not provided [study focus - 'moderating effects of homophobic bullying & school climate'].
(Poteat, Aragon, Espelage, & Koenig, 2009) Midwestern, USA.	YP (n=14,439) 14-19 years old from 18 schools in 1 county. "Do you ever feel confused about whether you are lesbian, gay, or bisexual?" LGB (n=1,060), questioning/less certain (n=921).	YP surveyed re: victimization, substance use and depressed/suicidal thoughts. Depression & suicidality - "How often have you…" a) "felt like killing yourself?" & b) "been depressed or sad?"	Questioning/less certain youth highest levels of depressed & suicidal thoughts.	Differences investigated by sex, race and sexual orientation.	Depression prevalence rates not provided [significant differences noted according to sex, race and sexual orientation, p=0.001].
(Wilkinson & Pearson, 2009) USA.	A representative sample of YP in USA (grades 9-12) classified by sexual attraction (female=7,082 & male=6,861). 6% of females & 7% of males SSA.	YP completed 1st wave of AddHealth (including CES-D). Football participation, religious attendance & locale also investigated.	↑ depression in same-sex attracted students (p≤0.001).	Urban locale larger impact for boys, whilst school religiosity greater impact for girls.	Depression prevalence rates not provided [mean depression for all males 0.55 & females 0.66].
(Bos et al., 2008) the Netherlands.	866 YP from 4 high schools in different cities. YP asked "Do you feel sexually attracted to someone of your own sex?" Those who selected "very often", "often", "frequently", or "sometimes" were SSA (n=74, 24 males & 50 females). Those who selected "never" were 'without SSA'.	YP completed questionnaires on parent-adolescent relationship, relationship with peers, class-mentor relationship & school identification. Also completed the depression scale of the General Health Questionnaire & the Rosenberg Self-Esteem Scale.	SSA YP had ↑ depression (p<0.001).	SSA participants rated quality of relationships with fathers & peers lower than those not SSA.	Depression prevalence rates not provided [focus of study – differences in social relationships, school performance & mental health].

(Authors & Year) Location	Description of participants	Method	Main findings	Comment	Prevalence of Depression
(Espelage et al., 2008) Midwestern USA.	13,921 YP from 18 high schools in 1 county (grades 9-12). "Do you ever feel confused about whether you are lesbian, gay, or bisexual?" LGB (n=1,065), sexually questioning (n=932).	YP completed 2000 Dane County Youth Survey. Depression & suicidality assessed a) "felt depressed or very sad?" b) "seriously thought about killing yourself?"	LGB ↑ depression & suicidal ideation ($p<0.01$). But 'questioning' YP ↑ rates relative to LGB & heterosexual YP.	LGB or sexually questioning YP ↑ depression if their families or communities were unsupportive.	Depression prevalence rates not provided ['depression-suicide feelings' mean LGB 0.77 vs. heterosexuals 0.63].
(Hatzenbuehler et al., 2008) Connecticut, USA.	1,071 YP from two middle schools (ages 11-14). YP asked "Have you ever had a romantic attraction to a boy?" & "Have you ever had a romantic attraction to a girl?" 29 (9 males & 20 females) same- or both-sex attractions (i.e. SSA).	YP completed assessments at baseline & 7 months later (e.g. the Children's Depression Inventory & the Multidimensional Anxiety Scale for Children & the emotional awareness subscale of the Emotion Expression Scale for Children).	SSA YP reported ↑ levels of depressive ($p<0.01$) & anxious ($p<0.05$) symptoms. Results indicated deficits in SSA emotional regulation.	Stress is likely to contribute to the development of emotion regulation deficits in SSA.	Depression prevalence rates not provided [mean depression SSA 13.14 vs. heterosexual 9.57 at baseline].
(Rivers & Noret, 2008) 'North of England' U.K.	2,002 YP from 14 schools (grades 7-9). YP attracted to "boys only, girls only, both boys & girls, boys more than girls, girls more than boys, not attracted to anyone at the moment, haven't thought about this, & unsure whom I'm attracted to". 53 attracted 'solely or primarily' to same sex.	SSA YP matched on 6 demographics to OSA YP. YP completed four sub-scales from the Brief Symptom Inventory (BSI); interpersonal sensitivity (4 items), depression (6 items), anxiety (6 items) and hostility (5 items).	SSA YP didn't differ significantly for depression & anxiety.	SSA YP ↑ hostility, reported feeling lonely & concerns re: sexuality.	Depression prevalence rates not provided [mean depression SSA 1.29 vs. OSA 0.60].
(Fleming et al., 2007) New Zealand.	Representative sample of NZ YP years 9 to 13 (n=9,570). 'Non-heterosexual' orientation defined as SSA, attracted to both sexes, neither sex or not sure of attractions (number or proportion of non-heterosexual YP not reported).	YP completed a multi-media NZ adolescent health survey (including the RADS & YP's self-report as having 'episode of depressed mood' for 2+ weeks).	Non-heterosexuality independently associated with ↑ rates of suicide attempts (OR 1.79).	Depression, alcohol abuse, friend or family member attempt suicide & family violence also risk factors.	Depression prevalence rates not provided [focus of the study associations between suicide attempts & other variables].
(Lehrer, Shrier, Gortmaker, & Buka, 2006) USA.	Sexually active YP (grades 7-12) from AddHealth (n=4,152). 1.5% of males and 2.9% of females had same-sex sexual attraction/behaviour.	Associations between baseline depressive symptoms (using CES-D) & sexual risk behaviour over 12 months examined.	↑ depressive symptoms predictive of sexual risk behaviours in males & females (OR 1.50).	Sex = male-female vaginal intercourse – a limitation re: sexual minority youth.	Overall depression prevalence 9.4% males & 15.7% females [separate rates according to sexuality not provided].

(Authors & Year) Location	Description of participants	Method	Main findings	Comment	Prevalence of Depression
(Park, Schepp, Jang, & Koo, 2006) three cities, South Korea.	1,312 YP from six schools (grades 10-12). Sexual orientation based on same sex (3.7% males & 1.9% females), 'heterosex' or both-sex (7.59% males & 3.25% females) romantic attraction. Same-sex & both-sex sexual behaviour also assessed.	Depression measured using CES-D.	Females' (unlike males) sexual orientation was predictive of suicidal ideation.	'Both-sexual orientation' females were more likely to report suicidal ideation than heterosexual females (OR 2.58).	Depression prevalence rates not provided [focus of the study predictors of suicidal ideation].
(Bezinovic & Tkalcic, 2005) Croatia.	6,392 YP (14-19 years old) from 4 counties. 13.3% of females (n=446) & 10% of males (n=304) were 'rarely or often' SSA.	Depression assessed using 8 items from the Depressiveness & Existential Crisis Scale.	SSA YP had ↑ symptoms of 'depression' compared with youth not SSA ($p<0.001$).	No significant differences between SSA males & females re: depressive symptoms.	Depression prevalence rates not provided [association between 'depressiveness & existential crisis' & sexuality tested].
(Udry & Chantala, 2005) USA.	Representative sample of YP grades 7-12 (n=13,305). YP asked "Have you ever had a romantic attraction to a male?...to a female?", "romantic relationship[s]" in past 18 months with a male or female, & sexual relationships (males &/or females). 33 same-sex interest only & 1,484 same-sex & opposite-sex interest.	YP completed 1st 2 in-home waves of AddHealth. YP surveyed re: various risk factors (e.g. father absent, verbal ability, receiving counselling & thinking about suicide). YP completed CES-D.	Boys ↓ depression with opposite-sex interest, but ↑ with same-sex interest ($p<0.001$). Girls = depression with each sex interest, but same-sex effect is stronger than the opposite-sex effect ($p=0.02$).	Same-sex interest component of risk attributed to "circumstances of living with same-sex interest in a heterosexual society" (p. 492).	Depression prevalence rates not provided [the effect of OSA was compared with SSA and depression].
(Williams et al., 2005) a South Central City, Canada.	1,598 YP (14-19 years old) from 5 high schools. YP who were "lesbian", "gay male", "bisexual", or "questioning" = LGBQ (n=97; 45 males & 52 girls)	YP surveyed re: victimization (including bullying, sexual harassment & physical abuse) & social support. Completed the Beck Depression Inventory and Youth Self-Report.	LGBQ reported significant ↑ depression & more hostile peer environment than heterosexual youth.	Depression in LGBQ YP possibly due to victimization & lack of social support.	Depression prevalence rates not provided [mean depression LGB 29.96 vs. heterosexuals 24.83 ('questioning' 27.71)].
(Consolacion et al., 2004) USA.	A representative sample (n=13,205) of YP in grades 7-12. YP asked "Have you ever had a romantic attraction to a male?...to a female?" 1,188 SSA or attracted to both sexes (631 males & 557 females).	YP completed 2 waves of AddHealth (questions on race/ethnicity, suicidal thoughts & self-esteem). Depression assessed using CES-D.	Across race, SSA YP didn't consistently show compromised mental health.	White SSA females at greatest risk, compared with other white YP.	Depression prevalence rates not provided [study focus - associations between sex, ethnicity, sexuality and mental health outcomes].

(Authors & Year) Location	Description of participants	Method	Main findings	Comment	Prevalence of Depression
(Galliher et al., 2004) USA.	A representative sample of YP in grades 7-12 (n=7,613). YP asked "Have you ever had a romantic attraction to a male?...to a female?" 111 SSA only [62 males & 49 females] & 296 YP attracted to both sexes [144 males & 152 females].	YP completed Wave II of AddHealth. YP interviewed about health status, health behaviour & psychological health. Depression assessed using CES-D.	SSA YP had ↑ depressive symptoms ($p<0.001$) (esp. rural SSA females & urban SSA males).	Community context may play a role in understanding depression in SSA YP.	Depression prevalence rates not provided [mean depression scores provided according to sexuality & where they resided ('rural', 'urban' & 'suburban' settings)].
(Lam et al., 2004) Hong Kong, China.	A representative sample (n=2,427) of YP (14-18 years old). Participants asked "Have you ever experienced homosexual tendencies?" 207 (44 males & 163 females) classified 'SSA' & 264 (122 males & 142 females) "don't know".	YP surveyed about gender dissatisfaction, pubertal timing, sexual behaviour, family & peer relationships & perceived attractiveness. Depression was assessed using CES-D.	SSA ($p<0.001$), early puberty & early intercourse resulted in ↑ levels of depressive symptoms.	YP wishing to change gender ↑ depressive symptoms. Family relationships ↓ satisfactory for SSA YP.	Depression prevalence rates not provided [mean depression SSA 2.61 vs. OSA 2.30].
(O'Donnell, O'Donnell, Wardlaw, & Stueve, 2004) New York, USA.	879 grade 11 YP from economically disadvantaged areas. 3.5 % had 'same-gender sex' in the year prior to the survey.	Depression assessed using 6 items from the Children's Depression Inventory.	15% of participants 'seriously considered suicide' & depression was a risk factor for suicidal ideation.	'Same-gender sex' was significantly related to suicidal ideation (OR 4.0) and suicide attempts (OR 2.68).	Depression prevalence rates not provided [focus of the study associations between suicidality & ethnicity].
(van Griensven et al., 2004) Northern Thailand.	1,725 YP (15-21 years old) from 3 vocational schools. YP identified as "heterosexual", "bisexual" or "homosexual" & answered "for whom do you have sexual feelings"? 174 were classified as homo- or bisexual/HB (81 males & 93 females).	Questions on sexual behaviour, whether had someone to talk to about personal problems & questions related to depressed mood (i.e. How often do you feel, 'energetic', 'down', 'bored', 'optimistic' & 'lonely').	Fewer HB males had someone to talk to about problems & had ↑ signs of depression ($p<0.05$) compared with heterosexual males.	Differences not noted in HB females.	Depression prevalence rates not provided [mean depression HB males 3.0 vs. heterosexual males 2.9 & HB females 3.2 vs. heterosexual females 3.1].

(Authors & Year) Location	Description of participants	Method	Main findings	Comment	Prevalence of Depression
(Wichstrom & Hegna, 2003) Norway.	A representative sample of YP (12-20 years old, n=2,924). Sexuality assessed, "Have you had any form of sexual contact with a person of your own sex?" (6.5% "Yes"), "Are you sexually interested in men or in women?" (15.5% not exclusively OSA) & "How would you place yourself on a scale ranging from exclusively heterosexual to exclusively gay/lesbian?" (11.4% not exclusively heterosexual).	YP completed 3 waves of the Young in Norway Study. Were questioned about suicide attempts, psychopathology, self-worth, sexual behaviour and social support. Depressed mood was assessed using the Depressive Mood Inventory.	Same-sex sexual behaviour was predictive of suicide attempts (OR 4.72).	Focused on risk factors for suicide. Some relevant risk factors were not included in analyses (e.g. victimization).	Depression prevalence rates not provided [focus of the study associations between suicide attempts in sexual minority youth & certain hypothesized risk factors].
(Udry & Chantala, 2002) USA.	A representative sample of YP in grades 7-12 (n=18,799). YP asked about sexual behaviour & were categorised "no [sexual] partners" (n=6,290; 3,123 males & 3,167 females), "same-sex partners only" (n=157, 57 males & 100 females), "opposite-sex partners only" (n=12,142; 5,951 males & 6,191 females) & "both sex partners" (N=210, 87 males & 123 females).	YP completed Wave I of AddHealth & answered questions on personal attributes, risk behaviour, victimization & 1 question on suicidal thoughts & 1 on depression, (i.e. "During the past week, how often did you feel depressed?)	'Probability of being depressed' based on sexual behaviour (3123 males out of 9218 & 3167 females out of 9581 were not sexually active).	1/3 of participants were not sexually active (i.e. not a good proxy measure of sexual orientation for youth). Depression measured using one question.	'Depression' = males 'same/both-sex' 13% vs. 'opposite sex' 8%. Females 'same/both-sex' 29% vs. 'opposite sex' 16%.
(Russell & Joyner, 2001) USA.	A representative sample of YP in grades 7-12 (n=11,940; 5,686 males & 6,254 females). Participants categorised "same-sex romantic attraction or relationship" based on "same-sex romantic attractions" (7.3% of males & 5% of females) & "same-sex romantic relationships" (1.1% of males & 2.0% of females).	YP completed Wave I of AddHealth. They answered questions on suicidality, hopelessness, alcohol abuse, & experiences of victimization. Depression measured with an 11-item scale based on CES-D.	SSA youth are more likely to report suicidal thoughts (males OR 1.68 & females OR 2.14) & attempts (males OR 2.45 & females OR 2.48).	First U.S. nationally representative study in the field. Other risk factors somewhat mediated results, but effects of SSA on suicidality remained.	Depression prevalence rates not provided [mean depression - males SSA 6.02 vs. OSA 5.10 & females SSA 8.14 vs. OSA 6.41].

(Authors & Year) Location	Description of participants	Method	Main findings	Comment	Prevalence of Depression
(Lock & Steiner, 1999) Northern California, USA.	1,769 YP (12-18 years old) from 2 high schools. YP asked "Are you comfortable with your sexual orientation?" & "Do you ever wonder whether you might be homosexual (lesbian, gay) or bisexual?" (106 LGB, 55 males & 51 females & 224 "unsure of sexual orientation").	YP completed the Juvenile Wellness & Health Survey-76. The survey contained questions on general risk taking, mental health problems, sexual victimization, eating & dietary problems.	LGB ↑ risk for 'mental health problems' ($p<0.0001$).	The study suggests that problems in LGB youth may partially be due to internalized homophobia.	Depression prevalence rates not provided [study focus - associations between 'problems' & sexuality].
(Woods et al., 1997) Massachusetts, USA.	Representative sample of 3,054 YP (grades 9 to 12) from one state. Those with Same Gender Sexual Experiences (SGSE) compared with those sexually active, but no SGSE. 111 reported SGSE (3.6%).	Students completed the 1993 Massachusetts Youth Risk Behavior Survey (89 multi-choice questions). Depression not assessed.	SGSE was associated with attempting suicide ($p<0.00001$).	Sexuality determined based on sexual behaviour.	Depression prevalence rates not provided [study focus - suicide attempts and associated risk behaviours].

Community samples (n=2)

(Authors & Year) Location	Description of participants	Method	Main findings	Comment	Prevalence of Depression
(Ruangkanchanasetr, Plitponkarnpim, Hetrakul, & Kongsakon, 2005) Bangkok, Thailand.	2,311 YP (mean age = 15.5 years) from schools and community settings. Of those who had sexual intercourse, 1% were homosexual.	YP completed the Youth Risk Behaviour Survey. Depression "…felt sad or hopeless every day for at least 2 consecutive weeks [and] stopped doing some usual activities."	19.9% of YP with depression – data not provided by sexual orientation.	Sexual orientation determined by sexual intercourse.	Overall depression prevalence 19.9% [separate rates according to sexuality not provided].
(Fergusson et al., 1999) Christchurch, New Zealand.	1,265 YP from a birth cohort longitudinal study. 20 lesbian, gay or bisexual at age 21 years old, & 8 same-sex sexual partner since the age of 16 (LGB=28).	YP interviewed at 15, 16, 18 & 21. Multiple surveys used - including standardised interviews (to assess for major depression amongst other disorders).	LGB YP ↑ risk of major depression (OR 4.0), suicidal ideation (OR 5.4) and suicide attempts (OR 6.2).	Presumably small number of LGB participants limited sub-group analyses (e.g. by sex).	Major depression – LGB 71.4% vs. heterosexual 38.2%.

Summary of Table 1

Of the 26 studies summarised in Table 1, all but three were published in the last ten years. Six were from the National Longitudinal Study of Adolescent Health (Add Health)[3] (Consolacion et al., 2004; Galliher et al., 2004; Russell & Joyner, 2001; Udry & Chantala, 2002, 2005; Wilkinson & Pearson, 2009) with nine additional studies also from the United States (Almeida et al., 2009; Birkett et al., 2009; Espelage et al., 2008; Hatzenbuehler et al., 2008; Lehrer et al., 2006; Lock & Steiner, 1999; O'Donnell et al., 2004; Poteat, et al., 2009; Woods et al., 1997). The remaining studies were from Europe (Bezinovic & Tkalcic, 2005; Bos et al., 2008; Rivers & Noret, 2008; Wichstrom & Hegna, 2003), Asia (Lam et al., 2004; Park et al., 2006; van Griensven et al., 2004), New Zealand (Fleming et al., 2007) and Canada (Williams et al., 2005).

Summary of school samples

Twenty-four studies utilised school samples. Amongst these studies there was no consistent method of assessing sexual orientation. Wichstrom and Hegna (2003) adopted the most robust assessment of this as they measured sexual behaviour, sexual attraction and sexual identity. However, the most common approach of assessing sexual orientation was asking participants about their sexual or romantic attractions (Bezinovic & Tkalcic, 2005; Bos et al., 2008; Consolacion et al., 2004; Fleming et al., 2007; Galliher et al., 2004; Hatzenbuehler et al., 2008; Park et al., 2006; Rivers & Noret, 2008; Wilkinson & Pearson, 2009). The next most frequent method of establishing this was by asking adolescents about their sexual attractions and sexual behaviours (Lehrer et al., 2006; Russell & Joyner, 2001; Udry & Chantala, 2005). Four studies solely defined adolescent sexuality on the basis of sexual behaviour (O'Donnell et al., 2004; Park et al., 2006; Udry & Chantala, 2002; Woods et al., 1997) and in three further studies the participants' sexual identity was used to define the group (Almeida et al., 2009; Lock & Steiner, 1999; Williams et al., 2005). In yet another study adolescents were asked "Have you ever experienced homosexual tendencies?" (Lam et al., 2004, p. 490) to identify adolescents who were not exclusively heterosexual. Some investigators appeared to have difficulty assessing sexual orientation and instead asked adolescents "Do you ever feel confused about whether you are lesbian, gay or bisexual?" (Birkett et al., 2009; Espelage et al., 2008; Poteat et al., 2009). Espelage and colleagues (2008) explained their reasoning for this question, stating "like many studies of this type, the school district did not approve a direct question about sexual orientation" (p. 207).

Between 2.3% and 15.5% of adolescents reported being attracted to the same or both sexes (Bezinovic & Tkalcic, 2005; Bos et al., 2008; Consolacion et al., 2004; Galliher et al., 2004; Hatzenbuehler et al., 2008; Lam et al., 2004; Park et al., 2006; Rivers & Noret, 2008; Russell & Joyner, 2001; Udry & Chantala, 2005; Wichstrom & Hegna, 2003; Wilkinson & Pearson, 2009) and

[3] Add Health is a large longitudinal study of a nationally representative sample of young people from the United States beginning in 1994. The Add Health cohort has been followed into young adulthood with four in-home interviews, the most recent in 2008, when the sample was aged 24-32.

between 1% and 6.5% of surveyed participants reported same gender sexual experiences (Lehrer et al., 2006; O'Donnell et al., 2004; Park et al., 2006; Udry & Chantala, 2002; Wichstrom & Hegna, 2003; Woods et al., 1997). The percentage of LGB adolescents (with or without those that reported questioning their sexuality or being transgendered) ranged from 6% to 10.5% (Almeida et al., 2009; Birkett et al., 2009; Lock & Steiner, 1999; Poteat et al., 2009; Williams et al., 2005). Van Griensven and colleagues (2004) measured sexual attraction and sexual identity and concluded that 9% of males and 11.2% of females were 'homo- or bisexual'.

The Centre for Epidemiological Studies Depression Scale (CES-D) was the most frequently used assessment to determine the presence of depression (Consolacion et al., 2004; Galliher et al., 2004; Lam et al., 2004; Lehrer et al., 2006; Park et al., 2006; Russell & Joyner, 2001; Udry & Chantala, 2005; Wilkinson & Pearson, 2009). The next most frequently used method for assessing depression consisted of using a single question or item to establish this, such as "How often have you been depressed or sad?" or "During the past 30 days, have you felt depressed or very sad?" (Birkett et al., 2009; Espelage et al., 2008; Poteat et al., 2009; Udry & Chantala, 2002). A few investigators used other scales including the depression scale of the General Health Questionnaire (Bos et al., 2008), the Children's Depression Inventory (Hatzenbuehler et al., 2008; O'Donnell et al., 2004), the Reynolds Adolescent Depression Scale (Fleming et al., 2007), the Beck Depression Inventory (Williams et al., 2005), the Modified Depression Scale (Almeida et al., 2009), the Depressive Mood Inventory (Wichstrom & Hegna, 2003) and the Brief Symptom Inventory (Rivers & Noret, 2008).

Most authors who compared rates of depression according to sexuality or sexual orientation concluded that sexual minority youth were at an increased risk of depressive symptoms relative to their exclusively heterosexual or opposite-sex attracted peers (Almeida et al., 2009; Bezinovic & Tkalcic, 2005; Bos et al., 2008; Espelage et al., 2008; Galliher et al., 2004; Hatzenbuehler, 2009; Lam et al., 2004; Udry & Chantala, 2002, 2005; Wilkinson & Pearson, 2009; Williams et al., 2005). A sexual minority orientation was also linked to elevated rates of suicidal ideation or suicide attempts (Almeida et al., 2009; Birkett et al., 2009; Espelage et al., 2008; Fleming et al., 2007; O'Donnell et al., 2004; Park et al., 2006; Poteat et al., 2009; Russell & Joyner, 2001; Wichstrom & Hegna, 2003; Woods et al., 1997).

Consolacion and colleagues' (2004) results based on racial/ethnic groups appeared to contradict the findings of others by concluding that youth attracted to the same sex did not consistently "demonstrate compromised mental health" (p. 200). However, they concluded that white same-sex attracted female adolescents reported the most compromised mental health relative to other white adolescents (Consolacion et al., 2004). In support of this finding, other researchers have also reported large differences in depressed/suicidal thoughts according to race/ethnicity and sexual orientation amongst white females (Poteat et al., 2009). Rivers and Noret (2008) stated that young people attracted to the same sex did not differ significantly in comparison to their heterosexual peers in terms of depression. Their study design involved matching 53 participants attracted to people of

the same sex with 53 participants who were solely attracted to the opposite sex from the same overall sample (Rivers & Noret, 2008) and they were matched on six key demographic variables (age, race, sex, school year/grade, allowance and family members with whom they lived).

Some of the most recent research in the field has indicated that adolescents who are questioning their sexuality are at the greatest risk of depression, and that these young people are at significantly increased risk of depression relative to their sexual minority peers (Birkett et al., 2009; Espelage et al., 2008; Poteat et al., 2009).

Of note, most studies examining the association with adverse mental health outcomes and sexual orientation grouped lesbian and gay adolescents with bisexual adolescents or grouped youth attracted to the same sex with young people attracted to both sexes (Almeida et al., 2009; Bezinovic & Tkalcic, 2005; Birkett et al., 2009; Bos et al., 2008; Consolacion et al., 2004; Espelage et al., 2008; Fergusson et al., 1999; Fleming et al., 2007; Hatzenbuehler et al., 2008; Lam et al., 2004; Lock & Steiner, 1999; Poteat et al., 2009; Rivers & Noret, 2008; van Griensven et al., 2004; Wilkinson & Pearson, 2009; Williams et al., 2005). This may be because of small samples or may reflect an assumption on the part of the researchers that an adolescent's report of bisexuality is a precursor to a lesbian or gay identity (Russell, Seif, & Truong, 2001).

Summary of community samples

The method for determining sexual orientation amongst the two studies with community samples differed. The proportions of students who were sexual minority youth was also broadly comparable to the studies described above. Ruangkanchanasetr and colleagues (2005) used sexual behaviour to determine sexuality and 1% of participants were classified as homosexual. Whereas in the Christchurch Health and Development Study 2.8% of participants were classified as LGB based on their sexual identity or sexual behaviour (Fergusson et al., 1999).

In terms of assessing for depressive symptoms comprehensively during adolescence, Fergusson and colleagues' (1999) research stands out amongst the 26 population-based studies, as they assessed for depression at four points in time, when participants were between 14 and 21 years old. In order to do this they used structured interview schedules based on the Diagnostic Interview for Children and the Composite International Diagnostic Interview (Fergusson et al., 1999). Their longitudinal study was the only identified population-based study to report the rates of depressive disorder by sexual orientation. They showed that 71.4% of LGB participants (from a total of 28 LGB individuals) and 38.2% of heterosexual participants (from a total of 979 heterosexual individuals) had Major Depression between the ages of 14 to 21 years of age (OR 4.0 (95% CI 1.8-9.3) $p<0.001$) (Fergusson et al., 1999). Furthermore, they found that 32.1% of LGB participants from their study had ever attempted suicide compared with 7.1% of heterosexual participants (OR 6.2 (95% CI 2.7-14.3) $p<0.001$) (Fergusson et al., 1999).

A limitation of the two studies utilising community samples was that, like the school-based studies, they grouped lesbian and gay adolescents with bisexual adolescents, or grouped all youth that engaged in same-sex sexual behaviour into one ‘homosexual’ category (Fergusson et al., 1999; Ruangkanchanasetr et al., 2005).

Table 2: Summary of studies with convenience and clinical samples

Convenience sample (n=9)				
(Authors & Year) Location	**Description of participants**	**Method**	**Main findings**	**Comment**
(Glover, Galliher, & Lamere, 2009) Utah, USA.	82 YP (14 to 21 years old) self-identified as. "gay/lesbian" (n=48), "straight" (n=14), "bisexual" (n=15), "questioning/other" (n=5).	YP completed the Relational Assessment Questionnaire (which measured 'relational-depression') & self-esteem.	YP who were isolated from intimate relationships reported ↑ 'relational depression'.	'Relational depression' = the 'tendency to feel depressed about one's intimate relationships'.
(Rosario, Schrimshaw, & Hunter, 2005) New York City, USA.	156 YP (14-21 years old) from 5 LGB organizations (80 males & 76 females) self-identified as "lesbian/gay" (66%), "bisexual" (31%), or other (e.g. "free spirit" 3%).	YP completed structured interview, with 6 & 12 month follow-ups. YP surveyed about: suicidality, conduct problems, self-esteem, social support, relationships & desirability. Depression assessed using Brief Symptom Inventory.	LGB YP who previously attempted suicide ↑ levels of depressive symptoms than LGB YP who neither attempted suicide or had suicidal ideation.	Generalisability limited because recruitment was non-random. No heterosexual comparison group.
(Hillier & Harrison, 2004) Australia.	A large convenience sample of SSA YP (14-21 years old) (N=748, 369 males & 379 females).	YP completed a questionnaire on discrimination, abuse, & well-being, sources of information on 'safe sex', relationships, sexual behaviour, support & safety.	60% of YP felt "great" or "pretty good" about their sexuality.	Study mostly qualitative & analysed discourses of sexuality.
(Whitbeck, Chen, Hoyt, Tyler, & Johnson, 2004) Midwestern, USA.	428 homeless YP (16-19 years old) from eight cities. 63 self-identified as LGB "lesbian, gay bisexual, something else, never thought about it or confused or unsure" (19 males & 44 females).	YP were interviewed at 2 times using the University of Michigan-Composite International Diagnostic Interview and the Diagnostic Interview Schedule for Children. They were surveyed re: deviant subsistence strategies & experiences of street victimization.	↑ levels of Major Depressive Disorder (MDD) in LGB youth (41.3% MDD in LGB youth & 28.5% in heterosexual YP).	LGB more likely to be 'kicked out of home'/left home because of conflict about their sexuality.
(Rosario et al., 2002) New York City, USA.	156 YP (14-21 years old) from 5 LGB organizations (80 males & 76 females) self-identified as "lesbian/gay" (66%), "bisexual" (31%), or other (e.g. "free spirit" - 3%).	YP completed structured interview, with 6 & 12 month follow-ups - surveyed re: gay-related stressful life events, negative attitudes & discomfort with homosexuality, conduct problems, social desirability & emotional distress (assessed using Brief Symptom Inventory).	Depressive symptoms significantly associated with ↑ discomfort with homosexuality, and conduct problems were associated with ↑ negative attitudes toward homosexuality.	Sampling bias & generalisability limited because recruitment was non-random.

(Authors & Year) Location	Description of participants	Method	Main findings	Comment
(Rohde, Noell, Ochs, & Seeley, 2001) a large Northwestern city, USA.	523 (309 males & 214 females) homeless YP (13-20 years old) from 1 city. "Non-heterosexual orientation" (N=173) assessed by 3 items: "self-labelled sexual orientation", "sexual attraction towards member of the same & opposite-sex" & "sexual preferences in daydreams."	YP surveyed re: suicidal ideation, hopelessness & measures of STD & related sexual behaviour. Depression assessed using Structured Clinical Interview for DSM-IV Axis I Disorders (SCID).	Suicidal ideation associated with 'same-sex sex' & a non-heterosexual orientation. Non-heterosexual orientation associated with ↑ current depression (OR 2.03)	Depression assessed using a structured diagnostic interview (i.e. a strength of this study). Depression associated with a bi- or homosexual orientation for males, but not females.
(Noell & Ochs, 2001) Portland, Oregon, USA.	536 homeless YP (13-20 years old) from 1 city. YP were "lesbian/gay/bisexual/unsure" if they selected a "bisexual", "mostly homosexual", "100% homosexual" or "not sure" orientation (141 of youth LGBQ, 44 males & 97 females).	YP were interviewed at baseline & 6 months later re: sexual history, physical & mental health, drug use, incarceration, & family/social networks. Depression assessed using the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID).	↑ rates of recent depression (OR 2.18) & suicidal ideation (OR 1.91) when LGBQ YP compared to heterosexual YP.	A large proportion of females in this study identified as lesbian or bisexual (compared with other similar studies).
(Safren & Heimberg, 1999) Philadelphia, USA.	56 LGB YP (29 males & 27 females) & 48 demographically similar heterosexual youth (21 males & 27 females) (16-21 years old) recruited from gay or generic after-school programs.	YP completed questionnaires on social support, coping styles, life stress, hopelessness, social desirability & depression. Depression assessed using the Beck Depression Inventory.	Compared with heterosexuals, LGB YP significant ↑ rates of past & present suicidality, depression & hopelessness, but not substance abuse.	Environmental factors associated with sexual orientation appear to play a role in predicting distress.
(Rosario, Rotheram-Borus, & Reid, 1996) New York, USA.	136 self-identified gay or bisexual males (14-19 years old) recruited from a LGB community-based service.	YP completed sub-scales of Derogatis' Symptom Checklist-90 (questions on alcohol & drug use, conduct problems, sexual behaviour, stressful life events & self-esteem scale).	Gay-related stressful life events seem related to emotional distress.	Authors suggest research on chronic gay-related stressful events & how youth cope.

Clinical sample (n=3)				
(Authors & Year) Location	**Description of participants**	**Method**	**Main findings**	**Comment**
(Weber, 2009) Midwestern USA.	307 YP (13-18 years old) (from a total of 40,824 YP) presenting to school-based clinics with 'sexual orientation and gender identity issues'.	YP completed RADS-2 & the results were compared with USA normative sample (N=9,052).	Results demonstrate RADS-2 has sound psychometric properties & appears suitable for use in the populations studied.	Sexuality poorly defined in this study.
(Ciro et al., 2005) New York City, USA.	723 YP (11-21 years old) presenting with mental health issues (263 males & 460 females). Those who selected a "not sure", "bisexual" or "lesbian/gay" sexual identity were categorised as LGBQ (N=75, 14 males & 61 females).	YP completed a self-report questionnaire, Adquest (about school/education, work, safety, health, sexuality, substance abuse, personal/family/home life) at an Adolescent Health Centre.	LGBQ YP at ↑ risk compared with heterosexual YP, particularly re: 'safety'. "Bisexual adolescents have many safety risks" (p. 228).	'Safety' = "witnessed violence", "feel unsafe", "victim of violence", "worry hurt self/others".
(Pastore & Techow, 2004) New York, USA.	472 YP (aged 13 to 19 years old) from 2 school-based health centres. 3% from School A & 7% from School B attracted to the same sex.	A retrospective chart review conducted in 2003 and results compared with 1988.	In 1988 43-44% of participants experienced 'sadness/depression'. Results on 'sadness/depression' not available for 2003.	Sadness/depression data were not provided by sexual orientation.

Summary of Table 2

Twelve studies utilised convenience or clinical samples, 11 studies were from the United States of America, with the remaining study being from Australia (Hillier & Harrison, 2004).

Summary of studies with convenience samples

It is not surprising given the low proportion of sexual minority youth in the overall adolescent population that nine studies utilised a convenience sampling method to recruit participants. These studies had, comparatively speaking, large numbers of sexual minority youth because their samples were purposive. Therefore sexual minority youth were very markedly over-represented in these studies. For instance, five of the studies had between 83% and 100% of participants self-identifying as LGB or same/both-sex attracted (Glover et al., 2009; Hillier & Harrison, 2004; Rosario et al., 1996; Rosario et al., 2005; Rosario et al., 2002). All but three studies recruited participants from LGB organisations or networks, the exceptions being those studies that recruited adolescents who were classified as homeless from various cities in the United States (Noell & Ochs, 2001; Rohde et al., 2001; Whitbeck et al., 2004).

Four studies compared the rates of depression between young people who were heterosexual or attracted to the opposite sex with sexual minority young people (Noell & Ochs, 2001; Rohde et al., 2001; Safren & Heimberg, 1999; Whitbeck et al., 2004). Three of these were cohort studies (Noell & Ochs, 2001; Rohde et al., 2001; Whitbeck et al., 2004) and one was a case-control study (Safren & Heimberg, 1999). These researchers used several different standardised methods to determine depressive symptoms, in particular; the Structured Clinical Interview for the DSM-IV (Noell & Ochs, 2001; Rohde et al., 2001), the Beck Depression Inventory (Safren & Heimberg, 1999), and the University of Michigan – Composite International Diagnostic Interview (Whitbeck et al., 2004). Two of the studies explicitly compared rates, such that, Whitbeck and colleagues (2004) found that 41.3% of LGB homeless youth had major depression compared with 28.5% of homeless heterosexual adolescents ($p<0.05$). Noell and Ochs (2001) reported that 22.9% of gay and bisexual homeless males compared with 10.6% of homeless heterosexual males, and 25.9% of lesbian and bisexual homeless females compared with 18.9% of heterosexual homeless females, had a recent major depressive disorder. Three of the four studies concluded that depression was associated with sexual minority status (Noell & Ochs, 2001; Safren & Heimberg, 1999; Whitbeck et al., 2004), with one study finding that depression was associated with a bisexual or homosexual orientation for males, but not for females (Rohde et al., 2001).

The main limitation of all studies conducted with a convenience sample is that their results cannot be generalised to other groups of adolescents. However, three out of the four studies were conducted with homeless adolescents (Noell & Ochs, 2001; Rohde et al., 2001; Whitbeck et al., 2004) and obtaining a truly representative sample of these young people would be very difficult to do considering the transient nature of their lives (Noell & Ochs, 2001).

Summary of studies with clinical samples

All three studies described the sexual orientation of their participants. For instance, Pastore and Techow (2004) reported that between 3% and 7% of students from their School Based Health Clinics were attracted to the same sex, whilst Ciro and colleagues (2005) found that 5.3% of males and 13.2% of females from a clinical sample were sexual minority youth. However the third study had a rather limited or restrictive definition of minority sexual orientation, as it could only report upon participants who had clinical concerns about their 'sexual orientation and gender identity' (0.8% of the total sample from a large public school district) (Weber, 2009).

None of the studies directly presented results on the rates of depression amongst adolescents according to sexual orientation. Instead they focused on other areas relevant to the mental well-being of sexual minority youth. Specifically the investigators carried out studies that: evaluated the reliability and validity of the Reynolds Adolescent Depression Scale with sexual minority adolescents (Weber, 2009); helped to determine risk factors, worries and the help-seeking behaviour of sexual minority youth (Ciro et al., 2005); or provided a general description of two School-Based Health Centres (Pastore & Techow, 2004).

Summary of articles which were excluded upon further review

One hundred and twenty six articles were excluded from further review because they were not useful in determining whether or not rates of depression were elevated in sexual minority youth. Of the excluded studies 80 (63%) were from the United States, 19 were from Europe, eight were from Canada, five were Internet-based and the remaining studies were from Australia, Central or South America, Asia or Africa. Most of the research in the area has been conducted in the past ten years; however articles in this field cover a four decade period (i.e. from 1971 to 2010). The majority of studies were excluded from further review because the adolescent data on depression was not presented separately from the adult data, or only adult data were provided (n=79). Other articles were excluded because they were opinion pieces or commentary (n=18), literature reviews or theoretical pieces (n=16), because they were case studies or case reviews[4] (n=9) or because after full review they were found to be not relevant (n=4) (see Appendix A for details).

Reviewed literature summarised

In summary, there is a growing body of evidence which supports the hypothesis that sexual minority youth have increased rates of depressive symptoms relative to their heterosexual or opposite-sex attracted peers. Eleven out of the 24 studies conducted with school-based samples concluded that sexual minority youth were at an increased risk of depressive symptoms (Almeida et al., 2009; Bezinovic & Tkalcic, 2005; Bos et al., 2008; Espelage et al., 2008; Galliher et al., 2004; Hatzenbuehler, 2009; Lam et al., 2004; Udry & Chantala, 2002, 2005; Wilkinson & Pearson, 2009; Williams et al., 2005), with two population based studies reporting that young people attracted to the same sex did not demonstrate compromised mental health (Consolacion et al., 2004; Rivers & Noret, 2008). Fergusson and colleagues longitudinal study of a birth cohort showed that LGB participants were more likely to have had Major Depression in their sample (Fergusson et al., 1999). Of the three cohort studies and the one case-control study from Table 2 that compared rates of depressive symptoms according to sexual orientation, three stated that depressive symptoms were associated with LGB status (Noell & Ochs, 2001; Safren & Heimberg, 1999; Whitbeck et al., 2004), with the remaining study concluding that depressive symptoms were associated with a bisexual or homosexual orientation for males, but not for females (Rohde et al., 2001). Rates of depression in sexual minority adolescents ranged between 17.3% and 71.4%, whilst amongst opposite-sex attracted adolescents it was between 9.7% and 38.2%. The most recent research in the field indicates that adolescents who are questioning their sexuality are at the greatest risk of depressive symptoms, and that they are at increased risk of this relative to their peers who report being same-sex attracted or identify as LGB (Birkett et al., 2009; Espelage et al., 2008; Poteat et al., 2009).

Caution is required in concluding that rates of depression are elevated in sexual minority youth. This is primarily due to the fact that both 'depression' and sexual orientation were poorly defined in the cited studies. For instance, some of the research has concluded that a young person was 'depressed' purely based on a participant's response to a single item, such as "During the past week,

[4] CBT was not used or cited in any of these case studies.

how often did you feel depressed?" (e.g. in Udry & Chantala, 2002). Furthermore, the vast majority of cited studies assessed depressive symptoms and not depressive disorders per se. Aside from one population-based study (i.e. Fergusson et al., 1999) diagnostic tools were not used. Sexual orientation was also inconsistently assessed, with only one study providing a robust assessment of this (i.e. Wichstrom & Hegna, 2003), as the researchers from this Norwegian study measured sexual behaviour, sexual attraction and sexual identity (Wichstrom & Hegna, 2003). The variation in how depression was assessed and sexual orientation was determined helps to account for the wide range of estimates for the rates of depressive symptoms in sexual minority youth (i.e. 17.3% to 71.4%). An additional limitation of research in the field of sexual minority youth and depression is the limited number of population-based studies in the area, with only two nationally representative surveys or survey series investigating the prevalence of adolescent sexual orientation and depression, one in the United States (i.e. AddHealth) and one in Norway (The Young in Norway Study) (Consolacion, et al., 2004; Galliher, et al., 2004; Russell & Joyner, 2001; Udry & Chantala, 2002, 2005; Wichstrom & Hegna, 2003; Wilkinson & Pearson, 2009). The majority of articles from this literature review were excluded from further review because they were not useful in determining whether the rates of depressive symptoms are elevated in sexual minority youth (i.e. the articles in Appendix A).

There was only one study identified on depression and sexual minority youth published in a peer-reviewed journal that was conducted in New Zealand[5], some ten or more years ago (i.e. Fergusson, et al., 1999), and this study grouped lesbian and gay adolescents with bisexual adolescents born in Christchurch in 1977. The Adolescent Health Research Group's (AHRG) Youth'07 study provided me with an opportunity to use data from a more recent sample of New Zealand adolescents to determine whether or not rates of depressive symptoms are elevated in sexual minority youth. A secondary analysis of the Youth'07 data was deemed useful as it would help to address a number of weaknesses identified in the studies from this literature review. In particular, Youth'07 comprised of a very large nationally representative sample of secondary school students, and depressive symptoms in Youth'07 were assessed using a standardised measure. As such, data on depression could be investigated separately according to sexual attraction sub-groups (i.e. those attracted to the same sex would not need to be grouped together with those attracted to both sexes).

[5] The other New Zealand article (i.e. Fleming et al., 2007) focused on suicide attempts.

Chapter Two - STUDY ONE

Justification for developing SPARX: The Rainbow Version

In the previous chapter I outlined the dearth of nationally representative data on sexual minority youth and depression. In this chapter I describe the methods of a secondary analysis of the Youth'07 survey investigating associations between sexual attraction (according to sexual attraction sub-groups) depressive symptoms, suicidality and self-harm in a large representative national sample of secondary school students in New Zealand. I also describe the associations between sexual attraction and help-seeking[6]. I then present the results of this study and discuss them in relation to relevant literature.

Aims

Aims:

1. To describe the demographic characteristics of students by sexual attraction from the Youth'07 survey.
2. To compare the proportion of students by sexual attraction who have reported depressive symptoms, suicidality and self-harming.
3. To investigate the strength of the association between depressive symptoms, suicidality and self-harming by sexual attraction.
4. To determine the proportion of students by sexual attraction that sought help for an emotional worry and establish the proportion who had difficulty accessing this help.
5. To investigate the strength of the association between helping-seeking for an emotional worry and having difficulty accessing this help by sexual attraction.

Hypotheses

Hypotheses:

1. Compared with their opposite-sex attracted peers, students who have reported that their sexual attraction is to the same-sex or both-sexes, and those not sure who they are sexually attracted to (i.e. sexual minority students) and those who are attracted to neither sex will be more likely to have depressive symptoms, thought about suicide, attempted suicide and self-harmed.
2. Compared with their opposite-sex attracted peers, sexual minority students and those who are attracted to neither sex (i.e. non-heterosexual students) will be less likely to access help for emotional worries and will be more likely to experience difficulties accessing help for emotional worries.

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[6] Study One has been published in a peer-reviewed journal:
Lucassen, M. F. G., Merry, S. N., Robinson, E. M., Denny, S., Clark, T. C., Ameratunga, S., et al. (2011). Sexual attraction, depression, self-harm, suicidality and help-seeking behaviour in New Zealand secondary school students. *Australian and New Zealand Journal of Psychiatry, 45*(5), 376-383.

Methods

Introduction

The data used for this study were gathered as part of a larger project entitled Youth'07: The National Survey of the Health and Wellbeing of New Zealand Secondary School Students. The survey was conducted in 2007 by the University of Auckland's Adolescent Health Research Group (AHRG) and was the second such national survey carried out by the AHRG (the first being in 2001). The survey was anonymous and cross-sectional in nature and representative of the New Zealand secondary school student population. The survey consisted of up to 622 questions which were administered using internet tablets (which are essentially hand-held computers). A branching structure was used in the questionnaire so that students were not asked questions that were not relevant to them; for example, students who said they did not smoke were not asked questions on the extent of their smoking.

In Part One of this section the methods of the broader Youth'07 survey are described. In Part Two the data analysis method for the current study are described.

Part One: Method of the Youth'07 survey

Participant selection

In 2007 there were 389 New Zealand schools that had more than 50 students enrolled in Year 9 to Year 13[7]. More than a quarter of these schools (115) were randomly chosen and invited to participate in the survey between March and October 2007. For participating schools with more than 166 students 18% of eligible students were randomly selected from the school roll and invited to participate (Adolescent Health Research Group, 2008b). In the ten schools with fewer than 166 students on the school roll, 30 students were randomly selected and invited to participate (Adolescent Health Research Group, 2008b). This was done to reduce the risk of individual students being identified when reporting results back to the smaller schools (Adolescent Health Research Group, 2008b). In total, the sample comprised 12,355 students.

Survey content

The Youth'07 questionnaire was based on the 2001 survey; new items for inclusion were developed in consultation with advisory groups, stakeholders and academics. Focus groups were undertaken with groups of young people to ensure comprehension and face validity of questionnaire items (Adolescent Health Research Group, 2008b).

The Youth'07 survey was designed to cover important health and wellbeing outcomes as well as risk and protective factors that increase or decrease the likelihood of positive and negative outcomes for young people in New Zealand. Several main topics were covered: Ethnicity, Home, School, Health and Emotional Health, Nutrition, Exercise and Activities, Sexual Health, Substance Use and

[7] Excluding Wharekura Schools where, with the exception of English classes, all subjects are taught in Māori.

Gambling, Injuries and Violence, Neighbourhood and Spirituality. An electronic version of the RADS-SF (Reynolds Adolescent Depression Scale – Short Form) was incorporated into the Youth'07 survey. RADS-SF is a shorter version of the Reynolds Adolescent Depression Scale (RADS). The short form was used as there was pressure to keep the number of survey items as small as possible.

M-CASI

A specially designed survey tool using multi-media computer assisted self-interviewing (M-CASI) was used to deliver the questionnaire. Students used headphones to hear audio 'voiceovers' for all the questions and this was available in both English and te reo Māori (and students could toggle between the two language options). Computer generated graphics were also included in this innovative survey technology (Denny et al., 2008; Watson et al., 2001). Students could choose not to answer any particular question or section of the survey. Before sensitive sections of the questionnaire, reminders were given that involvement in the survey was voluntary and answers were anonymous. Students who participated in the original pilot study reported a high level of interest and satisfaction with this method of data collection (Watson et al., 2001).

Survey procedure

Written consent was obtained from the principals of each participating school. Four weeks prior to the survey being conducted a resource package was sent to each school containing the student invitations, information for parents and school staff, and brightly coloured Youth'07 posters (Adolescent Health Research Group, 2008b). The written material informed students and their families about the purposes of the project, and who to contact to ask questions about the survey. It also stressed that student participation was voluntary and that any information collected would be anonymous and confidential. Individual schools' communication systems were also used to disseminate information prior to the survey being conducted and to remind students to attend the survey if they had been selected (Adolescent Health Research Group, 2008b).

On the day of the survey various venues were used including school halls, gymnasiums, classrooms and libraries (Adolescent Health Research Group, 2008b). Because the survey was completed on hand-held computers with headphones, desks were not absolutely necessary and it was relatively easy to place students to ensure that no one could see their screen and know their answers (Adolescent Health Research Group, 2008b). All students received a thank you card on completing the survey with the names and contact details of people the students could talk to if they had any issues arising out of taking part in the survey.

Ethics

Ethics approval for the study was obtained from the University of Auckland Human Subject Ethics Committee (reference number 2005/414). Written consent was obtained from the principal of each school involved and each student provided their consent before being able to access the Youth'07 survey. The process of data collection was designed to protect the identity of each participant. For instance, each hand-held internet tablet had a router connection to a laptop used as a server for the Youth'07 survey software program. Participants' anonymous responses were then automatically transmitted by a wi-fi web server to the laptop database. Files from the laptop servers were later uploaded to a central database and then imported into statistical software and collated for analysis.

Part Two: Method of the secondary analysis on sexual attraction, mental health and help-seeking

Youth'07 data were used to examine self-reported rates of depressive symptoms, self-harming, suicidality and help-seeking for emotional worries according to students' sexual attraction. Data from Youth'07 were used for the current study as it was New Zealand's most recent survey of youth health and wellbeing, it involved a large representative sample of secondary school students, it directly asked students about their sexuality, and it gathered data on the variables of interest. Prior to carrying out further analyses permission to use the Youth'07 data was obtained from the Adolescent Health Research Group.

Sexual attraction, sexual identity and sexual behaviour

The survey included one question on sexual attraction. Specifically, "Which are you sexually attracted to?" and the possible responses were 'the opposite sex (e.g. I am a male attracted to females or I am a female attracted to males)', 'the same sex (e.g. I am a male attracted to males or I am a female attracted to females)', 'both sexes (e.g. I am attracted to males and females)', 'not sure' or 'neither'. There were no questions on participants' sexual identity and sexual behaviour.

The mental health analyses were carried out according to the five sexual attraction groups (i.e. opposite-sex, same-sex, both-sex, 'not sure' or 'neither' sex attracted students) as it was possible that there would be meaningful differences between the groups. Sexual minority youth are often grouped together (e.g. in Consolacion et al., 2004; Fergusson et al., 1999; Lam et al., 2004), but recent research has indicated there are within group differences, with young people questioning their sexuality suspected of being at the greatest risk of depressive symptoms (Birkett et al., 2009; Poteat, et al., 2009).

Awareness of same-sex attraction and coming out

The possible responses to 'How old were you when you became first aware of your sexual attractions to people of the same sex?' were aggregated to '11 or less', and '12 or older'. Students attracted to the same or both sexes were also asked 'Have you come out (told people close to you openly of your sexuality)?' Those who gave an affirmative response were classified as 'students who have come out'.

Demographic information

Participants identified whether they were male or female. There were no question options that allowed participants to identify gender diversity (such as being transgender). The number of participants by age for certain sexual attraction groups was small, so age was categorised as '15 or less' or '16 or older'. Participants were asked to indicate the ethnic groups with which they identified, based on the New Zealand Census 2001/2006 ethnicity question (Statistics New Zealand). Those students who chose more than one ethnic group were assigned a single ethnic group using the Statistics New Zealand ethnicity prioritization method (Lang, 2002). For data analyses ethnicity was grouped: New Zealand European, Māori, Pacific, Asian and Other. Socioeconomic deprivation of each student's area of residence was measured using the New Zealand Deprivation Index (NZDep2006) (Salmond, Crampton, Sutton, & Atkinson, 2006). NZDep2006 combines eight

dimensions of deprivation derived from the NZ census and assigns each census area unit a deprivation decile (a decile of 1 represents areas with the least deprived scores and 10 represents areas with the most deprived scores). For data analyses students were grouped into one of three decile bands; indicating low (deciles 1 to 3), medium (deciles 4 to 7), and high (deciles 8 to 10) levels of deprivation according to their residential area.

Significant depressive symptoms

RADS-SF is a brief self-report scale which was developed as a measure of depressive symptomatology in adolescents aged 11 to 20 years old (Reynolds, 1986) and there are data to support its use with New Zealand adolescents (Milfont et al., 2008). The RADS-SF consists of 10 items and participants select one of four responses that best describes how they usually feel, with the options being 'almost never', 'hardly ever', 'sometimes', or 'most of the time', with a possible test score ranging from 10 to 40. 'Significant depressive symptoms' were identified by scores greater than 28 on the RADS-SF. This score was based on the analysis of the 2001 survey data, which showed that a level of 28 best matched the cut-off of the full RADS and gave closer agreement than the lower recommended RADS-SF cut-off level of 26 (in the percentage classified with significant levels of depressive symptoms) (Milfont et al., 2008).

Suicidality

Suicidal ideation was identified by an affirmative response to the question 'During the last 12 months have you seriously thought about killing yourself (attempting suicide)?' Suicide attempts were identified by an affirmative response to the question 'During the last 12 months have you tried to kill yourself (attempt suicide)?'

Self-harming

Deliberate self-harm was defined as an affirmative response to the question 'In the last 12 months, have you ever deliberately (on purpose) hurt yourself or done anything you knew might have harmed you or even killed you?'

Help-seeking behaviour

Seeking help from a health professional for emotional worries was identified by an affirmative response to the question 'In the last year, have you ever seen a health professional such as a doctor, nurse or school guidance counsellor for emotional health worries?' Having difficulty accessing help was defined by a student selecting 'an emotional worry' in response to the question, 'In the last 12 months have you had any difficulty getting help for any of the following?' ('An emotional worry' was one of ten responses).

Statistical analysis

Students were recruited using a two-stage clustered sample design with unequal probabilities of selection. In all analyses the data have been weighted by the inverse probability of selection, and the variance of estimates was adjusted to allow for correlated data from the same schools. Total numbers and adjusted percentages were calculated for the selected health behaviours or outcomes. Multiple logistic regression models, including the possible confounders of age, sex, ethnicity and level of neighbourhood socioeconomic deprivation, were used to investigate the associations between sexual attraction and the health behaviours and health outcomes. The interaction between sexual attraction and sex was tested for each outcome or health behaviour and where this interaction was significant, analyses were stratified by sex. Because of the number of very small cell sizes for the analyses testing the associations between sexual attraction and help-seeking behaviour, those who were attracted to the same or both sexes, not sure of their sexual attractions or attracted to neither sex were combined into a single category ('non-heterosexual'). Although it would have been desirable not to combine participants into a single non-heterosexual group, a theoretical argument can be made for this decision. For instance, although there are suspected within-group differences amongst those who are attracted to the same or both sexes, not sure of their sexual attractions or attracted to neither sex, all of these participants can be considered 'non-heterosexual' (as they were in Fleming et al., 2007; Le Brun et al., 2004). Moreover, young people who are questioning their sexuality ('not sure') are thought to have increased mental health needs relative to their peers (Birkett et al., 2009; Espelage et al., 2008) and people attracted to neither sex (or are asexual) often fall outside the conventional gender binary of male and female (Hinderliter, 2009). All analyses were carried out using SAS software version 9.1 (2004) using the survey procedures.

Results

The results of this study are divided into two sections. The first section provides an overview of the participants' demographics. The second section presents the findings related to the associations between sexual attraction and self-reported depressive symptoms, self-harm, suicidality and help-seeking behaviour.

Section One: Overview of participants

Response rates

More than a quarter of New Zealand secondary schools (n=115) were randomly selected and invited to participate in Youth'07. In total, 96 schools from throughout the country took part in the survey (a response rate of 84%). The majority of participating schools were state funded, co-educational, large and middle decile (Adolescent Health Research Group, 2008b). Comparisons of the participating schools with all secondary schools in New Zealand (with more than 50 students in Year 9 and above), indicate that girls' schools and schools from deciles 1 and 2 were slightly under-represented in the survey (Adolescent Health Research Group, 2008b).

From the participating schools, 12,355 students were invited to complete the survey. In total, 9,107 students took part (representing a response rate of 74%). Reasons for non-participation were largely

unclear. Of the 3,248 non-participants, 730 (22.5%) students were absent from school, 338 (10.4%) students were unavailable, 305 (9.4%) students declined to participate in the survey, 175 (5.4%) students had left the school and an estimated 150 (1%) of students missed out because of technical problems to do with the Youth'07 survey.

In total, 8,002 (88%) students answered the question on sexual attraction. Of those who did not respond to this question 117 (1%) declined to answer the question; 550 (6%) skipped the entire sexual health section of the questionnaire; and 438 (5%) had quit the survey before reaching this question. Responders to the sexual attraction question appeared similar to the total sample surveyed in Youth'07 (Table 3).

Table 3. Characteristics of the responders to the sexual attraction question compared with the overall sample

	Responders (N=8,002) n (%)	Total Youth'07 Sample (N=9,107) n (%)
Sex[8]		
Male	4,245 (53.1)	4,911 (54.0)
Female	3,757 (47.0)	4,187 (46.0)
Age[9]		
15 or less	5,163 (64.5)	5,934 (65.1)
16 or older	2,839 (35.5)	3,166 (34.9)
Ethnicity[10]		
NZ European	4,382 (54.8)	4,797 (52.8)
Māori	1,457 (18.2)	1,702 (18.7)
Pacific	710 (8.9)	924 (10.2)
Asian	978 (12.2)	1,126 (12.4)
Other	471 (5.9)	531 (5.9)

[8] Nine non-responders did not have data on sex.
[9] Seven non-responders did not have data on age.
[10] Four responders and 23 non-responders did not have data on ethnicity.

Characteristics of students by sexual attraction

Approximately 6% of students were sexual minority youth (i.e. reported being attracted to the same sex, both sexes or were not sure of their sexual attractions), with approximately 8% of students being non-heterosexual. The distribution of students by sexual attraction was broadly similar across sex, age group, ethnicity and level of socioeconomic deprivation, although numbers of respondents in some categories were small (Table 4). Most of the students attracted to the same sex and both sexes were not aware of their same-sex attraction at age 11 or younger. At the time of completing the survey approximately a third of students attracted to the same sex (23 of the 73) and less than half of those attracted to both sexes (111 of the 270) had come out.

Table 4. Characteristics of students by sexual attraction

	Sexual Attraction (N=8002)				
	Opposite-Sex n (%)	**Same-Sex n (%)**	**Both-Sex n (%)**	**Not Sure n (%)**	**Neither n (%)**
Total	7,370 (92.2)	73 (0.9)	270 (3.3)	143 (1.8)	146 (1.8)
Sex					
Male	3,968 (93.5)	46 (1.1)	119 (2.8)	55 (1.3)	57 (1.3)
Female	3,402 (90.6)	27 (0.7)	151 (4.0)	88 (2.3)	89 (2.4)
Age					
15 or less	4,732 (91.7)	37 (0.7)	168 (3.2)	100 (1.9)	126 (2.4)
16 or older	2,638 (93.0)	36 (1.2)	102 (3.6)	43 (1.5)	20 (0.7)
Ethnicity[11]					
NZ European	4,997 (93.0)	50 (0.9)	201 (3.7)	60 (1.1)	69 (1.3)
Māori	719 (93.3)	7 (0.9)	20 (2.5)	15 (2.0)	10 (1.3)
Pacific	531 (90.4)	4 (0.7)	11 (1.9)	20 (3.4)	21 (3.6)
Asian	768 (87.6)	9 (1.0)	21 (2.4)	41 (4.6)	38 (4.3)
Other	346 (91.2)	3 (0.8)	17 (4.3)	6 (1.6)	8 (2.1)
NZDep2006[12]					
Low Deprivation	2,764 (92.9)	27 (0.9)	103 (3.4)	41 (1.3)	44 (1.5)
Medium Deprivation	2,839 (92.9)	25 (0.8)	103 (3.3)	43 (1.4)	48 (1.5)
High Deprivation	1,710 (89.8)	21 (1.1)	63 (3.3)	56 (2.9)	54 (2.8)
Age first aware of same-sex attraction[13]					
11 or less	-	29 (44.3)	72 (26.9)	-	-
12 or older	-	38 (55.7)	197 (73.1)	-	-

[11] Nine opposite-sex attracted and one 'not sure' attracted student did not have data on ethnicity.

[12] 57 opposite-sex attracted, one both-sex attracted and three 'not sure' attracted students did not respond to this question.

[13] Six same-sex and one both-sex attracted student did not respond to this question.

Section Two: Sexual attraction, mental health and help-seeking

There were strong significant associations between sexual attraction and depressive symptoms, the risk of self-harm and suicidality with students attracted to both sexes at greatest risk and those attracted to the opposite sex or to neither sex at the least risk (Table 5). Students who reported being attracted to the same sex and those not sure of their sexual attractions had substantially higher odds of significant depressive symptoms, self-harm and suicidality whereas students attracted to neither sex had lower or broadly equivalent odds compared with students attracted to the opposite sex.

The analyses from Youth'07 indicated that nearly a third of students attracted to both sexes had significant depressive symptoms, compared with just over 20% of students attracted to the same sex and those not sure of their sexual attractions. Students attracted to neither sex appeared comparable to opposite-sex attracted students in relation to the presence of significant depressive symptoms (with approximately 10% having significant depressive symptoms).

The results on having seriously thought about suicide were stratified by sex as the association between sexual attraction and this variable was different for males and females ($p=0.01$), with males broadly following the pattern described above. However amongst females only those attracted to both sexes had considerably increased odds of serious suicidal thoughts. There was no significant interaction between sex and sexual attraction for self-harm, suicide attempts and significant depressive symptoms.

Table 5. Associations between sexual attraction and depression, self-harm and suicidality

	n (%)	OR[14] (95% CL)	*p* value[15]
Significant depressive symptoms			<.0001
Opposite-sex (N=7,212)	687 (9.5)	1.0	
Same-sex (N=70)	16 (23.3)	1.9 (1.1-3.1)	
Both-sex (N=261)	86 (32.3)	3.7 (2.8-4.7)	
Not sure (N=136)	30 (21.8)	2.1 (1.3-3.3)	
Neither (N=139)	14 (9.7)	1.0 (0.6-1.7)	
Deliberately self-harmed			<.0001
Opposite-sex (N=7,329)	1426 (19.4)	1.0	
Same-sex (N=73)	27 (36.9)	2.8 (1.8-4.4)	
Both-sex (N=268)	156 (57.9)	5.8 (4.4-7.6)	
Not sure (N=142)	44 (30.4)	1.8 (1.1-2.7)	
Neither (N=146)	20 (13.4)	0.6 (0.4-0.9)	
Seriously thought about attempting suicide – Males			
Opposite-sex (N=3,920)	329 (8.4)	1.0	<.0001
Same-sex (N=45)	13 (28.9)	4.5 (2.3-8.7)	
Both-sex (N=114)	39 (34.2)	5.8 (3.9-8.8)	
Not sure (N=55)	4 (7.4)	0.9 (0.3-2.3)	
Neither (N=57)	4 (7.2)	0.9 (0.3-2.5)	
Seriously thought about attempting suicide – Females			
Opposite-sex (N=3,396)	636 (18.6)	1.0	<.0001
Same-sex (N=27)	5 (19.1)	1.0 (0.4-2.7)	
Both-sex (N=151)	75 (48.3)	4.4 (3.2-6.0)	
Not sure (N=88)	25 (28.3)	1.6 (0.8-2.9)	
Neither (N=89)	10 (10.5)	0.5 (0.3-0.8)	
Attempted suicide			<.0001
Opposite-sex (N=7,313)	291 (4.0)	1.0	
Same-sex (N=72)	10 (13.9)	4.8 (2.4-9.6)	
Both-sex (N=265)	59 (21.7)	7.0 (5.2-9.4)	
Not sure (N=142)	14 (10.1)	2.4 (1.1-5.1)	
Neither (N=146)	8 (5.0)	1.1 (0.6-1.9)	

[14] Reference category is opposite-sex attracted students, adjusted for age, sex, ethnicity and level of deprivation.
[15] p-value for the influence of sexual attraction on the variable tested.

Help-seeking

Non-heterosexual students were more likely to have seen a health professional for an emotional worry (p<.0001) and to experience difficulty getting help for an emotional worry than opposite-sex attracted students (p<.0001). The results on help-seeking were stratified by sex because there were significant interactions between sexual attraction and sex for having seen a health professional for emotional worries (p=0.02) and having had difficulty getting help for an emotional worry (p=0.004). The interaction effect was related to the magnitude of the effect, as non-heterosexual males and females both reported more help-seeking behaviour and difficulties getting help for an emotional worry compared with their opposite sex attracted peers, but these differences were more pronounced in males (for example OR 2.9 compared with 2.1 and OR 3.7 compared with 1.8) (Table 6).

Table 6. Associations between sexual attraction and help-seeking

	n (%)	OR[16] (95% CL)	*p* value[17]
Seen a health professional for emotional worries - Males			
Opposite-sex attracted (N=3,947)	392 (9.9)	1.0	<.0001
Non-heterosexual (N=277)	67 (24.6)	2.9 (2.2-3.8)	
Same-sex	14 (31.0)	-	-
Both-sex	31 (26.5)	-	
Not sure	10 (18.5)	-	
Neither	12 (21.6)	-	
Seen a health professional for emotional worries - Females			
Opposite-sex attracted (N=3,394)	710 (21.0)	1.0	<.0001
Non-heterosexual (N=354)	123 (34.3)	2.1 (1.8-2.6)	
Same-sex	9 (31.7)	-	-
Both-sex	80 (52.1)	-	
Not sure	21 (24.7)	-	
Neither	13 (14.7)	-	
Had difficulty getting help for an emotional worry - Males			
Opposite-sex attracted (N=3,704)	174 (4.7)	1.0	<.0001
Non-heterosexual (N=265)	40 (15.1)	3.7 (2.4-5.8)	
Same-sex	8 (19.5)	-	-
Both-sex	23 (19.8)	-	
Not sure	4 (7.5)	-	
Neither	5 (9.5)	-	
Had difficulty getting help for an emotional worry - Females			
Opposite-sex attracted (N=3,292)	406 (12.3)	1.0	<.0001
Non-heterosexual (N=348)	72 (20.3)	1.8 (1.4-2.5)	
Same-sex	2 (7.9)	-	-
Both-sex	56 (36.4)	-	
Not sure	13 (15.5)	-	
Neither	1 (1.2)	-	

[16] Reference category is opposite-sex attracted students, adjusted for age, sex, ethnicity and level of deprivation.
[17] p-value for the influence of sexual attraction on the variable tested.

Discussion

Statement of principal findings

In this study I explored sexual attraction and its associations with depressive symptoms, self harm, suicidality and help-seeking behaviour in a large representative national survey of secondary school students in New Zealand. I have shown that although most of the sexual minority students surveyed in Youth'07 were not suicidal and did not have significant depressive symptoms, these students were at substantially increased risk of depressive symptoms, suicide attempts and self-harm, when compared with their opposite-sex attracted peers. Students who were non-heterosexual were more likely to have seen a health professional for emotional worries and to have had more difficulty getting this help.

When establishing the proportion of sexual minority youth it is important to be aware of developmental considerations. For instance, in the current study there appeared to be a decrease in the percentage of students who were attracted to neither sex when younger students were compared with older students (i.e. a larger proportion of students in the younger group endorsed a 'Neither' response compared to older students). This is hardly surprising, as adolescence is a time when young people are coming to terms with their sexuality and the results probably reflect a process of increasing awareness during the adolescent years. Some students were aware of their same-sex attraction at a very young age (specifically 11 years or younger). However, for the majority of students attracted to the same sex or both sexes, this awareness came later (i.e. when they were 12 years or older).

In completing the Youth'07 survey all the participants who reported being attracted to the same-sex or both-sexes were in effect declaring a sexual minority orientation to themselves. However it is reasonable to assume that a number of participants were unwilling or unable to disclose experiencing same-sex attractions in the survey therefore the results may under-represent the real number of students attracted to the same or both sexes.

In this study, students attracted to both sexes were at greater risk of self-harm, with more than half of students attracted to both sexes reporting having deliberately self-harmed in the previous 12 months. However, caution is required when interpreting this result as it was not possible from the single item used to ascertain that the students' intentions were self-inflicted harm. We were unable to explore the reasons for the increased risk of self-harm, depressive symptoms and suicidality in students attracted to both sexes, but it has been suggested that it may be symptomatic of a personal struggle related to managing an identity that is not as clearly defined as being lesbian/gay/same-sex attracted or straight/opposite-sex attracted (Ciro et al., 2005). In addition, being attracted to both sexes may result in marginalisation in both heterosexual and lesbian or gay networks.

Comparisons to other research

Prevalence of sexual minority youth and coming out

The proportion of sexual minority students remained unchanged between the two AHRG surveys (6.1% in 2001 and 6% in 2007) (Le Brun et al., 2004; Rossen et al., 2009). In 2007 as in 2001 most of the sexual minority students were attracted to both sexes (Le Brun et al., 2004; Rossen et al., 2009). The remaining students who were non-heterosexual were attracted to neither sex (accounting for approximately 2% of students in both AHRG surveys) (Le Brun et al., 2004; Rossen et al., 2009).

In relation to international estimates of adolescents who are attracted to the same or both sexes, the results from the current study are broadly comparable with other population-based studies. In Youth'07 4.2% of students reported being attracted to the same or both sexes, compared with between 2.7% and 15.5% of adolescents in studies from Croatia, the United States of America, Hong Kong, England and Norway (Bezinovic & Tkalcic, 2005; Consolacion et al., 2004; Galliher et al., 2004; Lam et al., 2004; Rivers & Noret, 2008; Russell & Joyner, 2001; Udry & Chantala, 2005; Wichstrom & Hegna, 2003; Wilkinson & Pearson, 2009).

Aside from the AHRG surveys only the Christchurch Health and Development Study has estimated the prevalence of sexual minority youth in New Zealand using a representative sample of young people. In the Christchurch study 20 participants at age 21 years self-identified as LGB (2%) (Fergusson et al., 1999). That study had a smaller proportion of sexual minority youth than the current study. This is probably due to the fact that the number of participants reporting same-sex attraction is almost certain to be greater than the number who would identify as LGB (Fergusson et al., 1999; Saewyc et al., 2004; Savin-Williams, 2001).

Unlike the population-based studies summarised in the previous chapter, students in the current study were surveyed about whether they had come out and the age at which they first became aware of their same-sex attractions. Surveying students about these aspects of their sexuality was valuable, as other researchers have indicated that many adolescents who will eventually identify as LGB are yet to come out to themselves or others (Savin-Williams, 2001). This is hardly surprising given that Savin-Willams and Diamond (2000) estimated that the average age of coming out to others is just after completing high school for both young men and women. Savin-Willams and Diamond's (2000) conclusion compliments the findings from Youth'07 and the earlier survey from 2001 which found that the majority of same-sex and both-sex attracted students were not out to others by the time they completed the survey (Le Brun et al., 2004; Rossen et al., 2009).

Significant depressive symptoms

Other population-based studies of adolescents have assessed depressive symptoms in sexual minority youth (e.g. Udry & Chantala, 2002, 2005). Most have concluded that LGB adolescents or youth attracted to the same or both sexes reported a higher prevalence of depressive symptoms compared with their heterosexual or opposite sex attracted peers (e.g. Espelage et al., 2008; Fergusson et al., 1999; Galliher et al., 2004; Lam et al., 2004; Udry & Chantala, 2005). The current study supports these findings, but unlike the majority of previous studies it has assessed rates of

depressive symptoms separately for youth attracted to the same sex and both sexes and this has highlighted differences between groups by sexual attraction.

The current study's results contrast with two recent population based studies from North America in which young people who were less certain of their sexuality or were sexually questioning were at greater risk of depressive symptoms when compared with their LGB or heterosexual peers (Birkett et al., 2009; Poteat, et al., 2009). In our study, students who were not sure of their sexual attractions or were attracted to neither sex, were at decreased risk relative to students attracted to both sexes. The differences may reflect an alternative approach to asking about sexuality, as the American researchers asked participants "Do you ever feel confused about whether you are lesbian, gay or bisexual?" and used this item to determine participants' sexual orientation. As a result of using this question the researchers had to combine lesbian and gay participants with bisexual participants (Birkett et al., 2009; Poteat, et al., 2009), so within-group comparisons were not possible. Of note, Poteat and colleagues (2009) stated that they were unable to include an alternative sexual orientation question or any additional sexuality questions, because they were constrained from doing so by their school district.

Help-seeking

I could find only one other study related to adolescent help-seeking, sexuality and depression. In particular, Ciro and colleagues (2005) surveyed adolescents who had used a youth health clinic in New York city and concluded that sexual minority adolescents expressed a greater desire to talk about their health and personal lives than the surveyed 'straight' participants. The results from Youth'07 support the findings from New York, as students who were non-heterosexual were much more likely to have seen a health professional for emotional worries, and by extension, to have demonstrated a desire to talk about their 'health' and 'personal lives'.

The general literature on help-seeking behaviour suggests that sex or gender is one of the most consistent predictors of this behaviour, with females being much more likely to seek help for emotional problems (e.g. Boldero & Fallon, 1995; Raviv, Sills, Raviv, & Wilansky, 2000). The numbers from the current study support this when male and female students are compared (e.g. 392 opposite-sex attracted males and 67 non-heterosexual males compared with 710 opposite-sex attracted females and 123 non-heterosexual females had seen a health professional for an emotional worry). The sex differences highlighted in the current study were not raised in the New York study. This is likely because the New York study had a much smaller overall sample size of sexual minority youth (n= 75).

Participants in the current study were not specifically surveyed about whether they sought help for depression or whether they had difficulties obtaining help to manage their depressive symptoms. Participants were instead questioned about their help-seeking in relation to all 'emotional worries'. Emotional worries cover a variety of mental health issues, with depression being one of a range of potential worries or concerns. However, previous research conducted by the AHRG using the 2001 survey data concluded that help-seeking for an emotional worry and having depressive symptoms were linked (Mariu, Merry, Robinson, & Watson, 2012) and specifically, having depressive symptoms

was significantly associated with seeking help for an emotional worry ($p<0.0001$) (Mariu et al., 2012). It is worth noting that despite this link, 82% of young people with significant mental health problems (including depression) did not seek professional help (Mariu et al., 2012).

Suicidality

As with the findings on depressive symptoms and sexual minority youth, previous researchers have concluded that LGB youth or young people attracted to the same or both sexes are at an increased risk of suicide (e.g. Espelage et al., 2008; Fergusson et al., 1999; Russell & Joyner, 2001). In the first AHRG survey, having a non-heterosexual orientation (i.e. being same-sex, both-sex, 'not sure' and 'neither' sex attracted) was independently associated with increased suicide risk (Fleming et al., 2007).

Like Fergusson and colleagues (1999), our study found that adolescents attracted to the same and both sexes had odds ratios of suicidal ideation that were considerably greater than their opposite-sex attracted peers. Fergusson and colleagues (1999) calculated odds ratios of suicidal ideation at 5.4 times greater for LGB participants than heterosexual participants and roughly comparable odds (OR 4.5 to 5.8) were calculated in Youth'07 for males attracted to the same or both-sexes. However, unlike the Christchurch study, we found differences existed according to sexual attraction and sex. When same sex and both sex attracted students are compared with LGB participants from the Christchurch study in regards to suicide attempts the odds are again, broadly speaking, comparable (OR 6.2). However, unlike the Christchurch study, we found that those students who were not sure of their sexual attractions were at increased odds of attempting suicide (OR 2.4).

Self-harm

Only one other population-based study identified in Chapter One surveyed students about deliberate self-harm in the previous 12 months (Almeida et al., 2009). In this much smaller study participants were stratified by self-reported sex/gender, with LGB and transgendered students combined into a single group (24 males, 79 females) and compared with heterosexual, non-transgendered students (330 males, 430 females) (Almeida et al., 2009). The prevalence of self-harm was particularly high among LGBT males from Boston, with 41.7% (10 out of 24) reporting self-harm behaviour (OR 20.26, 95% CI 7.38-55.62) (Almeida et al., 2009). Comparisons with the Youth'07 study are challenging, as the results on self-harm in Youth'07 were not stratified by sex (as the interaction between sexual attraction and sex for this variable was not significant) and sexual minority youth were not combined into a single group with transgendered young people. However, both studies indicate that sexual minority students appear to be at markedly increased risk of deliberate self-harm.

Strengths and limitations of the study

Strengths of the current study

My review of the literature found only two other nationally representative surveys or survey series investigating the prevalence of adolescent sexual orientation and depression, one in the United States (i.e. AddHealth) and one in Norway (The Young in Norway Study) (Consolacion et al., 2004; Galliher et al., 2004; Russell & Joyner, 2001; Udry & Chantala, 2002, 2005; Wichstrom & Hegna, 2003; Wilkinson & Pearson, 2009). The current study asked students about their sexual attractions and obtained this information from a very large nationally representative sample of secondary school students (n=8,002). As such the results are the closest possible to a representative sample of sexual minority secondary school students in New Zealand. A reliable and valid instrument for assessing depressive symptoms was used and all other instruments had been adequately tested prior to Youth'07 being conducted.

This study provides an in-depth analysis of variables that have not previously been investigated according to sexual attraction with regard to New Zealand secondary school students. I could find no comparable population-based studies which examined depressive symptoms, self-harm and suicidality separately for young people attracted to the same sex and both sexes. I was also able to investigate mental health outcomes and help-seeking behaviour in relation to sexual attraction, whilst controlling for other variables (such as age, sex, ethnicity and socioeconomic deprivation).

Finally, the comparatively large number of sexual minority students allowed for a more detailed study of adolescent mental health and help-seeking by sexual attraction, which has not been reported upon in any other comparable research to date.

Limitations of the current study

The study has several limitations. Firstly, as the survey is of secondary school students, the findings of the study cannot be generalised to all New Zealand adolescents. Furthermore, students who were absent from school on the day of the survey were obviously excluded, and there is evidence that those adolescents not engaged in main-stream schooling are less healthy than those who are (Denny, Clark, Fleming, & Wall, 2004). Consequently, the study may have an over-representation of healthier adolescents and under-representation of those most at risk.

Secondly, students could only select that they were either 'male' or 'female'. As a result of this forced binary response no variation was possible for an individual to express any gender diversity (e.g. that they were transgender). Moreover, sexual identity and same-sex sexual behaviour could not be ascertained, requiring the use of sexual attraction as a proxy measure of sexual orientation.

Thirdly, the survey is based on students' self-report. With all self-report it is difficult to determine to what extent people may have minimised or exaggerated responses, particularly those regarding a potentially stigmatised topic. However, the anonymity of the survey is likely to have limited the effect of this on student responses. Conversely, it can be argued that adolescents themselves have the best knowledge of their own thoughts, feelings and behaviours and that there is no other way of

obtaining most of this data (e.g. only the individual concerned can identify their own sexual attractions).

Finally, not all students completed all of the survey questions. Some areas, particularly in the later sections of the Youth'07 survey had large amounts of missing data. This is probably due to students losing interest or becoming tired. The total numbers for each outcome or behaviour are reported in the results section.

Conclusions

The main purpose of this study was to examine certain mental health and help-seeking issues in relation to sexual attraction in a large representative sample of secondary school students in New Zealand. This study confirms findings from previous research which has shown that sexual minority adolescents are more likely to experience depressive symptoms (Almeida et al., 2009; Bezinovic & Tkalcic, 2005; Bos et al., 2008; Espelage et al., 2008; Galliher et al., 2004; Hatzenbuehler, 2009; Lam et al., 2004; Udry & Chantala, 2002, 2005; Wilkinson & Pearson, 2009; Williams et al., 2005), that they are at an increased risk of suicidal ideation or attempts (Almeida et al., 2009; Birkett et al., 2009; Espelage et al., 2008; Fleming et al., 2007; O'Donnell et al., 2004; Park et al., 2006; Poteat et al., 2009; Russell & Joyner, 2001; Wichstrom & Hegna, 2003; Woods et al., 1997) and self-harm (Almeida et al., 2009). However, the results were unlike previous comparable population-based research, as this study has demonstrated that there are differences within the sexual minority population. Students attracted to both sexes appear to be at the greatest risk of depressive symptoms, self-harm and suicidality and those who were attracted to neither sex were more similar in terms of risk to opposite sex attracted students than to sexual minority students. Other researchers have concluded that youth attracted to both sexes (or bisexual adolescents) appear to be at the highest risk when compared with their peers from clinic based samples (e.g. Ciro et al., 2005). Ciro and colleagues suggested that bisexual adolescents' increased risk of mental ill-health may be related to managing an identity that is not as clearly defined as being lesbian, gay or straight (Ciro et al., 2005). However, due to the scarcity of information on this topic, more research that aims to explain the increased risk of mental ill-health in adolescents attracted to both sexes is warranted.

We need to understand the processes by which sexual minority youth are at increased risk of depressive symptoms, self-harm and suicide and why so many of these young people have difficulty accessing help for an emotional worry. To date, numerous researchers have argued that the increased risk of mental ill-health is a consequence of sexual minority adolescents living in an environment that is unsupportive of their sexuality (Bos et al., 2008; Bridget & Lucille, 1996; Lewis et al., 2001; Poteat & Espelage, 2007; Rivers & Noret, 2008; Vincke & Bolton, 1994; Williams et al., 2005) but it is difficult to prove this causal relationship with cross-sectional questionnaires that survey participants about general stressors and not LGB stressors per se. Research is therefore needed to determine the impact of gay stressors on the mental health of sexual minority youth.

Students who were non-heterosexual were more likely to have seen a health professional for an emotional worry. This was at odds with my initial hypothesis that non-heterosexual students would be

less likely to seek help for an emotional worry, but this is not surprising given their increased levels of psychological distress. However, as first hypothesized, these young people did report more difficulty accessing help and this is an issue that warrants addressing.

The results from this study suggest a need to provide interventions that will help address the unique mental health needs of sexual minority youth. These interventions will need to tackle some of the current barriers so that professional help can be more easily accessed. The proposed interventions should also be evidence-based and 'culturally appropriate' to sexual minority youth. However, these proposed solutions need to be adequately tested or evaluated before being more fully distributed or utilised.

Chapter Three - STUDY TWO

In the first part of this chapter I will briefly review the value of using psychotherapies like CBT in the treatment of depression in sexual minority youth. I will then discuss the development of a CCBT program developed at the University of Auckland (called SPARX). However, the primary purpose of this chapter is to summarise Study Two. In Study Two, three focus groups were carried out to inform the development of a special version of SPARX for sexual minority youth, called SPARX: The Rainbow Version (or Rainbow SPARX).

Treating depression in adolescents

As previously outlined, sexual minority youth are at an increased risk of depressive symptoms and non-heterosexual youth report more difficulty accessing professional help for emotional worries relative to their opposite-sex attracted peers (Lucassen et al., 2011). In fact most depressive disorders in the general adolescent population remain untreated (Emslie, 2008), and less than a quarter of adolescents who meet criteria for mental health disorders receive any form of treatment or assistance (Fergusson & Horwood, 2001). There are many reasons why adolescents do not obtain the help they need from trained health professionals. One reason is that many adolescents prefer self-help, internet based information or support via people they know rather than seeking professional health care (Farrand, Perry, Lee, & Parker, 2006). Finding ways of treating adolescents with depression remains a sizeable clinical and public health challenge (Milin, Walker, & Chow, 2003).

To date, treatments for adolescent depression broadly fit into two main categories; pharmacotherapy and psychotherapy. Pharmacotherapy includes the use of antidepressants such as serotonin selective reuptake inhibitors (SSRIs). SSRIs are frequently used in the treatment of adolescent depression (TADS, 2004) with fluoxetine recommended as the SSRI with the clearest evidence of efficacy (Hetrick, Merry, McKenzie, Sindahl, & Proctor, 2007; Whittington et al., 2004). However the use of antidepressant medication for mild depressive symptoms is not recommended as a first line treatment and some guidelines suggest that SSRIs should only be used in conjunction with psychological therapy for moderate to severe depression (e.g. NICE, 2005). Hence the use of pharmacotherapy in the treatment of adolescent depression has some obvious restrictions, and these limitations have encouraged clinicians, young people and their parents to consider alternatives to medication for the treatment of depression (Weisz, McCarty, & Valeri, 2006). Psychotherapeutic interventions are an obvious alternative. The National Institute of Clinical Excellence (NICE) from the United Kingdom specifically recommend CBT, interpersonal therapy and short-term family therapy as first-line interventions for the treatment of adolescent depression (NICE, 2005). Of these interventions CBT stands out, as it is a structured, short-term, psychological therapy (Beck, 1995) and a large body of evidence suggests that it is the most effective form of psychotherapeutic intervention for depression (Watanabe, Hunot, Omori, Churchill, & Furukawa, 2007).

Treating depression in sexual minority youth

Prior published research on the treatment of sexual minority youth with depression has consisted of case studies (with between one and four participants) and CBT was not cited (or used) in any of these case studies. Despite this, several researchers have postulated that cognitive-behavioural functional analysis and therapeutic techniques can be successfully used with sexual minority youth (Safren, Hollander, Hart, & Heimberg, 2001). The general principles of CBT are the same for all groups of clients including sexual minority youth; however working with unique populations does require some adaptation. From a cognitive perspective, sexual minority individuals are frequently exposed to negative attitudes about same-sex sexual attraction and this often leads to the development of negative core beliefs about the self which are theoretically linked to the development of psychological dysfunction (Safren et al., 2001). Unlike people from ethnic minorities, sexual minority youth do not typically share their minority status with their family, and instead of providing support, the young person's family can contribute to their stress levels (Safren & Rogers, 2001), further adding to the feelings of isolation a sexual minority young person might face.

Despite increased depressive symptoms amongst sexual minority youth, and the clinical importance of providing CBT in an affirming way when working with this group, many clinicians "do not have sufficient knowledge of, and training programs do not adequately prepare psychologists for work with, sexual minority populations" (Safren et al., 2001, p. 215). As well as a shortage of clinicians with expertise in working with sexual minority individuals, there is a shortage of trained health professionals working in New Zealand's child and adolescent mental health services (Mental Health Commission, 2001, 2004). As previously stated, sexual minority youth experience difficulty accessing help for emotional worries. These difficulties may be further compounded by certain characteristics of this population, namely their small numbers, isolation and the double stigma of having a psychiatric condition and being queer. The challenge then is to find ways of overcoming these barriers in order to deliver effective therapy to this vulnerable group of young people. Computer technology proffers one means of rising to this challenge.

Computerised Cognitive Behavioural Therapy (CCBT)

Because it is structured, CBT is well suited to being administered by computers. Furthermore, NICE in the United Kingdom emphasised that computerised CBT for depression (CCBT), by virtue of being delivered by computer, requires much less therapist time (NICE, 2005). Hence, it has the potential to alleviate some of the issues faced by the child and adolescent mental health workforce in New Zealand. In addition, CCBT is thought to be a "useful component of a stepped care program being one of the options offered to [adult] patients as a first line treatment approach" (NICE, 2005, p. 10). CCBT may be particularly useful in the delivery of treatment to sexual minority youth as it is less dependent on human resourcing, could be made freely available and would be accessible to this often geographically (Silenzio et al., 2009) and socially isolated population (Garofalo, Wolf, Kessel, Palfrey, & DuRant, 1998; Radkowsky & Siegel, 1997; Rivers & Noret, 2008).

Growing evidence supports the efficacy of CCBT (Marks et al., 2003; Mitchell & Dunn, 2007; Proudfoot et al., 2003; Proudfoot et al., 2004; Wright et al., 2005). However, CCBT interventions such

as ‘Beating the Blues’ (e.g. in Cavanagh et al., 2009) and ‘Overcoming Depression’ (e.g. in Whitfield, Hinshelwood, Pashely, Campsie, & Williams, 2006) have almost entirely been created and studied in relation to adult populations (Marks et al., 2003; Mitchell & Dunn, 2007; Proudfoot et al., 2003; Proudfoot et al., 2004; Wright et al., 2005) and I have not found any published studies that address issues of relevance to sexual minority youth with depressive symptoms.

Few CCBT programs have been trialled with adolescents with depressive symptoms and have had their results published in peer-reviewed journals (Richardson, Stallard, & Velleman, 2010). Internationally only six CCBT programs have been identified from the literature, specifically ‘Stressbusters’, ‘Master Your Mood Online’, ‘MoodGym’, ‘CATCH-IT’, ‘Reach Out! Central’ and ‘Think, Feel, Do’ (Calear & Christensen, 2010; Richardson et al., 2010). ‘Master Your Mood Online’ (or Grip op je dip Online) consists of CBT delivered by a clinician via a chatroom and is therefore not a self-help CCBT resource. However, this program has been cited in both the reviews of adolescent CCBT for depression (i.e. Calear & Christensen, 2010; Richardson et al., 2010) and to ensure completeness of data has been included in Table 7.

Researchers have had the results of the six CCBT programs published in nine studies over the previous five years. The studies differed in size from a small pilot RCT with 20 participants to a large cluster RCT of 1,477 participants. The number of sessions delivered as part each program varied from between five to 14 sessions (mean=8.2 sessions), with four of these programs delivered online and two via CD-Rom (i.e. ‘Stressbusters’ and ‘Think, Feel, Do’). The studies followed different protocols, for example CATCH-IT was conducted in a general practice environment, MoodGYM was delivered as a universal preventive intervention in secondary schools, and Reach Out! Central was offered online to the general public. The studies also adopted differing outcome measures, with three using the Centre for Epidemiological Studies Depression Scale (CES-D), whilst the other studies used either the Kessler Psychological Distress Scale (K10) or Adolescent Well Being Scale (AWS) to measure depressive symptoms. As a result of the differing protocols and outcome measures comparisons across the studies are limited. Despite this, where possible I have compared the primary outcome measure for each CCBT program pre- to post-intervention, or I have used the outcome measure most pertinent to depression. The effect sizes (Cohen’s *d*) for the six programs ranged from 0.04 to 1.49 with a mean effect size of 0.49. Five programs provided data on whether or not the pre- to post-intervention reductions in depression scores were significant, with four programs demonstrating a significant reduction (Abeles et al., 2009; Gerrits, van der Zanden, Visscher, & Conijn, 2007; Stallard, Richardson, Velleman, & Attwood, 2011; Van Voorhees et al., 2009; Van Voorhees et al., 2008). All of the studies separately concluded that CCBT shows promise (Abeles et al., 2009; Calear, Christensen, Mackinnon, Griffiths, & O’Kearney, 2009; Gerrits et al., 2007; O'Kearney, Gibson, Christensen, & Griffiths, 2006; O'Kearney, Kang, Christensen, & Griffiths, 2009; Shandley, Austin, Klein, & Kyrios, 2010; Stallard et al., 2011; Van Voorhees et al., 2009; Van Voorhees et al., 2008). Therefore, given the mean effect size (which was in the medium range) and that four programs have resulted in a significant reduction in depressive symptoms, there appears to be some evidence to support the claim that CCBT is a promising intervention for the treatment of adolescent depression.

Table 7. Summary of CCBT interventions for depressive symptoms in adolescents

Program details	Aim of intervention[18]	Program evaluated with	Treatment details	Control intervention	Primary outcome (or depression outcome used to establish effect size)	Post-intervention effect size
Stressbusters (UK) (Abeles et al., 2009).	'CCBT for teenagers suffering with depression'	12-16 yr olds (mild to moderate depression) (n=28).	8 sessions (30-45 minutes each) on CD-Rom.	Uncontrolled case studies (i.e. no control group).	The Moods & Feelings Questionnaire – Long Version (MFQ-L) pre mean=35.48 (SD=9.84) & post mean=20.32 (SD=11.75) (pre to post $p<0.001$).	*d*=1.40
Master your mood online (The Netherlands) (Gerrits et al., 2007).	'Prevention intervention for adolescents with depressive complaints'	Average age 19.8 yrs old (depressive symptoms) (n=140).	8 sessions (90 minutes each) delivered via chatrooms.	Open trial. No control group.	Centre for Epidemiological Studies Depression Scale (CES-D) pre mean=32.6 (SD=9.3) & post mean=18.7 (SD=9.4) (pre to post $p<0.001$).	*d* =1.49
MoodGYM (Australia) (Calear et al., 2009; O'Kearney et al., 2006; O'Kearney et al., 2009).	'Preventing & reducing the symptoms of anxiety & depression' (Calear et al., 2009) 'Identify problems with depression, overcome these problems, & develop good coping skills.'(O'Kearney et al., 2006; O'Kearney et al., 2009)	12-17 yr olds (a universal intervention). Calear et al. (2009) n=1,477. O'Kearney et al. (2006) n=78 males. O'Kearney et al. (2009) n=157 females.	5 sessions (30-60 minutes each) delivered via the Internet.	Calear et al. (2009) wait-list control. O'Kearney et al. (2006) 'usual personal development program' (e.g. study, ad hoc discussion & physical activity). O'Kearney et al. (2009) 'personal development activities about nutrition'.	All three studies utilised the CES-D. Calear et al. (2009) pre mean=11.48 (SD=9.23) & post mean=10.95 (SD=10.17) (pre to post results $p=0.12$). O'Kearney et al. (2006) pre mean=11.43 (SD=8.95) post data not provided (no significant differences based on CES-D). O'Kearney et al. (2009) pre mean=17.93 (SD=11.71) & post mean=15.25 (SD=11.47) (no significant differences based on CES-D).	Calear et al. (2009) *d* =0.05[19]. O'Kearney et al. (2006) *d* =0.11. O'Kearney et al. (2009) *d* =0.23.
CATCH-IT (USA) (Van Voorhees et al., 2009; Van Voorhees et al., 2008)[20].	'Internet-based preventive intervention for depression' (Van Voorhees et al., 2009; Van Voorhees et al., 2008)	14-21 yr olds (mild to moderate depression) (n=84).	14 modules delivered via the Internet.	RCT comparing CCBT & motivational interviewing (MI) to CCBT & brief advice (BA).	CES-D (MI) pre mean=22.28 (SD=11.43) & post mean=16.83 (SD=10.20) ($p<0.001$). CES-D (BA) pre mean=23.34 (SD=12.09) & post mean=16.92 (SD=10.89) ($p<0.001$).	*d*=0.44 (MI) *d*=0.56 (BA) (Van Voorhees et al., 2008).
Reach Out! Central/ROC (Australia) (Shandley et al., 2010).	'Online gaming program designed to support the mental health of people aged 16–25'	18-25 yr olds (Australian residents accessing the ROC website) (n=266).	A 'web-based interactive educational game designed to support the mental health of young people'.	Open trial. No control group.	The Kessler Psychological Distress Scale (K10) males pre mean=24.14 (SD=8.67) & post mean=23.76 (SD=8.63). K10 females pre mean=28.31 (SD=9.48) & post mean=27.74 (SD=9.77) (females had ↑ K10 than males pre & post $p<0.001$).	*d* =0.04 (males) *d*=0.06 (females)
Think, Feel, Do (UK) (Stallard et al., 2011)	'cCBT intervention for children and adolescents with depression and anxiety'	11-16 yr olds (depression & anxiety) (n=20)	6 sessions (30-45 min each) on CD-Rom.	Pilot RCT comparing CCBT to wait-list control.	The Adolescent Well Being Scale (AWS) pre & post mean data are not provided (significant ↓ in depressive symptoms reported $p<0.05$).	*d* cannot be calculated

[18] Aim of the intervention as described by the researchers.

[19] The CES-D scores of males randomized to MoodGYM were 2.64 points lower than wait-list control males at post-intervention, with an effect size of 0.43.

[20] Van Voorhees et al. (2009) is a 12-week follow-up study utilising the same participants as Van Voorhees et al. (2008).

Development of SPARX

Rationale for the development of SPARX

The majority of young people with depression do not receive treatment (Kataoka et al., 2002; Mariu et al., 2012) and even if all of their unmet therapy needs were detected, mental health workforce shortages would mean that many young people would still remain untreated (Mental Health Commission, 2001, 2004; Ramage et al., 2005). The challenge then, is finding a way of overcoming these barriers in order to deliver effective therapy to young people with depression. Computer-based therapies offer one means of rising to this challenge, because computer games and technology appeal to today's 'digital natives' (Prensky, 2001). From its inception, SPARX was intended as a CCBT resource that could be used nationally, even in remote and socio-economically disadvantaged areas, as the first step in a stepped care treatment approach (Merry et al., 2011). CCBT holds much promise for the treatment of depression, however prior to 2008 MoodGYM was the only CCBT program that had been formally evaluated with adolescents. This program was delivered in a format similar to an online manual and as a consequence may not have been particularly engaging resulting in poor completion rates. Low completion rates had previously been identified as an issue with CCBT (Waller & Gilbody, 2009). SPARX was to be different; it was conceptualised as a CCBT program delivered in a 3-D animated game-like format. It was hypothesised that by providing CCBT in this potentially more appealing way young people would be more likely to complete treatment.

The funding of SPARX

The use of computers to deliver CBT for the treatment of depressive symptoms in New Zealand adolescents has been the subject of a doctoral thesis by Karolina Stasiak (under the supervision of Associate Professors Simon Hatcher and Sally Merry). In this pilot RCT 34 secondary school students with depressive symptoms were randomised to CCBT or a placebo intervention (psycho-education). Results from Dr Stasiak's pilot were encouraging with large effect sizes and good uptake noted (Stasiak, 2008). As a consequence of these positive findings funding from the New Zealand Ministry of Health was obtained to develop SPARX utilising feedback from Dr Stasiak's piloted resource ('The Journey'). This provided me with an opportunity to contribute towards the development of SPARX, to develop the Rainbow Version (by incorporating material relevant to sexual minority adolescents) and to evaluate CCBT with sexual minority youth.

The content design group

The content design group (led by Associate Professor Sally Merry) was responsible for the development and design of SPARX's content. Throughout 2008 the group met on a weekly basis with representatives from Metia Interactive (a computer game development company) to discuss the progress and development of SPARX. Each member of the content design group (i.e. Dr Karolina Stasiak, Dr Matt Shepherd, Theresa Fleming and I) led the development of at least one level of the program, under Associate Professor Sally Merry's supervision. I was allocated levels four and five (the Mountain and Swamp provinces) for more detailed development. Two Beck Institute trained clinical psychologists (Tania Cargo and Dr Andrea Green) also audited SPARX's CBT content and assisted in further refining the resource. Throughout the development process, feedback from youth

and cultural advisors was used to improve the program (Merry et al., 2011). This feedback was obtained via youth focus groups and with the help of Māori and various other cultural advisors during face-to-face meetings. Six SPARX focus groups were facilitated with 45 senior high school students and a cultural advisory group (led by Kaumātua[21] Rawiri Wharemate) met quarterly during the development phase of SPARX in 2008 and 2009 (Merry et al., 2011).

E-learning constructs

SPARX was designed to be an adolescent self-help resource and we used relevant e-learning philosophies and strategies in the development of SPARX's content (Merry et al., 2011). Dr Iain Doherty (Director of the Learning Technology Unit, Faculty of Medical and Health Sciences, University of Auckland) provided the Content Design Group with the relevant expertise needed to ensure that pertinent e-learning strategies were successfully applied (Merry et al., 2011). In an earlier prototype of SPARX, users of the program were carefully guided through mini-games, with full explanations provided to ensure that there was no ambiguity with regards to what a user was meant to do. However, this proved to be unsatisfactory, as young people found this approach 'boring'. Instead, Dr Doherty suggested the use of an 'ill defined problem' in mini-games, where users were required to use cues within the program's environment to appropriately problem solve and overcome challenges. As a result of this change SPARX became more engaging.

Overview of SPARX

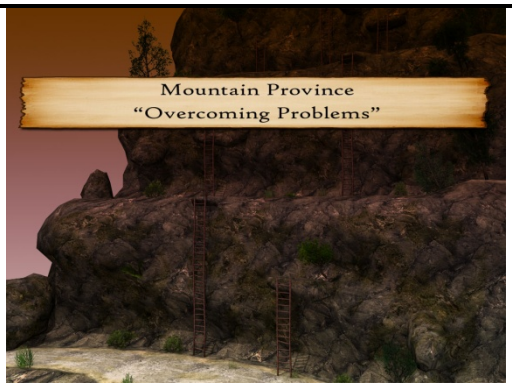
SPARX is a 3-D animated program where users learn skills to manage their depressive symptoms whilst simultaneously ridding a fantasy world of the gloom that has descended upon it (Merry et al., 2011). SPARX also uses gaming technology (e.g. mini-games) to engage users. Each of the seven levels of SPARX has a direct teaching component where skills from the fantasy world are applied to a real life context (Merry et al., 2011). Content from earlier levels is built upon in subsequent levels and all levels use core CBT skills and homework tasks to allow practise and facilitate generalisation (Merry et al., 2011). Bicentric frames of reference were used in SPARX (Salzman, Dede, & Loftin, 1999), as this allowed users of the program to alternate between the egocentric ('details in the information') and exocentric ('concerning the big picture') frames of reference (Salzman et al., 1999). For instance, every level began with the Guide character greeting the user and reviewing the content covered in the last level they completed (i.e. exocentric frames of reference), the user then enters the fantasy world and their avatar completes a mission (i.e. egocentric frames of reference), after which the Guide explains the significance of the challenge and how it applies to real life (i.e. exocentric frames of reference).

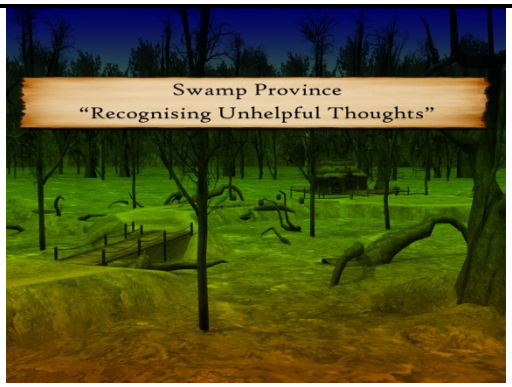
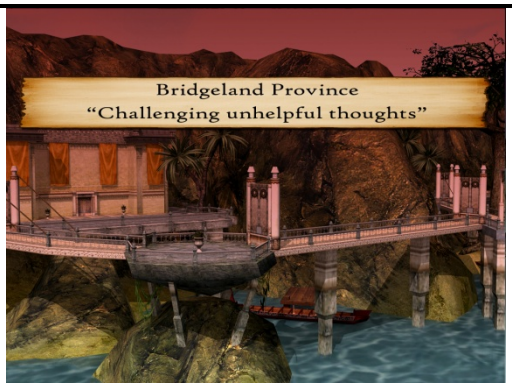
SPARX is delivered on CD-Rom and it comes with a notebook. The notebook contains a short summary of each level and has spaces available for users to record their own thoughts and comments about each level of SPARX.

[21] A respected Māori tribal elder, who is appointed by his people to guide and teach others, especially in relation to Māori language and customs.

The seven levels of SPARX contained certain CBT concepts and the physical appearance of each level reflected its content and was a metaphor for the concepts covered. For example, level four was the 'Mountain Province' and users were required to apply problem solving skills in order to climb a mountain in that particular level (see Table 8).

Table 8. Summary of SPARX content

Level	Title	Core Skills
Level 1		• Introducing Gnats (Gloomy Negative Automatic Thoughts or unhelpful thoughts) • Installation of 'Hope' (people recover from depression) • Breathing and relaxation • Psycho-education about depression and overview of the CBT model
Level 2		• Basic communication and interpersonal skills • Activity scheduling and behavioural activation • Progressive muscle relaxation • Introducing 'problem solving'
Level 3		• Dealing with strong emotions like angry and hurt feelings • Assertiveness • Negotiation skills
Level 4		• Problem solving (using 'STEPS')

Level 5		• Recognising various Gnats
Level 6		• Learning to challenge or swap Gnats using RAPA (R=Reality check; A=Another view; P=Perspective; A=Action)
Level 7		• Putting the skills together • Mindfulness – tolerating distress • Knowing when to ask for help

Adapted with permission (from Merry et al., 2011)

Throughout the development phase of SPARX the Content Design Group worked collaboratively with young people from the greater Auckland region who were involved in SPARX workshops, focus groups and testing sessions during 2008 and 2009. The feedback obtained from these young people then assisted us in refining and further improving prototypes of SPARX. Sexual minority youth were consulted separately, using focus groups to determine whether a specially adapted version of SPARX for sexual minority youth was warranted. A separate version of SPARX was thought potentially relevant and appropriate, given that sexual minority youth may have requested additional content, and this content might not have been applicable or appealing to heterosexual/opposite-sex attracted youth. Study Two documents the process of using the results from three focus groups to develop a separate CCBT program for sexual minority youth (called SPARX: The Rainbow Version).

Strengths and advantages of SPARX – relative to other CCBT programs

As previously stated, SPARX was created following on from Dr Stasiak's prototype CCBT resource 'The Journey'. In creating SPARX, we sought to improve upon previous CCBT programs for adolescent depression, especially in relation to three key areas:

1. Developmental appropriateness;
2. Therapeutic engagement; and
3. Cultural relevance.

1. CCBT programs for adolescents need to be developmentally appropriate for young people. In early 2008 when SPARX was being developed, no self-help CCBT programs had been specifically developed for and formally evaluated with adolescents who had depressive symptoms. MoodGYM had been evaluated in 2006 (see Table 7), but was originally developed for adults. Programs originally designed for adults and then tested with adolescents, may be unappealing for young people (Merry et al., 2011). Adolescents may have difficulty relating to 'adult issues' (e.g. stressors in the workplace). Instead, programs for young people should include issues more topical and relevant to young people's lives such as school performance, peer pressure and conflict with parents (Merry et al., 2011). The presentation of content in CCBT programs designed for adults includes mature language and expressions leading to possible comprehension problems for adolescents. For example, in MoodGYM, Elle (a character in the program) provides an example of a 'warped thought' that might be hard for a young person to comprehend or relate to (i.e. "…my failure to buy at the top of the market is just about the worst thing that could possibly happen to me. It has huge repercussions for my life and that of my children…"). Adolescent-specific CCBT programs need to have complex concepts simplified (e.g. in SPARX, cognitive restructuring is explained using the 'RAPA[22] key' in an interactive game where gates are unlocked in the Bridgeland Province, after this game the concept is put into a 'real life' context by the Guide character), otherwise young people may have difficulties understanding and applying the therapeutic techniques (Merry et al., 2011).

2. CCBT programs for adolescents need to be engaging. A systematic review concluded that completion rates for CCBT are low, with 56% of participants actually completing a full course of treatment (Waller & Gilbody, 2009). The reasons for non-completion are not clear (Waller & Gilbody, 2009), but SPARX's content design group hypothesised that completion rates could be improved upon by creating an 'attractive' and 'engaging' CCBT program. Earlier CCBT programs have consisted of reading large amounts of text and/or took a long time to complete making them potentially unappealing to adolescents (e.g. each session of Master your mood Online is 90 minutes long and CATCH-IT consists of 14 sessions). The content of SPARX was delivered in a game-like format, and only one other CCBT program has been provided in this way (i.e. Reach Out! Central). With the 3D game-like format, and eye-catching imagery,

[22] RAPA = 4 steps to swap a thought. R = Reality Check (How do you know your thought is true)?, A = Another View (Is there another way to think about it?) P = Perspective (Is it really as bad as you think?) A = Think 'ACTION'! (Think solutions, not problems).

we hoped that SPARX would appeal to young people (Merry et al., 2011). We considered it was important to ensure that the CBT message was not lost in the game, and that the game included enough "intrinsic motivators" such as the story line, increasing challenges from the gaming aspect, and cumulative accomplishments to encourage young people to return to the program. We noted that although Reach Out! Central had a game-like design, at times we found it difficult to follow the game or to understand the underlying messages, and indeed the uptake of this online resource has been disappointing (Calear et al., 2009; O'Kearney et al., 2006; O'Kearney et al., 2009).

3. Māori young people are at particular risk of depression and have considerably more difficulties accessing care compared to Pākehā/New Zealand European youth (Clark et al., 2008). It was therefore important to try and ensure that SPARX would appeal to Māori and be acceptable to Māori young people (Merry et al., 2011). Dr Matt Shepherd (a Māori Research Fellow and doctoral candidate) was part of the content design group; he facilitated focus groups with Māori during the development phase of SPARX and evaluated SPARX amongst Māori young people and their whanau/families as part of his doctoral thesis. In addition to Dr Shepherd's input, Rawiri Wharemate (our Kaumātua), Tania Cargo (a Māori clinical psychologist who is Beck Institute trained) and Maru Nihoniho (who is a Māori game developer and director of Metia Interactive) provided cultural expertise and helped to make sure that SPARX was acceptable to Māori young people. In order to ensure applicability to all young people in New Zealand, including Pacific and Asian adolescents a cultural advisory group including Māori, Pacific and Asian advisors, and young people of all ethnicities contributed to the development of SPARX.

Developing SPARX: The Rainbow Version

Aims

I used a mixed methods research design in this study; I employed both qualitative and quantitative research techniques, methods, approaches and concepts (Johnson & Onwuegbuzie, 2004). The study was primarily qualitative as I was mostly interested in discovering and exploring participants' perspectives to determine:

1. The unique challenges facing sexual minority youth and whether or not some or all of the identified issues should be addressed in a CCBT program.
2. What participants thought about the design, characters and scenarios in prototypes of SPARX and to elicit their ideas as to how SPARX could be improved for sexual minority youth.

Focus groups (as opposed to individual interviews) were utilised so that the views of multiple participants could be obtained simultaneously and because it is thought that the interactions between participants would provide rich data (Heary & Hennessy, 2006).

Quantitative and qualitative data were also obtained via a post group questionnaire. The post group questionnaire was used to check that the group milieu was conducive to open and free dialogue. This

was deemed important as a non-threatening and open environment is thought to maximise group interaction (Heary & Hennessy, 2006). The focus group questionnaire also sought to:

- Gather demographic data about the focus group participants;
- Provide participants with an opportunity to rate the prototype quantitatively; and
- Provide some additional qualitative feedback about SPARX in written form.

Methods

Focus group recruitment

As most secondary school students attracted to the same or both sexes in New Zealand have not disclosed their sexuality to others (Rossen et al., 2009) and participants under the age of 16 years old would have required parental consent to attend a focus group (potentially forcing younger participants to come out as a result) only participants over the age of 16 were included in this study. Initially young people (aged 16 to 21 years old) from Rainbow Youth[23] and UniQ[24] were invited to participate in focus groups to inform the development of Rainbow SPARX at three crucial times during the development of the program. However, it proved difficult to recruit participants and there was a great deal of interest from queer youth workers and young adults interested in helping sexual minority youth so the age range was extended to allow their inclusion.

Potential participants were recruited via youth workers and volunteers at the Rainbow Youth Centre, from a notice placed on the Rainbow Youth website and by promoting the focus groups in-person at Rainbow Youth's social groups in the central city and on the North Shore of Auckland. The first two focus groups were planned for the early evening when no one else was to use the centre on dates recommended by the Chairperson of the Rainbow Youth Board.

A third and final focus group was initially planned at the Rainbow Youth Centre in October of 2008; however, staff at the centre indicated that there would be insufficient interest in this group as almost everyone over 16 years old had already been invited to or attended one of the focus groups, or they were busy studying for their school or university examinations. Therefore tertiary students from the University of Auckland's branch of UniQ were recruited for the third focus group. An email was sent to all UniQ members and this was followed up with a visit to UniQ's Thursday afternoon coffee group meeting where I further promoted the focus group. The final focus group was planned at a time and date that suited the participants in a private room at the Department of Psychological Medicine, University of Auckland.

Focus group facilitators

I facilitated all three focus groups with the support of two female co-facilitators, Dr Karolina Stasiak and Theresa Fleming. At the time Dr Stasiak was a post-doctoral research fellow and Ms Fleming was a doctoral student and qualified social worker. We were co-developers of the SPARX program

[23] An Auckland-based youth-led organisation for queer young people.
[24] A social group for queer tertiary students primarily based at the city campus of the University of Auckland.

(along with Associate Professor Sally Merry and Dr Matt Shepherd) and were therefore well orientated to and knowledgeable about this computer program.

The two co-facilitators were selected because they were women with youth mental health research experience and it was thought that having both a male and a female facilitator would assist in making the focus groups as comfortable as possible for all the participants. The co-facilitators deliberately took a less active role during the groups which allowed me to lead the focus groups and attend fully to what was being said by focus group participants.

I co-facilitated a focus group for another study with Dr Stasiak at a local secondary school before my first focus group, so that I could observe how to lead or facilitate my own focus groups. I also briefed my co-facilitators prior to my focus groups and encouraged them to ask participants any pertinent questions that they thought I might have missed and to provide me with any feedback on how I could improve any subsequent focus groups.

I was known to most of the focus group participants through my involvement in both Rainbow Youth and UniQ. At the time of the focus groups I was providing clinical supervision to Rainbow Youth's Education Officer and knew two of the Board members in a social capacity, I was also a member of UniQ. All the group participants knew that I was an openly gay man and that I was a PhD student at the University of Auckland. However, only two or three of the participants would have known that I had previously worked as an occupational therapist at Auckland District Health Board's Child and Adolescent Mental Health Service.

Focus group design

At the beginning of each focus group participants read the study's Participant Information Sheet (Appendix B) and signed the associated consent form. During this stage of the focus group I explained the aim of the study and purpose of the focus group. I further explained that the focus groups would be roughly split into two sections:

In Section One participants were actively encouraged to take turns trying out the July, September or October SPARX prototype which was projected onto a large screen so that all the participants could easily observe what was going on. During this interactive part of the session, whilst participants were experiencing the prototype first-hand, the participants were asked questions about:

- The design, characters and scenarios in SPARX (e.g. what they liked about the prototype and what they did not like about it).
- How SPARX could be improved with sexual minority youth in mind.

In Section Two participants were asked about a more sensitive topic, specifically about the unique challenges facing sexual minority youth and whether some or all of these issues should be addressed in SPARX. During this part of the focus group participants were asked to reflect upon their own first-hand experiences of being a sexual minority young person in New Zealand and whether they thought the issues they identified should be addressed in SPARX.

The focus groups were semi-structured, and open-ended questions were used to encourage discussion. Each section started with me asking broad open questions (e.g. *"So what are your first impressions as to how it* [SPARX] *looks?"* and *"What…are some of the issues or unique challenges that same-sex-attracted youth and youth who are questioning their sexuality face in New Zealand today?"*). After the initial broad questions, more specific questions were used in each section to elicit more detailed information (e.g. *"So, any other questions or comments about the characters or the look of the characters?"* and *"So, we have talked about coming out and the problems with that, we have talked a bit about homophobia and how the language people use contributes to that and that is something that is really tangible. Are there any other unique challenges or difficulties that queer young people might face?"*).

The focus groups were actively promoted over a six-month period in Auckland, so that numerous sexual minority youth over the age of 16 years would know about the focus groups. By November everyone over 16 years old from Rainbow Youth and UniQ had been invited to one of the focus groups or had attended a focus group. Hence, for pragmatic reasons, no more than three focus groups were conducted prior to the completion of SPARX: The Rainbow Version and SPARX in March 2009.

The focus groups were audio-recorded and professionally transcribed. The transcripts were then thoroughly checked against the original audio recordings for accuracy. This process highlighted a few minor transcription errors which were corrected before data analysis occurred.

Questionnaire

In addition to participating in the group, participants completed a questionnaire about their views on the focus group and the SPARX prototype at the end of the session (see Appendix C for details). The questionnaire was brief and consisted of: three Likert scales rating the look and style of SPARX, SPARX's content, and how freely participants felt they could express their opinions; four free-text spaces so participants could elaborate upon responses; and two closed questions, one asking whether or not participants had "suffered from feeling down or [had been] low for more than a few days in a row" and the other asking "If you were feeling down, would you use a resource like this?". Participants were also asked to provide demographic data including their age, a free-text description of their gender/gender identity and ethnicity and a circled response in relation to their sexual identity. A questionnaire item pertaining to sexual identity was used as obtaining this sensitive information during group discussions seemed inappropriate.

Focus group analysis

Thematic analysis based on the general inductive approach was utilised to investigate common themes, points of agreement/disagreement and interrelationships between themes from the focus groups as well as from the free-text responses on the questionnaire (Thomas, 2006). This approach was selected as it allows the inherent "frequent, dominant or significant themes" (Thomas, 2006, p. 3) to be identified from the raw data. This method was also adopted as it is a straightforward approach to qualitative data analysis and it allowed me to be guided by the specific areas of research interest without being restricted by the restraints imposed by structured methodologies (Thomas, 2006). NVivo8 software was used to manage the data and support the thematic analyses.

In thematic analysis it is important to be clear about what constitutes a pattern or a theme (Braun & Clarke, 2006). In this analysis I considered a theme to be important if it captured something of conceptual importance in relation to the overall research aims (Braun & Clarke, 2006).

After reading and re-reading the transcripts several times, data across the three focus groups were coded. One of the co-facilitators (Theresa Fleming) reviewed a random sample of three or four pages of uncoded transcripts (equivalent to 10% of each focus group) and independently coded these excerpts. Ms Fleming's coded excerpts were then compared to my original coded transcripts. This accuracy check identified some minor discrepancies in interpretation and naming of codes and these were resolved through discussion. For example, Ms Fleming identified some codes as possible sub-themes of a larger theme, whereas at this point in time I had not started to name or link the themes or describe any relationships.

Codes were then collated into potential themes, after which themes were developed and checked against the other themes and back to the original data set. Another independent researcher familiarised herself with the transcripts and then provided feedback on the definitions and names for each theme, resulting in changes to the names of two themes. A preliminary summary of themes was also sent to focus group participants for feedback. Most participants did not provide feedback and the two who did made no suggested changes.

Quantitative data from the focus group questionnaires were analysed using descriptive functions of SPSS 15.0. Free-text comments from the questionnaires were analysed using thematic analysis aided by NVivo8 software.

Focus group ethics

Approval for this study was given by the University of Auckland Human Participants Ethics Committee (reference 2008/078). As participants under the age of 16 years old would have required parental consent to attend a focus group (potentially 'outing' most of the younger participants as a result) only participants over the age of 16 were invited to attend the groups. Each participant received a $20 Westfield shopping voucher as a gratuity for their input.

Results

Focus group participants

The focus groups were conducted in July, September and October of 2008 and lasted from one hour and fourteen minutes to one hour and twenty-eight minutes. Young people from Rainbow Youth participated in the first two focus groups and these were conducted at the Rainbow Youth Centre in central Auckland. Students from UniQ participated in the third focus group and this was conducted at the Department of Psychological Medicine, University of Auckland. A total of nine people attended the three focus groups, with one participant (Nel) attending two of the groups. Five of the participants were adolescents between the ages of 16 and 18 years old, the remaining four participants were young adults between the ages of 22 and 27 years old (mean age of all participants = 20 years). Initially only participants aged 21 years old or younger were sought for the focus groups; however, two adult volunteer workers from Rainbow Youth (Denise and Kirk) were very keen to attend the first focus group and their input was deemed valuable, hence the age range was extended accordingly. Participants in the third focus group were understandably older than the Rainbow Youth participants as they were undergraduate university students from UniQ. An 18-year-old male participant planned to attend Focus Group Two, but did not do so despite confirming that he would. Slightly more females than males participated in the focus groups and the participants were an ethnically diverse group. However the majority were still New Zealand European (five participants) with the remainder being "Māori Euro", "NZ Indian", "Pacific Islander" and "Asian". To ensure that participants can not be identified they have been given pseudonyms and their ethnicity information has not been presented in Table 9. Therefore, the table only summaries the gender/gender identity, age and sexual identity information for each participant.

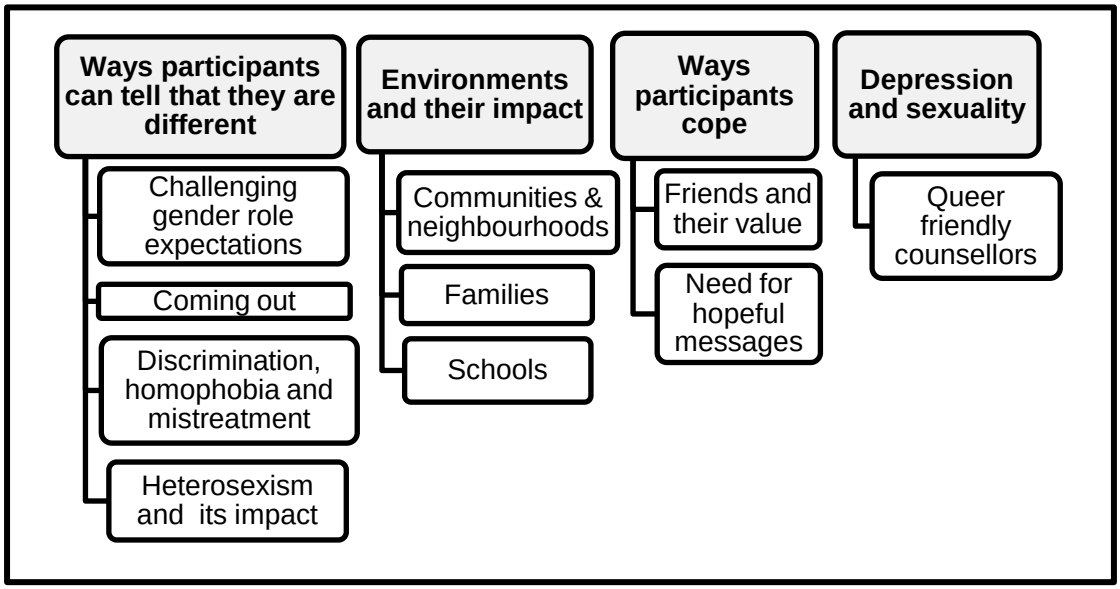
Table 9: Focus group participants' demographic information

Focus Group	Name	Gender/Gender Identity	Age	Sexual Identity
1st	Razz	*"Male"*	16	Gay
1st & 2nd	Nel	*"Female"*	17	Lesbian
1st	Denise	*"Lesbian"*	26	Lesbian
1st	Kirk	*"Male/Gender Queer"*	24	Gay
2nd	Kate	*"Female"*	18	Lesbian
2nd	Charlotte	*"Female"*	18	Bisexual
3rd	Steve	*"Gay Male"*	27	Gay
3rd	Matt	*"M"* (i.e. Male)	18	Gay
3rd	Jo	*"Female"*	22	Lesbian

Issues participants face and addressing these in SPARX

There were four main themes in relation to the unique challenges facing sexual minority youth and whether or not these issues should be addressed in SPARX. The most dominant theme was "Ways participants can tell that they are different" and this theme could be divided into four additional sub-themes; "Challenging gender role expectations", "Coming out", "Discrimination, homophobia and mistreatment" and "Heterosexism and its impact". The next most prominent theme was "Environments and their impact" and this theme could be further divided into three sub-themes; "Communities/neighbourhoods", "Families" and "Schools". The third theme was "Ways participants cope" and this could be broken down into two sub-themes: "Friends and their value" and the "Need for hopeful messages". Finally, the last theme was "Depression and sexuality", with an associated sub-theme "Queer friendly counsellors". Figure 1 below summaries the four main themes and their associated sub-themes.

Figure 1. Issues participants face and addressing these in SPARX



Ways participants can tell that they are different

Challenging gender role expectations

Several participants described challenging established gender role expectations, for example Razz described a life-time of gender variant behaviour:

> *"…I used to play with Barbie dolls and I always had girl mates and I always played netball. I never did boy things."* Razz (16 years old)

Some of the participants appeared to take pride in challenging gender role expectations. In Focus Group One Razz (16 years old) declared *"I wear dresses"* and Jo (22 years old) was proud of her Mohawk hairstyle in Focus Group Three. However, participants were aware that this might result in negative comments. Nel described how people might react if a male picked the 'female backpack' for their Avatar in SPARX:

> *"'Oh my God, that backpack looks so fabulous', but in a mean way, but it would be like, only a girl should wear that backpack or something like that."* Nel (17 years old)

Participants suggested that it was not sexuality per se (as long as you do not disclose your sexuality) that resulted in mistreatment or negative comments, but gender non-conformity:

> *"…if a guy has just a feminine hint to his voice or something then everyone is going to be like 'oh my God, he's gay', but he is not. Or if a girl likes playing sports and wears track pants and stuff all the time and she's assumed a lesbian, she'll get crap. But you could have one of the fem, popular girls who are stereo-typically straight; she won't get any trouble for being a lesbian because she is not out kind of thing."* Nel (17 years old)

Coming out

Participants also had to deal with the process of coming out. In all three groups this was seen as a risky process, especially for younger people, who may then have been forced out of home:

> *"I have known a lot of people that were kicked out of home for coming out, especially if you are young because if you don't have close ties to your extended family or if your extended family are as homophobic as your family then you really have nowhere to go. And if you are young your peers are also young and they're living at home with their family. How can you say 'my friend needs to come and stay because…' It just doesn't happen like that when you are young."* Kirk (24 years old)

Focus group participants recommended that young people considering coming out did so once they were well supported and that they only disclosed this information to people that they could trust. Razz (16 years old) shared his experience of trusting the wrong people.

> *"…I thought I could trust people, because I trust pretty easily and I trusted people and told the wrong people and it spread like wild fire."*

Coming out was viewed as a means of addressing heterosexist assumptions (this sub-theme is mentioned again later under 'heterosexism and its impact'):

> *"I actually find it better to be out…I absolutely hate the idea that people are assuming I am straight, because I am not and 'cause people do assume that you are and that is annoying."* Charlotte (18 years old)

However, Matt (18 years old) thought coming out was something that he did not have to do and depended on the situation or context:

> *"I don't really see coming out as something that I have to do. If I want to do it, if it is convenient and [if it] is going to help me* [I'll come out]. *I don't just have to come out."*

There was some debate about whether or not it was a good idea to come out in one's teen years. In Focus Group One, Nel (17 years old) stated, "*I felt I lost my teen years because I did come out."* In contrast Kirk (24 years old) believed that "[I] *lost my teen years even though I didn't come out."*

Kirk: *"For me, I didn't come out until last year in October and I was twenty-three and I had to wait until I was out of home, financially secure, had a decent group of friends that I felt supported by before I could even fathom telling my parents…But in saying that after I have come out and they are okay with it and it is a non-issue, I felt if only I had done it when I was younger. Then I would have been like these guys and just enjoy my teen years being out instead of being in the closet because that was just the worst experience."*

Nel: *"But then in saying that on the other end of the spectrum I came out and I lost my teen years because I had to grow up. I had to get a job and find my own place to live and support myself."*

Discrimination, homophobia and mistreatment

Another way in which participants could tell that they were different was to do with the discrimination, homophobia and mistreatment that they faced. For instance (as mentioned previously) not having somewhere to live after coming out or the negative comments they received from others. A notable example being the use of *"that's so gay"* to denote that something was "lame" or stupid or outright derogatory comments like *"fag"* or *"bloody homo".* Several participants gave specific first-hand examples that included being subjected to 'gay jokes' in a workplace, not being able to take a same-

sex partner to a school ball and outright physical abuse. Razz's (16 years old) experiences after coming out in the South Island stood out:

> *"My house was right next to an alleyway. I used to be scared and every time I came home from school or work I would be scared to go down the alleyway because there were a whole bunch of guys waiting for me in the alleyway and my house was right next to the alleyway. And like every time I was screaming out for help and the neighbours didn't even come over, even my blimming mother wouldn't come outside."*

A participant noticed that all the characters in SPARX were pleasant and that this appeared to be at direct odds with the real-life experiences of focus group participants. As a result she suggested that 'bad people' be present in SPARX so that sexual minority users of the program learnt how to deal with them.

> *"…Everyone you have met has been like 'I want to help you' kind of thing. Whereas not everyone is like that, so you would be like 'why is everyone being nice to me?'… You do meet a lot of bad people* [in real life] *and if it came across in a game it is like 'oh, my God, there are still bad people in the game'*. [But] *You find a way to deal with that."* Nel (17 years old)

Heterosexism and its impact

Another way in which participants could tell that they were different was to do with people's heterosexist assumptions. During Focus Group Two Nel, Charlotte and Kate all gave first-hand accounts of people assuming that they were heterosexual and refusing to believe that they were anything other than heterosexual.

> *"He* [a male peer] *was like 'will you go out with me?'. No. 'Why not?' I don't like guys. 'Oh, how come you don't like anyone?' I didn't say I didn't like anyone, I don't like guys. 'Oh, what so you are a lesbian then?' And I am like yes. He said, 'no, you're not'".* Kate (18 years old)

<u>Environments and their impact</u>

Communities and neighbourhoods

Participants reported that some communities were overtly hostile. Razz in Focus Group One mentioned a small town *"…at the very bottom of the South Island, damn the place"* and the beatings he received after coming out. Certain small town locations with no LGBT community were identified, such as Hawera (in the North Island) and Westport (in the South Island), and their lack of a LGBT community was deemed to be a challenge in itself. Matt and Razz who had lived in small towns thought Auckland was considerably better and Denise (in Focus Group One) highlighted the value of a LGBT community in larger centres like Auckland:

> *"Just connecting in the gay community, the connection is important because then that is the same thing as your family. If family members reject you but you get connected in the gay community then it gives you a sense of belonging that you lose."* Denise (26 years old)

However, certain areas within Auckland were acknowledged as being more 'queer friendly' than other parts of the same city:

> *"…I have a number of friends who have absolutely no qualms about walking down the street hand-in-hand* [with a same-sex partner]. *But there are other people who will only do it in certain areas, particularly K Road. That is the scene you are allowed to do that sort of thing with your partner. But Queen Street – No."* Jo (22 years old)

Some workplace environments were identified as supportive (for example SKYCITY – an Auckland casino complex), whilst other places of employment were seen as unsupportive. Matt also implied in Focus Group Three that certain beliefs might lead to issues for people in religious environments.

> *"…there are things like the Old Testament – it is very anti-gay. I am reading the bible at the moment and I am only up to Deuteronomy and I am sure about two or three times there has already been homosexuality is bad."* Matt (18 years old)

Families

Families varied in terms of how they treated their sexual minority offspring or relatives. For instance, some participants described being treated *"…like crap…"* by parents (i.e. Nel, 17 years old) whilst others described immediate families that were supportive, whereas members of their extended family were less so. In Focus Group Two, Kate and Charlotte both mentioned that their parents appeared to favour their heterosexual siblings:

> *"… they said that they were picking me up from the metro at ten o'clock and I wasn't allowed to stay out later than ten and they were not going to pick me up later than ten because they have to get up early in the morning – it was after GQ* [a Rainbow Youth group]. *And so they picked me up at ten o'clock and my sister gets home at one o'clock in the morning, she is fifteen, after a dance party. And it was fine – they said they would pick her up. And I was like, excuse me! And I am eighteen and she is fifteen…"* Charlotte (18 years old)

However both Kate and Charlotte felt unable to challenge their parents about these perceived double-standards, with Kate (18 years old) believing *"there is an element of guilt to it and it is like, I have caused enough trouble already I should back off*".

Some parents seemed to struggle to accept their child was not heterosexual and made some stereotyped assumptions:

> *"My Mum pulls out this photo of like the Topp twins* [openly lesbian entertainers] *and goes; this is what lesbians look like. You don't look like this! And I was like, but . . . . this is what 'they' look like, how am I supposed to look? You don't know anything about it."* Kate (18 years old)

Schools

School environments also varied considerably. Nel, Razz, Denise, Kate and Charlotte discussed school environments that were not supportive of sexual minority students. Nel (17 years old) mentioned having an unsupportive School Guidance Counsellor when she sought psychological help at her secondary school.

Mathijs: *"And was the high school do you think supportive?"*

Nel: *"No. Not in any way whatsoever. The school counsellor numerous times said 'oh, my god, that* [same-sex attraction] *is so sick'…"*

Kate highlighted that despite staff at her single-sex school being supportive of sexual minority students, it was more difficult for junior students to be out:

> *"I do know that there have been some girls who have had a lot of trouble at high school because they have come out when they are in third or fourth form and it is not so well accepted."* Kate (18 years old)

Ways participants cope

Friends and their value

Seven of the participants described the importance of friendships and the value of a 'gay community'. For instance (as previously mentioned), Kirk (24 years old) felt he needed "*a decent group of friends"* before he could consider coming out to his parents and having like-minded friends seemed to be especially helpful for Kate (18) at her school where she tended to *"hang out with a group where more of us are queer than straight*." However, coming out had the potential to strain or even jeopardise established friendships, with Nel presenting this scenario:

> *"My best friend is gay and we have sleepovers all the time and I sleep in her bedroom – oh, my God, they are going to think I'm her girlfriend kind of thing."* Nel (17 years old)

Both Kirk and Razz suggested that sexual minority youth seriously consider who they could trust when coming out and that they find *"someone who you can build trust with and confide in"* Kirk (24 years old). Charlotte had adopted this cautionary strategy of only coming out to people she could trust whilst at secondary school:

> *"And it was like the only people who knew were the people who told me that they were gay and then I would be like same, but don't tell anybody…because I had no idea how anybody would react because it just wasn't something that was openly talked about."* Charlotte (18 years old)

Need for hopeful messages

Some participants appeared to cope with life's difficulties by remaining hopeful or positive. For example, *"Life can be good"* (Kirk, 24 years old), *"No matter what happens to you, you don't have to take the dark path…Not losing hope"* (Nel, 17 years old). Participants suggested that SPARX somehow delivers this hopeful message, with Nel giving a first-hand account of how life could get better:

> *"I got kicked out of home, I had nowhere to go, I was in a whole new town and I am in my first year at Auckland University* [now]. *I have aspirations to do my PhD in psych and stuff..."* Nel (17 years old)

Depression and sexuality

Two participants mentioned their first-hand experiences of being depressed and this was linked to coming out or the homophobia, discrimination and mistreatment that they faced. Denise in Focus Group One stated:

> *"Depression among young people is such a big thing because I didn't go through depression last year but when I was coming out, it takes a while, I was a bit sad for a while."* Denise (27 years old)

In the same focus group Razz mentioned becoming depressed, seemingly in response to the homophobia, discrimination and mistreatment he faced:

> *"…I lived there* [with his mother in the South Island] *for a year and that's when I went through my depression. And I faced everything like beatings, discrimination, not even being able to get work because of who I was."* Razz (16)

Queer friendly counsellors

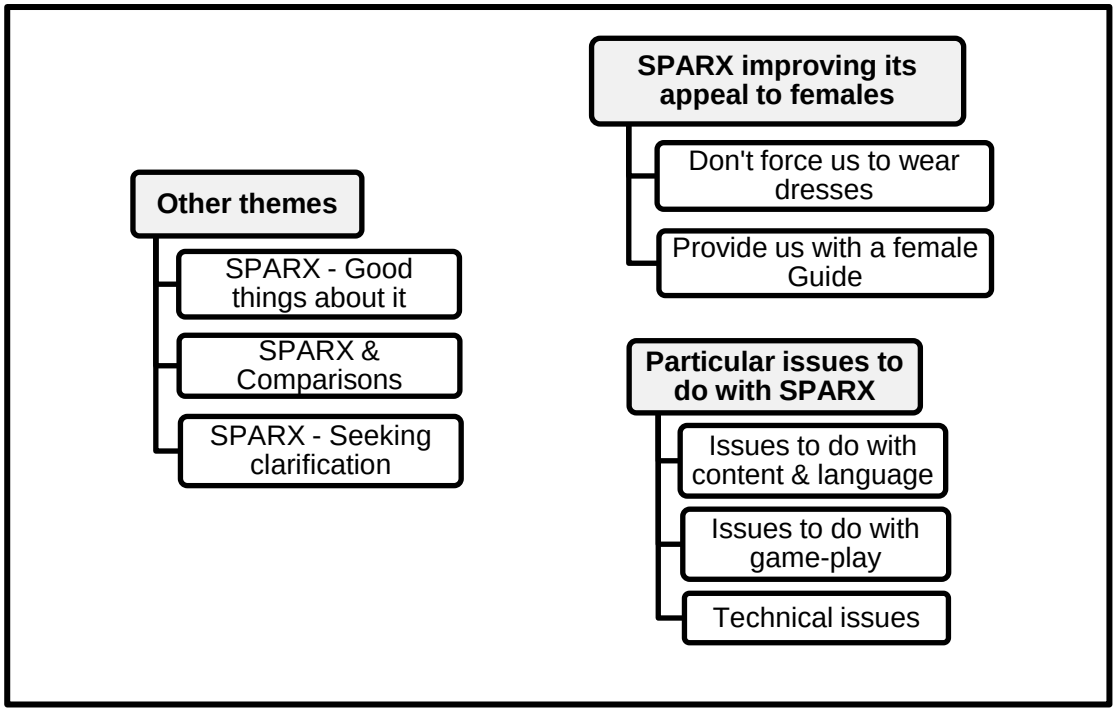
Denise thought that this PhD project had the potential to improve the quality of psychological services offered to sexual minority young people with depression:

> *"…I'm aware from a psychological point of view that there is not actually a lot of queer friendly counsellors so could you take the statistics from this of how much people are needing queer friendly counsellors and use it to maybe implement better gay and lesbian counsellors in New Zealand?"* Denise (26 years old)

SPARX and its applicability

Several themes emerged in analysis in relation to the design, characters and scenarios in SPARX and suggestions on how SPARX could be refined for sexual minority youth (see Figure 2 below).

Figure 2. SPARX and its applicability



Other themes

SPARX - Good things about it

Positive feedback about SPARX could be divided into three broad areas: positive comments about the look and feel of SPARX; positive comments about one's ability to be gender non-conformists in SPARX; and positive feedback about the concept of CCBT.

Positive feedback about the look and feel of SPARX included rather general comments, such as *"It looks fantastic"* Denise (26 years old) and specific feedback; *"I like the RPG* [role-playing game] *theme"* Matt (18 years old).

Participants thought that customization of the avatar (amongst other things) allowed for self-expression and gender non-conformity and this related to the theme of challenging gender role expectations (discussed earlier in this chapter). For instance:

> *"I think it is a fairly good idea to have it so that you can customise it* [your avatar]. *It is a way of expressing yourself…if someone wants to go and have a guy and wants to give him a pony tail it is up to them but they are not going 'this is stink, I can't do that'."* Kate (18 years old).

Finally, participants provided positive feedback about the concept of CCBT and the nature of the PhD project. Kirk (24 years old) thought that having a fantasy role-player game like SPARX would be

useful as young people would likely be *"more receptive to it because it is a game, it is something you would enjoy instead of having someone like just blah, blah, blah at you."* Nel (17 years old) provided positive feedback but also implied that SPARX would not be suitable for more severely depressed young people, *"And then again it is the level of severity of depression. If this game is only for people with mild or moderate depression…It's like oh cool."*

SPARX and comparisons

Participants compared SPARX to other computer games and to popular culture. In particular, participants compared the look and feel of SPARX to computer games like The Sims, Prince of Persia, Tomb Raider and Pokémon games. Jo talked about a game called Spyro and how SPARX could adopt the same subtlety to deliver key messages:

> *"It reminds me vaguely of computer and play station games such as Spyro where the games are very subtle. I was playing one game one day and I was like this could so be an underlying message, I don't think it was, but in terms of the language that they used they were basically overcoming problems and as you go through in Spyro in particular, you are collecting gems and power beams or light gems. And basically you are ridding the world of the evil that is out there. And this game* [SPARX]*, as I said, seems vaguely similar to it. So perhaps if you maybe look at some of the language they used to make it more subtle and allow people to read into things more."* Jo (22 years old)

Razz and Matt thought that SPARX had an *"anime[25]"* look and feel, with participants in Focus Group Two even customising their avatar to look like a character from Dragon Ball Z (a Japanese cartoon series which was popular in New Zealand in the late 1990's). One other noteworthy reference to popular culture was made, with Nel (in Focus Group One) expressing scepticism about the use of celebrities to reinforce certain key messages.

Mathijs: *"At this stage it looks like famous New Zealanders talking about their experiences of depression* [will be used in SPARX]. *You* [Nel] *had an expression on your face? Tell me more about that?"*

Nel: *"Sorry. I have done the whole DBT* [Dialectical Behaviour Therapy] *program twice through now, so I am just a bit sceptical."*

Mathijs: *"In terms of video clips?"*

Nel: "*Yes. Because you see a famous person and it is like oh yeah, you've really got it easy. I just got kicked out of home or something and it is just like yes, I played rugby* [in reference to John Kirwan, a former All Black who has publicly discussed having depression] *and now I am not depressed."*

[25] Animation originating in Japan.

SPARX – Seeking clarification

Participants asked numerous questions about SPARX and these questions could be grouped into four main categories; technical questions, questions about SPARX's look and feel, general questions and questions about the target audience for SPARX. The first general category of questions were technical in nature:

> "[Is SPARX]…*going to be brought out as a PC or like* [a] *PlayStation* [game]?"
> Razz (16 years old)

> *"Is there sound?"* Matt (18 years old) and *"Is it an online game?"* Jo (22 years old)

There were also multiple questions about the look and feel of SPARX, such as:

> *"…was he meant to be Māori* [in reference to the Guide]*?"* Charlotte (18 years old)

> *"What is the thing on the roof* [in reference to a bat in Level One]*?"* Matt (18 years old)

Some questions about the look and feel of SPARX also related to other themes (i.e. there was an interrelationship between themes). For instance, Jo (22 years old) asked a question whilst also challenging gender role expectations (discussed earlier in this chapter):

Jo: *"So basically they have chosen androgynous or unisex hair styles?"*

Mathijs: "*Yes. Some of them* [the game developers] *think the Mohawk is probably more for the guys."*

Jo: "*Have you seen some of the females in Family* [an Auckland queer bar] *lately? I was one of them* [i.e. a female with a Mohawk hairstyle]*!*"

Participants asked general questions which sought to clarify how SPARX would work: *"When someone answers, are there right and wrong answers in the game?"* Kirk (24 years old), or *"So this is getting into more of the therapeutic stuff?"* Nel (17 years old).

Finally, participants asked questions about the purpose of SPARX, which sought to clarify who SPARX was aiming to help. Jo (22 years old) asked, *"Would the game be targeted solely at gay youth or would it be for any youth with depression?"* and Nel (17 years old) in Focus Group One asked *"So is this focus for people who are at school mostly?"*

<u>SPARX – Improving its appeal to females</u>

Don't force us to wear dresses

As they were customising their avatar, female participants summarised the problems inherent with the female character only being able to wear a dress.

> *"…Personally I don't like dresses, that is why I am not having any input in her clothes."* Nel (17 years old)

> *"You can't change the clothing? Because it is like male characters wear this, female characters wear that...Not perhaps so important for the male characters. Maybe I am just saying that because I'm a girl, that to say well you are either a guy or you wear a skirt, is not so great."* Charlotte (18 years old)

The solution posed for the female avatar being forced to wear dresses was straightforward; Nel (17 years old) during Focus Group One stated "…*you could kind of click something and she will be wearing pants and then you click it back and she will be in a skirt.*" Another potential solution was not limiting people to selecting either a male or female character:

> *"Since you are getting this kind of game approach you don't necessarily need to have a human whichever sex. It could be something like a more Pokémon kind of thing which doesn't need any sex."* Steve (27 years old).

Provide us with a female Guide

Only having a male Guide character was another issue identified by female participants. Nel and Jo clearly indicated a preference for a female Guide character, although Jo suggested this might be 'confusing'.

> *"Well, in the game this guy* [the Guide] *is like a kind of mentor telling you the rules and showing you through and I know quite a few girls who would be like I don't want a guy mentor because that really sucks."* Nel (17 years old)

> *"Just from a female's perspective, would it perhaps, it is not that I hate guys, but I would find it easier relating to a female, even if it is only in a game, it could be females experiencing depression who see a male character it is like sexist. Especially if it is a queer and questioning youth, seeing the object of your affection may make things easier. Or it could make it more confusing – that is just an idea."* Jo (22 years old).

Perhaps preferring a female Guide was in part to do with gender power dynamics; as males have historically been placed in positions of authority and the participants wanted to challenge this notion. Or lesbian participants may have preferred to have taken directions from a female authority figure, as Jo stated it is easier for her to relate to females. A solution was suggested for this problem; in Focus Group Three, Jo (22 years old) thought there should be "*A female and a male guide*".

Particular issues to do with SPARX

Issues to do with content and language

Participants highlighted problems and solutions to do with the content, scripting and the language used in SPARX. Specifically they recommended that the language should be in keeping with its fantasy setting, that reading should be kept to a minimum and that it should not be too explicitly a 'depression game' (especially early on in Level One).

> *"Think about the diction, maybe you should make it faux medieval since you have the whole RPG* [role-playing game] *thing."* Matt (18 years old)

> *"I think maybe the language you use could be more suitable to fit the theme of the game…"* Kirk (24 years old)

> *"…Make it more subtle. Once we got to this part of the game it was fine but prior to that I was sitting there and it is nice to know about the levels of depression, but at the same time it would actually put me off it."* Jo (22 years old)

Kate (18 years old) suggested that SPARX should engage with the player sooner, instead of getting straight into 'heavy stuff', *"I think it was a bit heavy at the start to go straight in with the one in six people are depressed. Maybe you could leave that to a question or something at some point…"* Her solution being, *"…at the moment it comes across as if the Guide is giving you a lecture and then you start. Whereas if you choose your character so you have put something into it before you get onto that information then it would be better."* Jo (22 years old) emphasised that some environments are not safe for sexual minority youth and she implied that the users of SPARX should be given information about 'safe havens' in the real world:

> *"… safe haven being gay versus, not so safe haven for being gay – where do I go? In the game it is alright to be yourself but in real life, is there a place that I can be myself?"*

Issues to do with game-play

Participants identified issues to do with game-play, specifically that the mini-games within SPARX were too easy.

> *"…it* [fighting Gnats and releasing the bird of hope mini-game] *was just like click, click, click and they were gone."* Nel (17 years old)

One participant highlighted that the ease in which the negative thoughts/Gnats could be destroyed in the above mentioned mini-game could be interpreted as SPARX implying that getting rid of persistent negative thoughts in real life is easy.

> *"I think if you have it so that the negative thoughts go away really easily, some people that are determined to find problems with it because they are in that state of mind, are going to go 'oh,*

well they are saying it is easy to get rid of negative thoughts' and for them it is not." Charlotte (18 years old)

The solution for this issue was making the mini-games more challenging.

"At this stage it looks like it [fighting Gnats and releasing the bird of hope mini-game] *might need to be slightly more challenging..."* Matt (18 years old)

Technical issues

Participants identified several technical issues to do with SPARX; however for each identified issue participants also generated solutions. For the problem of not knowing how long SPARX would take whilst loading a game level, Kirk (24 years old) suggested *"…some sort of bar that was just telling you when it was filling then you would be like okay it is not that far away*". For the problem of only being able to use the mouse in order to move your avatar, Kirk (24 years old) queried "*Is it too difficult for them to enable it with a keypad?*" Nel (17 years old) thought that the 'incorrect' use of colours could be fixed by "*Maybe more natural colours* [being used] *because it is very off."* And finally the absence of an escape icon/button could be fixed with the use of an 'X box' as suggested by Steve (27 years old) *"Shouldn't there be an 'X' box at the very top right hand corner when they need to exit they just press that?"*

Questionnaire results

All of the participants indicated that they were able to express their opinions in the focus group "half of the time" (a rating of 3 on the Likert scale), "a lot" (a rating of 4) or "totally" (a rating of 5), with a mean rating of 4.4 (SD 0.84). Six participants provided additional comments to explain their Likert scale ratings. Three of those participants commented that the small size of the focus groups was advantageous, one participant wrote *"Easy to express opinions in small group, etc".* Another participant implied that having a group of like-minded sexual minority youth was useful, stating *"I just feel that I can be me".* Only one participant suggested that it might have been difficult to get their opinions heard, stating *"Other people speak most of time".*

In relation to the look and style of the SPARX prototype participants either "liked it" (a rating of 4 on the Likert scale) or "liked it a lot" (a rating of 5), with a mean rating of 4.3 (SD 0.48). Five participants provided additional comments and three of these were positive comments about the program's look and feel, for example *"The game is looking good for its stage".* One participant suggested that SPARX appearance should have less of a Māori influence, stating *"If the game is not specifically target* [targeted] *for Māori group, there is not much point for idea of tui or Māori things".*

Participants were less positive about SPARX's content (i.e. the messages and information designed to help young people with depression). Participants rated that they "liked it a little" (a rating of 2 on the Likert scale), "it was neither good nor bad" (a rating of 3), "liked it" (a rating of 4) or "liked it a lot" (a rating of 5) with a mean rating of 3.5 (SD 0.96). Six participants provided free-text feedback, with two participants recommending that some of the messages be less explicit, for instance one person thought *"Messages perhaps need to be more subtle and not overt".*

Three participants provided additional free-text feedback. All of these comments were positive; for example, one person wrote that the resource was *"Well needed".*

Nine out of the ten participants answered the two closed questions at the end of the questionnaire. Of those nine participants eight stated that they had "suffered from feeling down or [had been] low for more than a few days in a row". This is perhaps not surprising given that the focus group was about advising on the development of a computerised form of therapy for sexual minority young people with depression so it may have attracted individuals with an interest arising from personal experience. Six of the nine participants also indicated that they would "use a resource like this" if they were feeling down with one participant writing that they would "maybe" use it.

Addressing the issues participants raised

As a result of sexual minority participants' input specific changes to SPARX were made. These changes were implemented in order to address the issues participants raised during the focus groups (e.g. technical issues and issues to do with content, language and game-play). A decision was also made to create a separate version of SPARX for sexual minority youth (i.e. SPARX: The Rainbow Version), as it was not possible to fully incorporate all of the suggested changes in the regular version of SPARX[26]. Table 10 summarises the sexuality-specific issues raised by participants and provides examples of how these were addressed in Rainbow SPARX.

[26] A trailer of the programme can be viewed at www.downanddifferent.org.nz

Table 10. Changes made to SPARX in order to create SPARX: The Rainbow Version

Issue raised by participant/s	Examples of how the issue was addressed
Challenging gender role expectations	Customisation options for the male & female avatar became the same (e.g. hairstyles and outfit colours). An option was added to a drag and drop entitled, "Triggers that make me feel angry" - "Being told I don't act like a girl/guy should".
Coming out	Additional options were added when identifying a youth-specific problem e.g. "I worry my friends will reject me when I tell them I'm not straight" and "If I 'come out' to my parents they might kick me out".
Discrimination, homophobia & mistreatment	Users are encouraged to reflect upon how homophobia might have an impact, e.g. the Guide character states "Hearing negative comments like 'that's so gay' for when something is lame or stupid implies that there is something wrong with being gay and if we aren't careful we might start to believe it".
Heterosexism and its impact	"Heterosexism" was added as a geyser in a mini-game where geysers are about to explode (a metaphor for negative emotions having the same potential to explode).
Communities & neighbourhoods	On the 'whiteboard' (which appears several times) the contact details of Rainbow Youth were provided, "Rainbow Youth (www.rainbowyouth.org.nz) can help you get in touch with other similar young people in the Greater Auckland region."
Families	A participant mentioned guilty feelings associated with her sexuality and how this impacted on her family. These guilty thoughts were used as a scenario to help users identify certain negative cognitions in Level Six.
Schools	A school scenario is presented in Level Six "Your friend walks past a group of students who are laughing. Your friend tells you "I bet they were laughing at me, probably because I'm bisexual" and she feels really lousy. What would be your advice to her?"
Friends and their value	For the drag and drop exercise "My Sparks" (positive things about yourself, your future or your life) an additional 'Spark' was added "I am grateful for my friends".
Need for hopeful messages	The Guide character asks "True or False, most gay, lesbian, bisexual and takataapui[27] young people are healthy, happy and lead full lives" (the correct answer being True).
Queer friendly counsellors	For a drag and drop exercise in Level Three "Ways to distract your mind" amongst other options a user could select "Talk to someone who understands (e.g. OUTLINE 0800 688 5463)" (OUTLINE is a free national LGBT phone counselling service).
Don't force us to wear dresses	The female avatar had the option of wearing both the original dress (which had been created in response to cultural consultation for SPARX) and the specially designed trousers in Rainbow SPARX.
Provide us with a female Guide	In an attempt to address this issue the female Mentor character was given higher-status (i.e. as an identifiable wise person and 'spokesperson of the Ancestors') giving the Guide and Mentor similar status in both SPARX and Rainbow SPARX.

[27] A Māori individual who identifies as queer or non-heterosexual.

Discussion

Statement of principal findings

LGB focus group participants from this study reported experiencing discrimination, homophobia and mistreatment in the form of victimization, physical assault and more subtle means (e.g. name calling). Participants could tell they were different because they had either challenged gender role expectations, had come out or had experienced heterosexism. Instead of providing support, several of the participants' families often contributed additional stress, stress that their heterosexual siblings would not experience. As indicated in the questionnaire results, most participants had suffered from feeling down or low, and during focus group discussions some participants directly linked this to coming out or the mistreatment that they faced.

Participants were positive about prototypes of SPARX. This was evident from the qualitative results (e.g. positive comments about the look and feel of SPARX) and the very favourable mean ratings for the 'look and style of the game' from the questionnaire results. Participants were less enthusiastic about the content of the prototypes. For instance, SPARX received a lower mean rating for the item assessing its content from the questionnaire results, compared to the ratings for the 'look and style of the game'. Furthermore, the comments from participants under the themes 'SPARX – Improving its appeal to females' and 'Particular issues to do with SPARX' indicated that further changes to the program were required. Not surprisingly, focus group participants wanted to adapt SPARX to better meet the unique requirements of sexual minority youth and they made numerous suggestions in relation to how it could be improved.

Relevance of current study

I searched the literature and found no other study which has sought to identify the unique challenges facing sexual minority youth and to integrate these into the development of a computerised self-help program for depression.

Strengths and limitations of the study

Strengths of the current study

The study has several strengths. This is the only study to date that has sought the views of sexual minority youth in relation to developing a computerised cognitive behavioural therapy (CCBT) program. I sought to develop a CCBT program in collaboration with young people and effectively they were consultants in the development of Rainbow SPARX. Every effort was made to address the issues participants raised. Utilising the general inductive approach has allowed for an investigation of common themes, points of agreement/disagreement and interrelationships between themes from the focus groups.

Limitations of the current study

This is a small study and the results cannot be generalised to all sexual minority youth or LGB individuals with depressive symptoms, especially as the participants were recruited from queer

organisations, and this is likely to have resulted in a bias because volunteers from 'homophile' organisations are thought to be different to LGB participants undergoing therapy (Bailey, 1999). Ideally more sexual minority youth, from clinical services and non-queer organisations, would have attended each of the focus groups. Small group sizes are often an issue when facilitating focus groups with sexual minority youth (e.g. Lee, 2002) and small group sizes are not uncommon when discussing sensitive topics with hard to reach target groups of young people (Connell, McKevitt, & Low, 2004). However, as indicated by participants in the questionnaire results, the smaller groups created a comfortable milieu, which is important as a comfortable environment is thought to maximise group interaction (Heary & Hennessy, 2006).

Comparisons to other research

Issues reported by participants in the current study have also been described by a large sample of sexual minority youth in Australia in which youth described their experiences using autobiographical stories (Hillier & Harrison, 2004). Studies from outside New Zealand have indicated that certain environments negatively impact on sexual minority youth (Hillier & Harrison, 2004; Safren & Rogers, 2001) and the results from the current study back these findings. I concur with Purcell and colleagues who assert that people who are not heterosexual "present unique political, social, interpersonal, and personal qualities" (Purcell, Campos, & Perilla, 1996, p. 391) and believe that working with sexual minority youth is comparable to working with individuals from a distinctive ethnic culture.

Conclusions

The majority of participants endorsed the use of CCBT for sexual minority youth with mild to moderate depressive symptoms. CCBT has the potential to help sexual minority youth with depression, as it can be completed in private and would be accessible to young people living outside major urban centres with established LGBT organisations.

LGB participants in Auckland identified a number of issues relevant to sexual minority youth, for example, coming out, heterosexism and homophobia and these issues were then incorporated into Rainbow SPARX.

An unexpected positive impact of Study Two was that it appeared to make recruitment of participants for the subsequent studies easier. For instance, several participants in Studies Three and Four were keen to evaluate Rainbow SPARX after hearing about the project from participants in Study Two.

The next logical step after developing SPARX: The Rainbow Version was to evaluate it formally amongst sexual minority youth in New Zealand, and to compare the results to a control group of exclusively opposite-sex attracted young people. This formal assessment of Rainbow SPARX was conducted in two parts, the first part (Study Three) sought to evaluate the program quantitatively, whilst the second part (Study Four) provided a qualitative evaluation of this CCBT resource.

Chapter Four - STUDY THREE (A) & (B)

Quantitative evaluation of SPARX: The Rainbow Version

As discussed in the literature review in Chapter One, and as highlighted in the results of Study One (Chapter Two), there is evidence that sexual minority youth are at increased risk of depressive symptoms and that they experience more difficulty accessing help for emotional worries. In Study Two sexual minority youth reported that they were in favour of a specific CCBT resource, and identified issues of particular relevance that they would like incorporated into such a resource. In an attempt to address these issues a specially modified version of a CCBT program (SPARX: The Rainbow Version) was developed for sexual minority youth with depressive symptoms.

The data used for Study Three (A) were gathered as part of an open trial of SPARX: The Rainbow Version with sexual minority youth. I conducted an open trial, recruiting as many sexual minority youth as possible within the time available, to determine whether SPARX: The Rainbow Version was acceptable and feasible, and to gather efficacy data that could inform a later definitive RCT.

The open trial occurred alongside a randomised controlled trial (RCT) conducted by Associate Professor Sally Merry. The RCT provided me with an opportunity to compare the results of the open trial of SPARX: The Rainbow Version amongst sexual minority youth to SPARX and treatment as usual (TAU) amongst exclusively opposite-sex attracted young people from the RCT.

This chapter is divided into two parts. In Study Three (A) the open trial will be described. In Study Three (B), comparisons are made between sexual minority youth completing SPARX: The Rainbow Version from the open trial (i.e. from Study Three (A)) and exclusively opposite-sex attracted young people completing SPARX or completing TAU from the RCT.

Study Three (A)

Aims

1. To ascertain the acceptability and feasibility[28] of SPARX: The Rainbow Version by assessing uptake and completion rates for sexual minority youth with mild to moderate depressive symptoms.
2. To determine whether SPARX: The Rainbow Version reduces depressive symptoms for sexual minority youth with mild to moderate depressive symptoms and to obtain data that could be used to inform a randomised controlled trial.
3. To gather further information about the acceptability of SPARX: The Rainbow Version via user feedback.

[28] The feasibility of SPARX: The Rainbow Version was determined by the uptake of the open trial. In particular, how many young people expressed an interest in participating in the open trial and how many sexual minority youth were enrolled in the study.

Hypotheses

Primary Hypotheses:

1. Participants attempting SPARX: The Rainbow Version will have good treatment completion rates and treatment satisfaction results.
2. Participants who use SPARX: The Rainbow Version will have decreased depressive symptoms measured on the Child Depression Rating Scale - Revised (CDRS-R) from pre- to post-intervention and this effect will be sustained to three-month follow-up.

Secondary Hypotheses:

1. Participants who completed SPARX: The Rainbow Version will demonstrate improvements on secondary outcome measures of depression and anxiety symptoms, hopelessness and functioning from pre- to post-intervention and these effects will be sustained to three-month follow-up.

Methods

Recruitment

Sexual minority youth with depressive symptoms were identified by youth workers, teachers, school guidance counsellors and health professionals from five sites throughout the Greater Auckland region. It was anticipated that Rainbow Youth[29] would recruit the largest number of participants, and they supported the study by creating a SPARX: The Rainbow Version display area in their drop-in centre and by allowing meetings with their members to promote the study in central Auckland and on the North Shore of Auckland. Four secondary schools supportive of sexual minority youth also encouraged participation in the study; they did so by placing study posters in their guidance department, by inviting selected students to participate or by allowing a study presentation at their school's Gay-Straight Alliance or Diversity Group. Participants enrolled in the study were also encouraged to invite suitable friends to participate and health professionals supportive of the study promoted it to relevant patients/clients. In 2009 the study was advertised in Express (New Zealand's lesbian and gay newspaper) and Gay NZ (www.gaynz.com) and it was endorsed by the sexual minority media in three articles (e.g. in Express, Gay NZ and in the Tamaki Makaurau Lesbian Newsletter).

Originally, when promoting the study, sexual minority youth 'with depression' were encouraged to participate. However, after some weeks it became apparent that potential participants were 'put off' by the term depression (as this was associated with severe depressive symptoms and/or suicidal ideation), hence, with ethics approval, the study was promoted to all sexual minority youth aged 13 to 19 years old. As a result it was made explicit that Rainbow SPARX was designed for sexual minority youth who were feeling 'stressed or low', although participants did not need to have depressive symptoms to take part.

[29] An Auckland-based youth-led organisation for queer young people.

Once suitable participants were identified, I contacted them via email and sent them an information sheet. I then telephoned potential participants so that the study could be explained further, after which a face-to-face meeting was arranged at one of the three ethics-approved localities (i.e. the University of Auckland, the Rainbow Youth Centre and a co-educational secondary school). I ensured that potential participants understood the participant information sheet and that informed consent was obtained from each participant (and when applicable from their parent/guardian) before the pre-intervention assessments were conducted.

Study inclusion criteria

Adolescents were eligible for inclusion in the trial if they were:

- Attracted to people of the same sex, both-sexes or were questioning their sexuality (i.e. sexual minority youth);
- Willing to trial SPARX: The Rainbow Version and provide feedback on it;
- From the Greater Auckland region;
- Aged 13 to 19 years old on the date of consent;
- Able to provide written consent and had parental co-consent if under the age of 16; and
- Proficient in English (i.e. minimum of one year of schooling in English).

Study exclusion criteria

As the primary aim of the study was to assess the acceptability and feasibility of SPARX: The Rainbow Version amongst sexual minority youth; the main exclusion criteria was being exclusively attracted to people of the opposite sex. Sexual minority youth with severe depressive symptoms or at risk of suicide or self-harm could be included, provided they were getting extra help from a school guidance counsellor, therapist and/or general practitioner. Sexual minority youth with an intellectual or physical limitation could also participate if they wanted to do so. Those with any other mental health disorder where the primary focus was not depression could participate, except when this was not adequately treated (in which case they would be encouraged to obtain additional assistance). Finally those receiving antidepressant medication or other relevant therapies (e.g. CBT or interpersonal therapy) were able to take part; these additional treatments were to be documented at the pre-intervention assessment. However, only sexual minority youth who had depressive symptoms at baseline had their quantitative results analysed in the study.

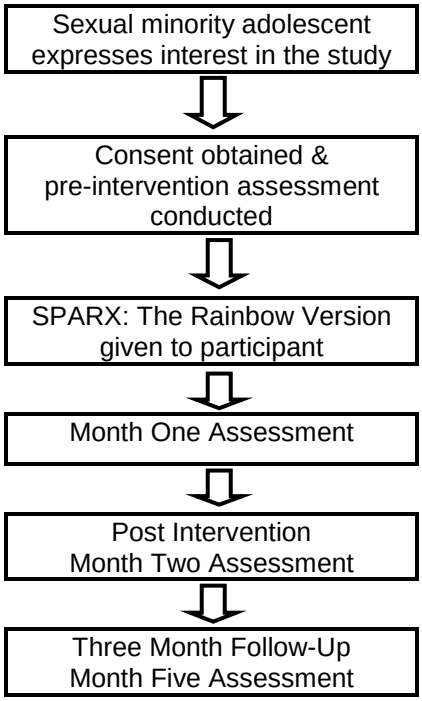
Assessment sequence

After consent was obtained, the pre-intervention assessment was conducted. This assessment consisted of participants' filling in the 'Questions about you' form and my completing the CDRS-R with the young person. All participants then also completed the following self-rated measures: the Reynolds Adolescent Depression Scale (RADS-2), the Mood and Feelings Questionnaire – Long Form (MFQ), the Paediatric Quality of Life and Satisfaction Questionnaire (PQ-LES-Q), the Kazdin Hopelessness Scale (Kazdin HPLS) and the Spence Children's Anxiety Scale (SCAS). After the assessment all eligible participants were given Rainbow SPARX and instructed to complete one to two levels of Rainbow SPARX per week and to finish treatment within one or two months. Participants could choose whether to complete treatment at home, at the Rainbow Youth Centre, at

the co-educational school (where an ethics locality assessment had been completed) or at the University of Auckland.

A brief safety check was conducted either by telephone or face-to-face with participants approximately half way through treatment (Month One Assessment). The CDRS-R and the self-rated measures were then completed again at post-intervention (Month Two Assessment) and at three-month follow-up (Month Five Assessment), approximately five months after participants started treatment (see Figure 3).

Figure 3. Assessment sequence for Study Three (A)



Safety and risk monitoring

The presence of severe depressive symptoms and suicidal ideation were assessed at four separate time points, at the face-to-face appointments (i.e. pre- and post-intervention and at three-month follow-up) and during the brief safety check approximately half-way through treatment.

A participant was categorised as having had an adverse event (AE) if their depressive symptoms worsened using pre-defined criteria (e.g. a CDRS-R raw score ≥76). Moderate (or stronger) suicidal ideation in the previous four weeks also constituted an AE (i.e. a score of 7 on Question 12 on the CDRS-R, or a score greater than 5 on Question 13 on the CDRS-R, or a score of 4 on item 14 of the RADS-2).

Any AE resulted in a participant's general practitioner or school guidance counsellor being promptly contacted and additional support arranged. My primary PhD supervisor, Associate Professor Sally Merry (a consultant child and adolescent psychiatrist) was also informed within 24 hours of all AEs, and for participants under the age of 16 their parent/s or guardians were contacted and informed

about the AE. Participants over the age of 16 were encouraged to discuss the AE with their parents or guardians, so that they could receive further family/whānau support.

Each time a participant completed a level of Rainbow SPARX, the Guide character asked participants to complete a brief mood check. One of the items stated "Over the last week, I've had serious suicidal thoughts". If a participant responded "yes" then the computer program shut down and prompted the participant to get more help from their General Practitioner or School Guidance Counsellor. They were then able to re-start Rainbow SPARX and continue using the program.

Measures

Primary outcome measure – CDRS-R

The Child Depression Rating Scale – Revised (CDRS-R) (Poznanski & Mokros, 1996) is an observer-rated scale based on well-used adult scales but developed specifically for children. It takes approximately 30 to 45 minutes to administer and is easy to use (Brooks & Kutcher, 2001). The CDRS-R has demonstrated sound reliability, validity, and sensitivity to change (Brooks & Kutcher, 2001; Myers & Winters, 2002).

The interviewer assesses a child or adolescent across 17 areas (each item is scored 1 to 7 or 1 to 5), with possible raw scores ranging from 17 to 113 (see Appendix G for details). A total score of 40 (t-score 63) is the cut-off indicating the presence of depressive symptoms (Myers & Winters, 2002), with scores between 44 to 57 (t-scores 65 to 74) interpreted as suggesting that, "a depressive disorder is likely to be confirmed in a comprehensive diagnostic evaluation. Further evaluation should be pursued" (Poznanski & Mokros, 1995, p. 1). Fourteen symptom areas are assessed based on the responses given by the child or adolescent. These items cover impairment of schoolwork, difficulty having fun, social withdrawal, sleep disturbance, appetite disturbance, fatigue, preoccupation with physical complaints, irritability, guilt, low self-esteem, depressed feelings, morbid ideation, suicidal ideation and weeping. The remaining three symptom areas are evaluated based on the child's or adolescent's non-verbal characteristics (depressed facial affect, listless speech, and hypoactivity).

I was provided formal training and received group supervision in the use of the CDRS-R prior to the study commencing. At three of the group supervision sessions, after viewing and rating pre-recorded mock assessments, my scoring was bench-marked to others being trained to use the CDRS-R.

Secondary outcome measures

Reynolds Adolescent Depression Scale (RADS-2)

The RADS-2 (Reynolds, 2002) is a self-completed 30 item questionnaire developed specifically to measure the severity of depressive symptoms in adolescents (Brooks & Kutcher, 2001) (see Appendix H). Each item can be scored 1 ("Almost never") to 4 ("Most of the time") and total scores range from 30 to 120 with scores ≥77 representing a "clinically relevant level of depression" (Brooks & Kutcher, 2001, p. 363). Seven items (i.e., the Anhedonia/Negative Affect scale items) are reverse scored and responses on all the items are summed to obtain a total score (Osman, Gutierrez, Bagge, Fang, & Emmerich, 2010). The earlier version, RADS, has been shown to have excellent internal

reliability, construct validity, stability with diverse samples of community youths, and correlates well with other measures (Brooks & Kutcher, 2001; Myers & Winters, 2002). Recent research on the RADS-2 indicates that it has sound psychometric properties in a sample of adolescent psychiatric inpatients (Osman et al., 2010). This scale has also been used in the Youth2000 survey series and the RAP-Kiwi study, with results demonstrating that it is valid and appropriate to use with New Zealand adolescents (Walker et al., 2005) .

Mood & Feelings Questionnaire (MFQ) – Long Version

The MFQ is a self-completed questionnaire designed to detect clinical depression in children and adolescents (Brooks & Kutcher, 2001). It contains 33 items and takes about ten minutes to complete (see Appendix I). Each item consists of a statement to which subjects respond by endorsing the extent to which the statement describes their experiences over the past two weeks ("true," "sometimes," or "not true") (Brooks & Kutcher, 2001). Total scores range from 0 to 66, with 27 as the cut-off for depression, as this yields the highest combination of sensitivity and specificity (Brooks & Kutcher, 2001). The MFQ has demonstrated sound validity as a screening instrument in clinical populations (Kent, Vostanis, & Feehan, 1997).

Paediatric Quality of Life Enjoyment and Satisfaction Questionnaire (PQ-LES-Q)

The PQ-LES-Q has been specifically developed for children and adolescents and was based on a Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q) for adults (Endicott, Nee, Ruoyong, & Wohlberg, 2006). It is self-completed and contains 15 items addressing satisfaction with current life (see Appendix J). Items inquire about satisfaction with health, mood/feelings, school, helping out at home, getting along with friends and with family, play/free time, getting things done, sense of love for life, having enough money, place of residence, ability to pay attention, energy level, and overall course of life. Each item can be scored from 1 ("Very poor") to 5 ("Very good"). Scores range from 15 to 75 (with higher scores indicating greater enjoyment and life satisfaction). In a large-scale clinical trial of adolescents with major depression PQ-LES-Q scores at baseline ranged from 42.5 to 44.9 (Vitlello et al., 2006). The PQ-LES-Q has demonstrated adequate reliability and it is moderately correlated with severity of illness measures (e.g. the Children's Depression Rating Scale) (Endicott et al., 2006). The PQ-LES-Q has been recommended as an additional outcome measure in clinical research, as it captures dimensions not covered by commonly used global severity of illness or symptomatic measures (Endicott et al., 2006).

Spence Children's Anxiety Scale (SCAS)

The SCAS is a self-completed assessment which consists of 38 anxiety items, six filler items and one open-ended, non-scored item. It has been designed to evaluate symptoms relating to separation anxiety, social phobia, obsessive-compulsive disorder, panic-agoraphobia, generalized anxiety and fears of physical injury in children (Spence, 1998). Respondents are asked to indicate the frequency with which each symptom occurs on a four-point scale ranging from "Never" (scored 0) to "Always" (scored 3) and a total score is obtained by summing the 38 anxiety symptom items (Spence, Barrett, & Turner, 2003) (see Appendix K). Scores range from 0 to 114 with higher scores reflecting greater anxiety symptoms (Spence, 1998). In clinical samples, those categorised with social phobia had a mean total score of 32.20, while those categorised as having co-morbid social-separation anxiety had

a mean total score of 48.75 (Spence, 1998). Non-clinical controls had a mean total score of 18.80 (Spence, 1998). The SCAS has acceptable psychometric properties in terms of internal consistency, convergent and divergent validity (Spence et al., 2003).

Kazdin Hopelessness Scale for Children (Kazdin HPLS)

The Kazdin HPLS is a self-completed assessment which consists of 17 items, modified from the Beck Hopelessness Scale (Kazdin, French, Unis, Esveldt-Dawson, & Sherick, 1983) (see Appendix L). Each item is scored "True" or "Not true" although the direction of responding for an answer indicating hopelessness varies, the scale is scored so that the higher the score (0 to 17), the greater the hopelessness or negative expectancies for the future (Kazdin et al., 1983). Those scoring above 6 are categorised as having 'high hopelessness' (Kazdin et al., 1983). It has been shown that the Kazdin HPLS is internally consistent, that items discriminated high hopeless and low hopeless children, and that item-total score and test-retest reliability were in the moderate range (Allen & Tarnoski, 1989; Kazdin, Rodgers, & Colbus, 1986).

Post-Intervention Satisfaction Questionnaire

The post-intervention Satisfaction Questionnaire is a 32-item self completed questionnaire (see Appendix M). The first section consists of 11 items pertaining to the usefulness of SPARX: The Rainbow Version. The first ten items are scored 5 ("Very useful") to 1 ("Not at all useful") with total usefulness scores ranging from 10 to 50. The remaining usefulness item was a non-scored open-ended question (i.e. "Anything else – please specify"). The second section consists of ten items related to the likeability of the program. Scores for these items range from 1 (☹) to 5 (☺), however participants can rate an item as "N/A" if the item is perceived as not applicable to them. Total likeability scores range from 7 to 35 (items 14, 17, and 18 were anticipated to have numerous "N/A" ratings so these items were not used to calculate the total score). The final section of the Satisfaction Questionnaire included three open questions, three closed questions and five limited response questions (e.g. "Would you recommend this programme to your friends?"; and "Do you think SPARX: The Rainbow Version would appeal to other young people?").

Satisfaction Questionnaire (Month Five)

At the three-month follow-up appointment participants completed another satisfaction questionnaire (see Appendix N). It was a 5-item questionnaire that asked participants one closed question ("Since finishing SPARX: The Rainbow Version have you used any of the skills you learnt?"), three limited response questions ("How useful was the programme for you?", "Which SPARX skills have you used?" and "Which of the SPARX skills do you think have been most useful for you?") and one open-ended question ("Have you got any comments/suggestions on how to improve SPARX: The Rainbow Version?").

Ethics

Ethics approval for the study was provided by the Multi Region Ethics Committee (Ref:MEC/09/01/002). Participants were given an information sheet (Appendix D) about the study via email, the study website (www.downanddifferent.org.nz) or from a youth worker, teacher, school

guidance counsellor or health professional who was known to them. Written consent was obtained before any study-specific procedures were conducted.

Each participant received a $50 Westfield shopping voucher (at the Month Five/three month follow-up assessment) as a gratuity for their help evaluating SPARX: The Rainbow Version.

Changes to protocol during the trial

Initially only participants 16 years and older were recruited for the study, as obtaining parental consent would have potentially required younger participants telling their parents about their sexual orientation. However, after ten months of recruitment, ethics approval was sought and obtained to extend the age range so those under 16 years old could participate (see Appendix E for the participant information sheet). This was done as a number of younger participants (13 to 15 years old) had indicated that they were interested in the study and that they would be able to get signed parental consent to participate.

Statistical analyses

The total number of young people approached from various sites and subsequently enrolled in the study are summarised in a flowchart. Participants' demographic characteristics were summarised using means, standard deviations, ranges, frequencies and percentages as appropriate. The demographic characteristics include age, sex, ethnicity (New Zealand European and non-New Zealand European) and other features including educational status and self-reported sexual attraction. Completion of treatment was defined as completing four or more of the seven levels of Rainbow SPARX. All other post-intervention Satisfaction Questionnaire and Satisfaction Questionnaire (Month Five) data were summarised descriptively for metric measures using means, standard deviations and ranges, and for categorical variables as frequencies and percentages. Pre- to post-intervention and post-intervention to three-month follow-up changes in the CDRS-R and functioning on self-report measures (e.g. RADS-2, MFQ, PQ-LES-Q, SCAS and Kazdin HPLS) were tested for statistical significance using paired t-tests. Pre- to post-intervention effect sizes were calculated using Cohen's *d for* the CDRS-R and self-report measures. Adverse Events and the numbers and types of extra interventions at baseline were also summarised.

General principles

Statistical analyses were performed using PASW (SPSS for Windows Statistical Software package) version 18. Unless otherwise stated, all analyses were carried out using the intent-to-treat principle, in which the analyses included all study participants with depressive symptoms (CDRS-R ≥30) at baseline, regardless of their subsequent withdrawal from treatment, or withdrawal from assessment. Missing responses (e.g. loss to follow-up) were replaced using the last observation carried forward method. In the two instances where there was missing data at three-month follow-up the end of treatment score was carried forward. A two-tailed p-value <0.05 was taken to indicate statistical significance in all analyses.

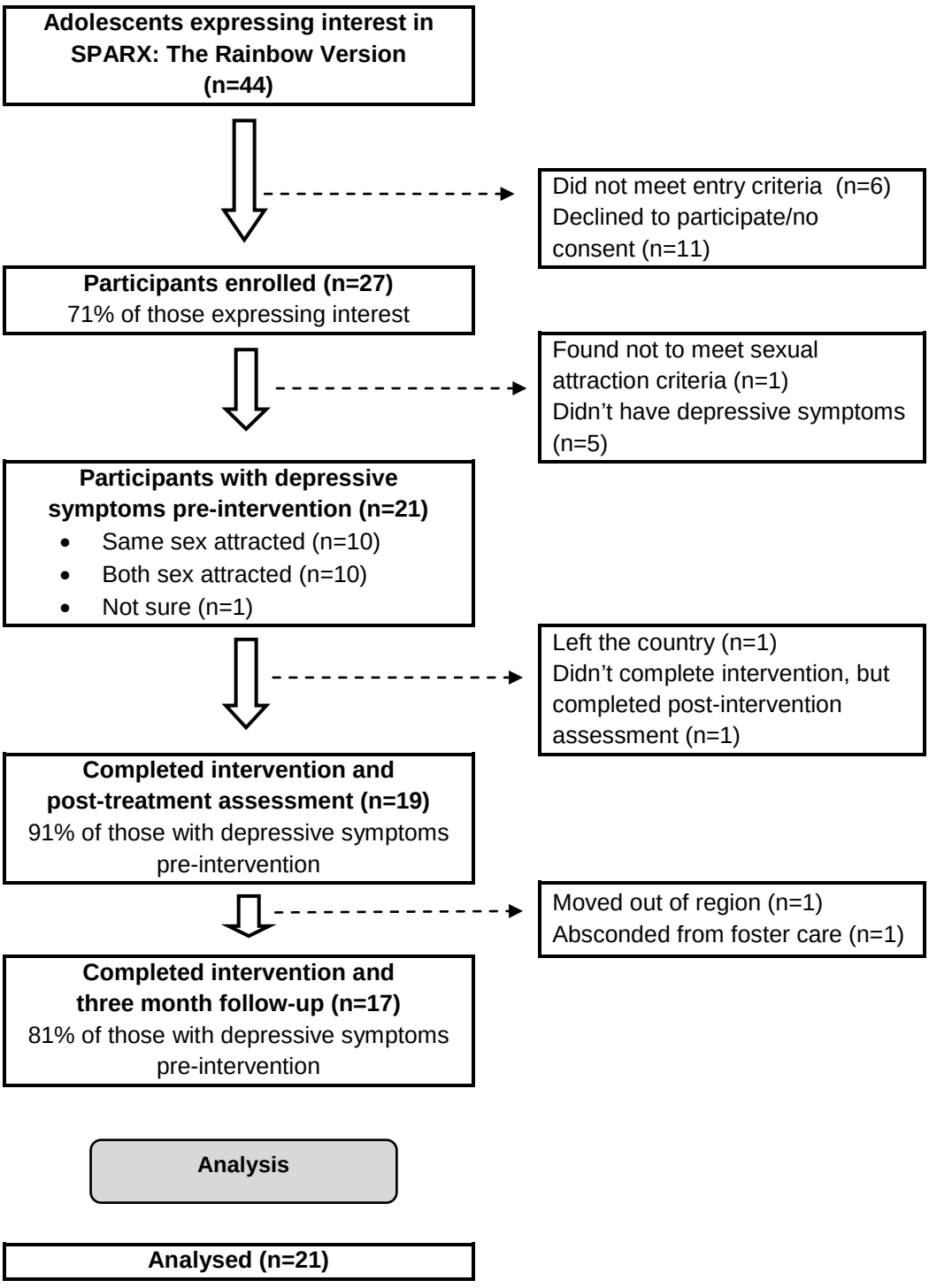
Results

Participant flow

Forty-four adolescents from various sources were identified as potential participants for the study (e.g. from Rainbow Youth, four high schools, queer popular media and via professional networks). Seventeen potential participants were not enrolled, as they did not meet entry criteria (e.g. they were too old or resided overseas) or because they declined to participate after receiving the participant information sheet or because they were younger than 16 years old and did not want to obtain signed parental consent. Over a 14-month period 27 adolescents from 13 sources were enrolled in the study.

Of the 27 participants enrolled in the study, one participant initially identified as being 'not exclusively heterosexual' but post-intervention described himself as exclusively opposite-sex attracted or 'straight' and was therefore excluded from all statistical analyses. Of the remaining 26 enrolled participants, 21 had mild to moderate depressive symptoms pre-intervention. Ninteen of the 21 participants completed SPARX: The Rainbow Version and the post-intervention assessment (91% of enrolled participants with depressive symptoms at baseline). One participant did not complete treatment because he could not use SPARX: The Rainbow Version on his Apple Mac and another withdrew from the study as she moved overseas immediately after enrolling in the study. Seventeen participants completed the three-month follow-up assessment (81% of enrolled participants with depressive symptoms at baseline). Two participants were lost to three-month follow-up, as one participant moved out of the Greater Auckland region and another absconded from foster care (Figure 4)

Figure 4. Study Three (A) participant flow chart



Demographic data

Study participants were aged between 13 to 19 years old and approximately half identified as female and half identified as male. Nearly three-quarters were New Zealand European. Of the participants that were not high school students, most were involved in further training/tertiary studies or they were in paid employment.

Table 11. Baseline demographics (n=21)

Age	
Mean age (SD)	16.52 (1.57)
Age range	13-19
Sex[30]	
Female	47.6% (n=10)
Male	52.4% (n=11)
Ethnicity	
NZ European	71.4% (n=15)
Māori	9.5% (n=2)
Pacific	4.8% (n=1)
Asian	14.3% (n=3)
Other	0% (n=0)
NZ European	71.4% (n=15)
non-NZ European	28.6% (n=6)
Educational Status	
High School	66.7% (n=14)
Non High School	33.3% (n=7)
< Year 9 at School	-
Tertiary Education	14.3% (n=3)
Work	4.8% (n=1)
Training Course	4.8% (n=1)
Other	9.5% (n=2)

[30] As indicated by participants on the "Questions About You" form.

Treatment completion rates

Study participants reported excellent treatment completion rates, with 90.5% completing four or more levels/sessions of SPARX: The Rainbow Version (17 participants completed all seven sessions). The mean number of levels/sessions completed was 6.60 out of a possible 7 levels/sessions (Table 12).

Table 12. Treatment completion rates (n=21)

Completed treatment	90.5% (n=19)
Mean number of sessions completed	6.60
(SD)	(1.35)
Range	1-7

Treatment satisfaction data

In terms of acceptability 16 participants (80%) indicated that they would recommend SPARX: The Rainbow Version to friends (Table 13).

Table 13. Post-intervention satisfaction – would recommend this treatment (n=20)

Yes	80.0% (n=16)
No	20.0% (n=4)

Moreover, 85% of participants completing SPARX: The Rainbow Version reported that they thought the intervention would appeal to other young people (Table 14).

Table 14. Post-intervention – Appealing (n=20)

Yes	85.0% (n=17)
No	15.0% (n=3)

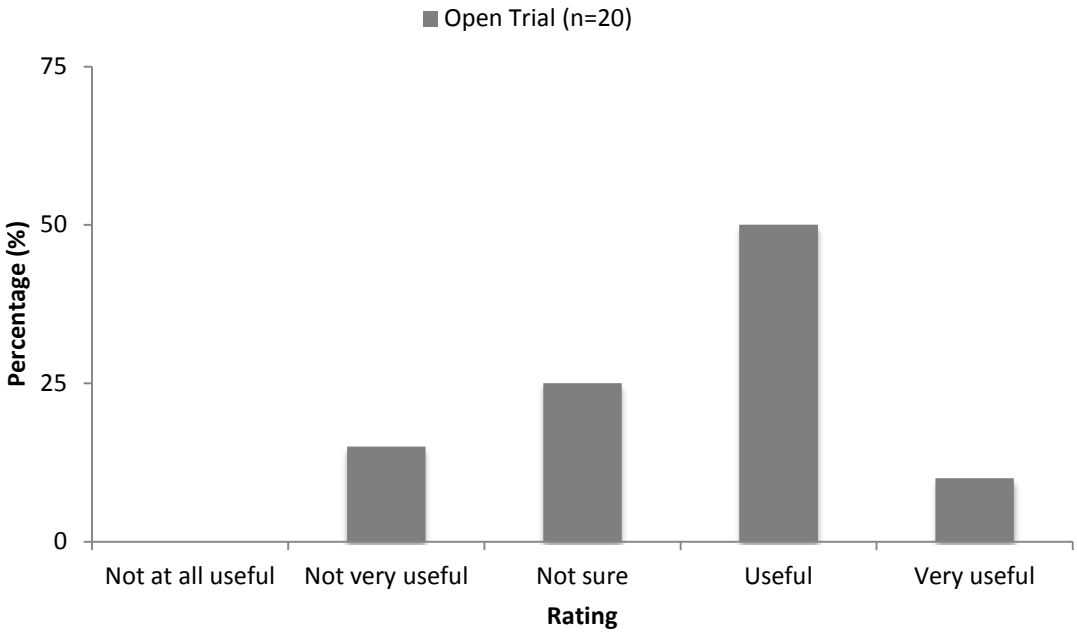
SPARX: The Rainbow Version also received favourable scores on perceived usefulness and likeability, providing further support for its acceptability to sexual minority youth (Table 15).

Table 15. Post intervention – Usefulness and likeability (n=20)

	Mean (SD)
Total Usefulness of SPARX: The Rainbow Version (out of 50)	38.15 (7.46)
Total Likeability of SPARX: The Rainbow Version (out of 35)	27.15 (5.08)

Most of the study participants who used Rainbow SPARX rated its overall usefulness as either ‘Useful’ or ‘Very useful’ (Figure 5).

Figure 5. Overall, how useful was SPARX: The Rainbow Version for you?



The mean usefulness ratings for the various components of SPARX: The Rainbow Version ranged from 3.55 to 4.10; individual sections of the intervention were rated as just below or just above a 'Useful' rating (3='Not sure' score and 4='Useful') (Table 16).

Table 16. Mean post-intervention usefulness ratings (n=20)

	Mean (SD)	Not applicable
Overall usefulness	3.55 (0.89)	0
Learning about depression	4.05 (0.89)	0
Do it – Doing more makes you feel better	3.95 (0.94)	0
Relax – Slow breathing & muscle relaxation	4.10 (1.07)	0
Solve it – Problem solving & using STEPS	3.55 (0.94)	0
Sort it – Listening, being assertive and negotiation skills	3.65 (0.93)	0
Sort it – Dealing with angry and hurt feelings	3.95 (0.76)	0
Spot it – Spotting negative feelings and thoughts (Gnats)	3.90 (1.07)	0
Spot it – Spotting positive or helpful thoughts (Sparks)	3.75 (1.02)	0
Swap it – Changing negative thoughts (using RAPA)	3.70 (1.03)	0

Ratings: "Very useful"=5 to "Not at all useful"=1

Overall the mean SPARX: The Rainbow Version likability ratings were favourable, with the items "You can learn things [from it] by yourself at your own pace", "It is different from talking to a doctor/counsellor", "I could do it at home", "It comes with a Notebook that I can keep" and "It is made especially for young people" receiving 'Liked' ratings (i.e. scores above 4). The item, "It has video clips of celebrities giving advice" received the lowest mean (2.70), and this was because many participants stated that they could not actually find the video clips (as evident by the high number of participants rating this item as not applicable). Twelve participants rated the item "I could do it at the University of Auckland" as not applicable, this was because the majority of participants completed SPARX: The Rainbow Version at home.

Table 17. Mean post-intervention likability ratings (n=20)

	Mean (SD)	**Not applicable**
It looks like a computer game	3.65 (1.14)	0
You can learn things [from it] by yourself at your own pace	4.00 (0.92)	0
It has video clips of celebrities giving advice	2.70 (1.34)	10
It is different from talking to a doctor/counsellor	4.05 (1.05)	0
It showed me things I didn't know	3.90 (0.97)	0
I could do it at the University of Auckland	3.75 (0.89)	12
I could do it at home	4.67 (0.69)	2
It comes with a Notebook that I can keep	4.26 (1.10)	1
It is made especially for young people	4.05 (0.89)	0
It has a New Zealand look and feel	3.63 (1.30)	1

Ratings: "really liked"=5 to "didn't like"=1

Forty percent of study participants reported having shared what they had learnt or discovered with regards to the treatment that they received. Eighty percent of participants completed Rainbow SPARX at home, with two participants completing treatment at school and two participants completing treatment somewhere else. On average most participants took less than 30 minutes to complete a level/session of SPARX: The Rainbow Version. Half of the participants indicated that the levels should be longer. Eight participants (40%) reported completing all of the challenges set at the end of each level (Table 18).

Table 18. Summary of results for post-intervention satisfaction questionnaire (n=20)

Shared what was learnt/discovered with others	
Yes	40.0% (n=8)
No	60.0% (n=12)
Missing Data	-
Where levels were completed/ treatment carried out	
Home	80.0% (n=16)
School	10.0% (n=2)
GP clinic	-
Youth Centre	-
Somewhere else	10.0% (n=2)
Missing Data	-
Length of time required to complete a level/session	
< 20 minutes	25.0% (n=5)
20-30 minutes	70.0% (n=14)
30-40 minutes	5.0% (n=1)
> 40 minutes	-
Missing Data	-
Should sessions/levels be	
Longer	50.0% (n=10)
Shorter	5.0% (n=1)
Stay as they are	45.0% (n=9)
Missing Data	-
Challenges set at the end of sessions/levels completed	
All of them	40.0% (n=8)
Most of them	20.0% (n=4)
Some of them	30.0% (n=6)
None of them	10.0% (n=2)
Missing	-
Not applicable	-

Treatment satisfaction data – Three-month follow-up

At the three-month follow-up point most participants rated SPARX: The Rainbow Version as either 'Very useful' or 'Useful' and all reported that they had utilised some of the skills that they learnt as a result of treatment (Table 19). The 'Relax' component of Rainbow SPARX was identified as the most commonly used skill and it was perceived to be the most useful skill.

Table 19. Summary of results for Satisfaction Questionnaire (Month Five) (n=17)

How useful was the support/programme for you?	
Very useful	35.4% (n=6)
Useful	29.4% (n=5)
Fair	17.6% (n=3)
Not very useful	17.6% (n=3)
Not at all useful	-
Other	-
Since finishing treatment have you used any of the skills you learnt?	
Yes	100% (n=17)
No	-
Which SPARX skills have you used [multiple answers possible]?	
Do it	17.7% (n=3)
Relax	76.5% (n=13)
Sort it	35.3% (n=6)
Solve it	23.5% (n=4)
Spot it	35.3% (n=6)
Swap it	29.4% (n=5)
Ask for help	29.4% (n=5)
Which SPARX skill has been the most useful?	
Do it	11.8% (n=2)
Relax	41.2% (n=7)
Sort it	5.8% (n=1)
Solve it	11.8% (n=2)
Spot it	11.8% (n=2)
Swap it	5.8% (n=1)
Ask for help	11.8% (n=2)
Other	-
Missing Data	-

Changes on CDRS-R

The depressive symptoms of study participants measured on the CDRS-R decreased significantly from pre- to post-intervention ($p<0.0001$), with a large pre- to post-intervention effect size[31] (*d*=1.01) and, as hypothesised, this positive change was maintained at three-month follow-up (Table 20).

Table 20. Results for the CDRS-R

	Pre-Intervention (n=21)	Post-Intervention (n=21)	3 Month F/up (n=21)
CDRS-R Mean Score (SD)	41.48 (10.35)	34.05 (10.24)	33.43 (12.04)
CDRS-R Mean Change (CI)	-	-7.43 (-10.79 to -4.07)	-0.62 (-5.82 to 4.58)
p-value	-	<0.0001	0.81
Effect Size	-	1.01	-

[31] All effect sizes were Cohen's *d*: 0.2=small effect; 0.5=medium effect; and 0.8=large effect (Cohen, 1992).

Changes in functioning on self-report measures

The depressive symptoms of study participants measured on the RADS-2 and MFQ decreased significantly pre- to post-intervention (p=0.001 and p=0.02 respectively), with a large effect size based on the RADS-2 (*d*=0.84) and a medium effect size based on the MFQ (*d*=0.57). These positive changes in depressive scores were maintained at three-month follow-up. Significant improvements also occurred pre- to post-intervention for anxiety scores as measured on SCAS (p<0.0001) and hopelessness scores as measured on Kazdin HPLS (p=0.008). However changes in quality of life (as measured on PQ-LES-Q) although positive, were not significant (p=0.16).

Table 21. Results for the secondary outcome measures

	Pre-Intervention (n=21)	**Post-Intervention (n=21)**	**3 Month F/up (n=21)**
RADS-2 Mean Score	71.33	63.43	62.57
(SD)	(15.03)	(14.84)	(17.60)
RADS-2 Mean Change	-	-7.90	-0.86
(CI)		(-12.17 to -3.64)	(-5.41 to 3.70)
p-value	-	0.001	0.70
Effect Size	-	0.84	-
MFQ Mean Score	25.10	18.90	19.57
(SD)	(12.97)	(13.71)	(14.68)
MFQ Mean Change	-	-6.19	0.67
(CI)		(-11.13 to -1.25)	(-5.58 to 6.92)
p-value	-	0.02	0.83
Effect Size	-	0.57	-
PQ-LES-Q Mean Score	29.43	32.24	34.76
(SD)	(8.19)	(9.98)	(9.35)
PQ-LES-Q Mean Change	-	2.81	2.52
(CI)		(-1.18 to 6.80)	(-0.55 to 5.60)
p-value	-	0.16	0.10
Effect Size	-	0.32	-
SCAS Mean Score	38.81	30.95	27.29
(SD)	(15.53)	(16.11)	(15.79)
SCAS Mean Change	-	-7.86	-3.67
(CI)		(-11.62 to -4.10)	(-7.73 to 0.39)
p-value	-	<0.0001	0.07
Effect Size		0.95	-
Kazdin HPLS Mean Score	4.76	3.33	2.95
(SD)	(3.10)	(2.85)	(2.20)
Kazdin HPLS Mean Change	-	-1.43	-0.38
(CI)		(-2.43 to -0.43)	(-1.31 to 0.55)
p-value		0.008	0.40
Effect Size		0.65	-

Adverse Events (AE)

In total, 8 Adverse Events (AEs) were recorded. One participant had three AEs and one participant had two AEs (Table 22).

AEs classified as 'unrelated to treatment' included physical illnesses, injuries, and reactions to situations such as family stressors. Worsening in mood or increased self-harm were coded as 'possibly related to treatment', on the grounds that the allocated intervention may not have been sufficiently effective. All AEs were 'unrelated' or 'possibly related' to the study. Where AEs were 'possibly related' to the study the AEs were scrutinized by myself and Associate Professor Sally Merry (a child and adolescent psychiatrist) and extra support was arranged for the participant (see Table 23 for details).

AEs were rated by severity, the least severe events (categorised as 'low severity') included increased anxiety and disengagement from school, and none of the AEs from the open trial were rated as 'low severity'. AEs categorised as 'moderate severity' included worsening of mood, running away from home, increased suicidal thinking or deliberate self-harm (e.g. cutting oneself) or referral to specialist care. A suicide attempt was categorised as 'serious', however no suicide attempts occurred in the study. All AEs for the study were in the 'moderate severity' category (Table 22).

Table 22. Adverse events recorded during the study

Number of adverse events	8
Relationship to study	
Unrelated	2
Possibly	6
Probable	-
Outcome	
Continue with study	8
Withdrawn from study	-
Severity of adverse events	
Low	-
Moderate	8
Serious	-

The following table summarises all the AEs for study participants and what occurred as a result of these AEs. All eight of the AEs were of moderate severity and resulted in extra support for the participant. All participants were able to continue with the study after the AE.

Table 23. Summary of all adverse events for study participants

Severity of AE	Participant (AE-Number)	Summary of adverse events	Outcome
Low	-	Nil	-
Moderate	Jack (AE–1)	Informed by School Guidance Counsellor (SGC) that participant had absconded from foster care. Carers contacted police.	Continue with study
	Tina (AE-1)	Participant had one experience of strong suicidal thoughts (after a fight with a family member). Counsellor informed & Tina provided with ↑ support.	Continue with study
	Tina (AE–2)	Participant had one instance of "very strong" suicidal thoughts (no plan & didn't attempt suicide). AE discussed with her General Practitioner's (GP) Practice Nurse. GP referred participant to a mental health service.	Continue with study
	Natasha (AE–1)	Participant had moderate thoughts of self-harm (due to "lots of stress and low self-esteem") and one self-harm incident (punching a wall). Additional support offered.	Continue with study
	Natasha (AE–2)	Mood worsening ("…feeling stuck in the down"). Requested contact details of suitable counsellors on the North Shore of Auckland. Appointment to see GP was made. Details of several counsellors & a clinical psychologist provided.	Continue with study
	Natasha (AE–3)	Disagreement with woman at the mall (who made a homophobic comment) & this led to participant being 'stressed out' with suicidal ideation. GP re-contacted (via practice nurse). GP surgery offered additional assistance.	Continue with study
	Bob (AE–1)	One incident of experiencing strong suicidal ideation (related to his boyfriend "cheating and stuff"). Bob's mother and SGC contacted. Additional support provided by SGC.	Continue with study
	Troy (AE–1)	Participant had been "feeling down lately" and requested help in arranging an appointment to see his SGC. SGC informed & SGC arranged face-to-face session with Troy.	Continue with study
Serious	-	Nil	-

Additional support at baseline

Study participants were not excluded from the study if they were receiving extra interventions at baseline, as maintaining rigid inclusion and exclusion criteria had negatively impacted upon study recruitment at the early stages of the study. Seven of the 21 participants were receiving professional help for mental health issues at baseline, with one of these participants receiving two forms of assistance. Four participants were engaged in weekly (or more frequent) counselling with a School Guidance Counsellor or counsellor at a Polytechnic and they had all been attending sessions for more than three months. Two participants were taking antidepressants and both had been prescribed these for more than three months. Two of the participants were current clients of a District Health Board funded out-patient child and adolescent mental health service.

Discussion

Statement of principal findings

Twenty-one sexual minority youth with mild to moderate depressive symptoms were enrolled in the open trial. Participants had excellent treatment completion rates, with 19 out of 21 young people completing at least four sessions of SPARX: The Rainbow Version and 17 out of 21 completing all seven sessions. Sexual minority participants rated the acceptability of SPARX: The Rainbow Version favourably with more than 80% indicating that Rainbow SPARX would appeal to other young people and that they would recommend it to their friends, suggesting that this intervention was acceptable to this group of young people.

The depressive symptoms of sexual minority participants on the CDRS-R decreased significantly post-intervention and this effect was maintained at three-month follow-up. The reduction in depressive symptoms from pre- to post-intervention was of a magnitude that would be clinically meaningful, but the final mean scores remained above a CDRS-R raw score of 29 (i.e. 'depressive disorder is unlikely' range) suggesting some depressive symptoms remained. The reductions in depressive symptoms of sexual minority participants on the self-reported measures (i.e. RADS-2 and MFQ) were also significant from pre- to post-intervention and these reductions were maintained at three-month follow-up. The improvements on SCAS and Kazdin HPLS were significant from pre- to post-intervention and were maintained at follow-up, but the results on the PQ-LES-Q pre- to post-intervention, whilst positive, were not significant. However, caution is required when interpreting the non-significance of this result, as the study may have been under-powered to detect the significance of this finding.

Relevance of current study

The systematic literature review detailed in Chapter One revealed that the majority of studies in the area of depression and sexual minority youth have focused on establishing the prevalence of depressive symptoms. Despite an extensive literature search, I was able to identify only a handful of studies addressing treatment of depression in sexual minority youth. These were all case reports with between one and four participants, making this the only formal trial of the treatment of depressive symptoms in this population.

This study demonstrated that SPARX: The Rainbow Version is an acceptable intervention. Eighty-five percent of participants thought Rainbow SPARX would appeal to other young people and this specially adapted form of CCBT was also perceived to be useful (based on the total usefulness ratings). Furthermore, participants experienced clinically meaningful reductions in depression and anxiety symptoms and in hopelessness immediately post-intervention with improvements maintained over a three month follow-up period.

As previously established, the analysis of the Youth'07 data demonstrated that non-heterosexual youth were more likely to seek help for an emotional worry and they reported more difficulty accessing this help. Because Rainbow SPARX was developed in consultation with sexual minority individuals and because it is delivered via computer, it can be accessed at a time and place best suited to an adolescent, and can potentially address some of the barriers to care faced by sexual minority youth.

This study has expanded the very limited research base in the area of treating depressive symptoms in sexual minority adolescents. I have gathered data needed for a definitive RCT to test the effectiveness of Rainbow SPARX in sexual minority youth

Strengths and limitations of the study

Strengths of the current study

Despite being an open trial, this is the largest study to date on the efficacy of interventions for depression conducted with sexual minority youth. There were few exclusion criteria to ensure maximal generalisability.

The sexual minority youth in the open trial were well engaged in the research process, as evidenced by the excellent retention and assessment completion rates. The hope is that these positive results occurred because Rainbow SPARX was seen as relevant and engaging. The high satisfaction ratings make this likely. It may also have been because of altruism. Participants felt that they were not just completing Rainbow SPARX for their own benefit, but for all sexual minority youth. They knew that the resource, if successfully evaluated, was to be distributed nationally after the conclusion of the study. The possibility that young people completed the intervention and continued with the trial because of the gift vouchers given in recognition of their time cannot be ruled out.

I gathered data on the usefulness and likability of Rainbow SPARX overall and of its components. This is especially valuable, as there is little research in the field of CCBT and adolescents, so these data can help inform further developments in the field, including establishing what features of CCBT are worth maintaining and which elements need further refinement. For example, the relaxation content (e.g. controlled breathing) in Rainbow SPARX was very favourably received (i.e. this was rated as the most useful skill of the seven main skills) and inclusion of this topic is warranted in subsequent CCBT programs.

Internationally, there are few CCBT programs that have been developed specifically for adolescents with depression, and even fewer with published results. A recent review identified only four,

'Stressbusters', 'Master Your Mood Online', 'CATCH-IT' and 'MoodGYM' (Richardson et al., 2010). Two additional CCBT programs ('Reach Out Central' and 'Think, Feel, Do') published results more recently (Shandley et al., 2010; Stallard et al., 2011). Therefore this study adds to the limited number of studies on the efficaciousness of CCBT for the treatment of adolescent depression.

Limitations of the current study

This was a small open trial. I was only able to recruit 21 sexual minority adolescents with depressive symptoms over a 14-month period. Despite intensive efforts to recruit the largest possible sample size for this study from the greater Auckland area, recruitment was difficult, showing that a larger trial would have to be carried out over an extended time period or at a national (rather than a regional) level. The small sample size limits the generalisability of the study. In addition to this the participants were probably not representative of all sexual minority youth in New Zealand, as all of the participants were sufficiently comfortable with their sexuality to enrol in a formal research project focused on sexual minority youth. Furthermore, the younger participants (aged 15 years or younger) came from families that were willing to consent to their involvement in the study, demonstrating that all of the younger participants were 'out' to their parents, at an age when most sexual minority youth are not 'out' (Rossen et al., 2009).

Without having a wait-list control group it is difficult to rule out that reductions in depressive symptoms occurred simply as a result of time. However, recent work by Gledhill and Garralda (2010) has indicated that depressive symptoms in young people presenting to primary care tend to persist without intervention. Of the 274 adolescents screened for depressive symptoms in a primary-care setting in London, 26 adolescents had a depressive disorder. At six-month follow-up more than half of the original depressed group were still depressed (Gledhill & Garralda, 2010).

Having more participants who were questioning their sexuality would have been advantageous, as this would have extended the breadth of the sexual minority sample. Being able to recruit these participants was obviously problematic. Despite every effort being made to ensure privacy and confidentiality, sexually questioning youth would likely have struggled to participate in a study like this one, as it would have required a degree of comfort and certainty in one's sexuality that is often absent in these young people. These challenges were further exacerbated by certain consent protocols, in particular the ethics committee's requirement of parental co-consent for younger participants (which explicitly included highlighting to parents that their child was not heterosexual). As a result of this, several potential participants elected not to participate, because they did not want their parents to know about their sexuality.

It is worth noting that treatment completion was determined by participants' self-report, as Rainbow SPARX was delivered via CD-Rom and not via the Internet. However, based on participants' informal descriptions of their experiences using various sessions of Rainbow SPARX (during Study Four) I am reasonably confident that the self-reported completion rates of open trial participants are accurate.

The study could have been strengthened by having a longer follow-up period, to establish whether reductions in depressive symptoms were maintained at a six-month follow-up appointment. Although

depressive symptoms were assessed using standardised tools with sound psychometric properties, formal diagnoses of depression were not made.

Comparisons to prior research

My findings that CCBT leads to a reduction in depressive symptoms are in line with previous research in both adults and adolescents (Andrews, Cuijpers, Craske, McEvoy, & Titov, 2010; Richardson et al., 2010). To date most research in the area of CCBT has been conducted with adult populations (Richardson et al., 2010) and with participants who are likely to be mostly heterosexual. There were very low dropout rates in this study, in contrast to previous research (Richardson et al., 2010). This may have been as a result of the support I provided to participants (equivalent to fifteen minutes per participant over the course of their treatment). A meta-analysis of CCBT in adults indicated that supported CCBT programs result in improved adherence (Andersson & Cuijpers, 2009). The high retention and treatment completion rates may have reflected sexual minority participants' desire to improve therapy and services for queer youth (for more details see results in the following chapter – qualitative feedback about Rainbow SPARX). It may also be because Rainbow SPARX's interactive game format was, as it was designed to be, especially engaging and relevant to adolescents. By utilising the skills of game developers the program was made to be youth-focused and the actual format of CCBT was thought to increase the intrinsic motivation of participants to complete treatment.

Participants received only a limited amount of support to complete CCBT in this study. There was a Month One phone call or 'check-in' part-way through treatment. This phone call primarily served as a brief safety check; however participants were also asked whether or not they were experiencing difficulty accessing Rainbow SPARX. The amount of support offered to adolescent participants trialling other versions of CCBT has varied considerably, but most programs have offered some form of professional input (Richardson et al., 2010). The results from this trial are encouraging as completion rates were high despite the very low levels of professional input provided.

Rainbow SPARX consisted of seven levels or lessons, which is broadly comparable to the five to 14 sessions offered in other child and adolescent CCBT programs (Richardson et al., 2010) and the five to nine levels typically provided in adult CCBT (Andrews et al., 2010).

Other researchers have concluded that mood disorders such as depression are often unrecognised (e.g. Andrews et al., 2010). The open trial was promoted to all sexual minority youth and they were informed that Rainbow SPARX was designed for youth feeling 'stressed and low', rather than being depressed per se. This strategy provided a means of partially addressing the issue of unrecognised depression in relation to the open trial's recruitment and allowed for greater participant numbers.

Conclusions

In this open trial with 21 participants SPARX: The Rainbow Version was found to be a feasible and acceptable intervention for sexual minority participants, with participants having excellent treatment completion rates and treatment satisfaction ratings. Depression, anxiety and hopelessness ratings improved immediately after completion of Rainbow SPARX and these positive effects were

maintained at follow-up three months later. The next step for evaluating the program is a definitive RCT comparing SPARX: The Rainbow Version to an active control condition.

Study Three (B)

The open trial described in Study Three (A) occurred alongside a randomised controlled trial (RCT) comparing SPARX and treatment as usual (TAU), conducted by Associate Professor Sally Merry. In Study Three (B) I have compared the results of the open trial (i.e. Study Three (A)) with the results from exclusively opposite-sex attracted participants from the RCT. Having comparison groups of exclusively opposite-sex attracted participants was deemed appropriate because: SPARX was designed for general use (and could therefore be thought of as a predominantly heterosexual program); and most studies related to depression and sexual minority youth have not included any comparisons to heterosexual youth. Furthermore, all previous treatment studies in the field of sexual minority youth and depression have been case studies with no control group (e.g. Goff, 1990; Hart & Heimberg, 2001; Hussain & Roberts, 1998; Jackson et al., 2005).

Aims

1. To describe and compare the characteristics of the sexual minority participants who started SPARX: The Rainbow Version to exclusively opposite-sex attracted participants from a RCT that compared SPARX to treatment as usual (TAU).
2. To compare changes in depressive symptoms of sexual minority participants who completed SPARX: The Rainbow Version to changes amongst exclusively opposite-sex attracted participants from the RCT who completed SPARX and TAU.
3. To compare changes in the secondary measures of sexual minority participants who completed SPARX: The Rainbow Version to changes amongst exclusively opposite-sex attracted participants from the RCT who completed SPARX and TAU.

Hypotheses

Primary Hypothesis:

1. Sexual minority participants attempting SPARX: The Rainbow Version will have treatment completion rates and treatment satisfaction scores as good as exclusively opposite-sex attracted participants attempting SPARX.

Secondary Hypotheses:

1. SPARX: The Rainbow Version will decrease depressive symptoms, and this decrease will be of the same magnitude as observed in exclusively opposite-sex attracted participants randomised to SPARX or TAU using the CDRS-R scores pre- to post-intervention and at three-month follow-up.
2. SPARX: The Rainbow Version will result in comparable improvements in symptom and functioning as observed in exclusively opposite-sex attracted participants randomised to SPARX or TAU as assessed using the secondary outcome measures pre- to post-intervention and at three-month follow-up.

Methods

The RCT was a multicentre, prospective non-inferiority trial (Merry, et al., 2012). Participants in the RCT were recruited from 24 primary healthcare sites throughout New Zealand (from youth clinics, general practices and school-based counselling services). All the RCT participants were adolescents seeking help for their depressive symptoms and enrolled adolescents were randomised to receive either SPARX or TAU (Appendix O provides more details on the study method for the RCT).

Measures

The same measures and questionnaires were utilised in both the open trial (i.e. Study Three (A)) and the RCT, so that direct comparisons between the two studies could be made.

Assessing sexual attraction

Before beginning treatment participants answered demographic questions, specifically items pertaining to age, sex, ethnicity, educational status and the Youth2000 sexual attraction question.

Prior to the RCT commencing, the acceptability of the sexual attraction question was pre-tested at focus groups conducted at an Auckland secondary school with students assumed to be mostly attracted to the opposite sex. This was to ensure that the question would not cause any undue distress to RCT participants. The consensus from the focus group participants was that this item was acceptable, as long as it was a 'pen and paper' question completed in a private setting. This sexual attraction item was used to identify the exclusively opposite-sex attracted participants who formed the comparison group for the current study.

As the sexual attraction question was an unconventional demographic item, two further Youth2000 questions were also added to broaden the scope of demographic items (e.g. "How many people, including you, usually live in your home?" and "Do you feel that people at school care about you (like teachers, coaches or other adults)?"). These questions were added to the 'Questions about you' form to make the sexual attraction item seem less unusual amongst the conventional demographic items (i.e. questions about age, sex and ethnicity). As these two additional Youth2000 questions were solely added to increase the acceptability of the questionnaire they have been excluded from all analyses.

Post-Intervention Satisfaction Questionnaire

Item 17 of the satisfaction questionnaire was phrased differently for RCT participants (i.e. "I could do it at school/GP clinic/youth centre") because RCT participants would not be completing treatment at the University of Auckland. The final section of the Satisfaction Questionnaire[32] included three open questions, three closed questions and five limited response questions. These items primarily asked participants where they completed treatment, how many levels of the program were completed, how

[32] Five of the questions from the final section were also asked of TAU participants from the RCT in their treatment satisfaction questionnaire.

long it took on average to complete levels, whether or not they thought the intervention would appeal to other young people and whether they would recommend it to friends.

Satisfaction Questionnaire (Month Five)

This 5-item questionnaire (see Appendix N) was completed at the three-month follow-up appointment, participants answered one closed question ("Since finishing…[the programme] have you used any of the skills you learnt?"[33]), three limited response questions ("How useful was the programme for you?[34]", which of the programme's "…skills have you used?" and which of the programme's "…skills do you think have been most useful for you?") and one open-ended question ("Have you got any comments/suggestions on how to improve [the programme]?").

Statistical analyses

The total number of young people approached from various sites and subsequently enrolled in the RCT are summarised in a flowchart. Baseline participant and clinical features were summarised by group (i.e. open trial, RCT-SPARX and RCT-TAU) using means, standard deviations, ranges, frequencies and percentages as appropriate. The demographic characteristics include age, sex, ethnicity (New Zealand European and Non New Zealand European) and other features including educational status and self-reported sexual attraction. Certain characteristics (e.g. sex, age and ethnicity) of the sexual minority participants who undertook SPARX: The Rainbow Version were compared with the characteristics of the exclusively opposite-sex attracted RCT participants randomised to SPARX and TAU, using Chi-square tests and ANOVA as appropriate.

Completion rates by treatment group were compared using Chi-square tests. The post-intervention Satisfaction Questionnaire and Satisfaction Questionnaire (Month Five) data were summarised descriptively for metric measures using means, standard deviations and ranges, and for categorical variables as frequencies and percentages. Satisfaction Questionnaire data (e.g. would you recommend this treatment to your friends?) were compared by treatment group using Chi-square tests, Fisher's exact tests, and independent t-tests as appropriate. The Satisfaction Questionnaire (Month Five) 'perceived treatment usefulness at three-month follow-up' item was compared by treatment group using Chi-square tests.

The changes in depressive symptoms (as measured by the CDRS-R) from pre- to post-intervention and post-intervention to three-month follow-up were compared between open trial participants and the exclusively opposite-sex attracted RCT participants randomised to SPARX and TAU using general linear models. These models included baseline levels of the depressive symptoms and treatment group as covariates. Where any differences in baseline characteristics were found between groups (e.g. age) the general linear model was repeated and this variable controlled for.

[33] TAU participants were asked "Since the last assessment, have you used any of the skills you learnt?"
[34] TAU participants were asked "How useful was the support for you?"

The changes in functioning on self-report measures (e.g. RADS-2, MFQ, PQ-LES-Q, SCAS and Kazdin HPLS) from pre- to post-intervention and post-intervention to three-month follow-up were compared between open trial participants and the exclusively opposite-sex attracted RCT participants randomised to SPARX and TAU using general linear models. These models included baseline functioning measures as appropriate and treatment group as covariates. Where any differences in baseline characteristics were found between groups (e.g. age) the general linear model was repeated and this variable controlled for.

The numbers and types of AEs in the RCT were also summarised.

General principles

Statistical analyses were performed using PASW (SPSS for Windows Statistical Software package) version 18. Unless otherwise stated, all analyses were carried out using the intent-to-treat principle, in which the analyses included all exclusively opposite-sex attracted participants from the RCT and all open trial participants with depressive symptoms (CDRS-R ≥30) at baseline, regardless of the their subsequent withdrawal from treatment, or withdrawal from assessment or deviation from RCT protocol. Missing responses (e.g. loss to follow-up) were replaced using the last observation carried forward method.

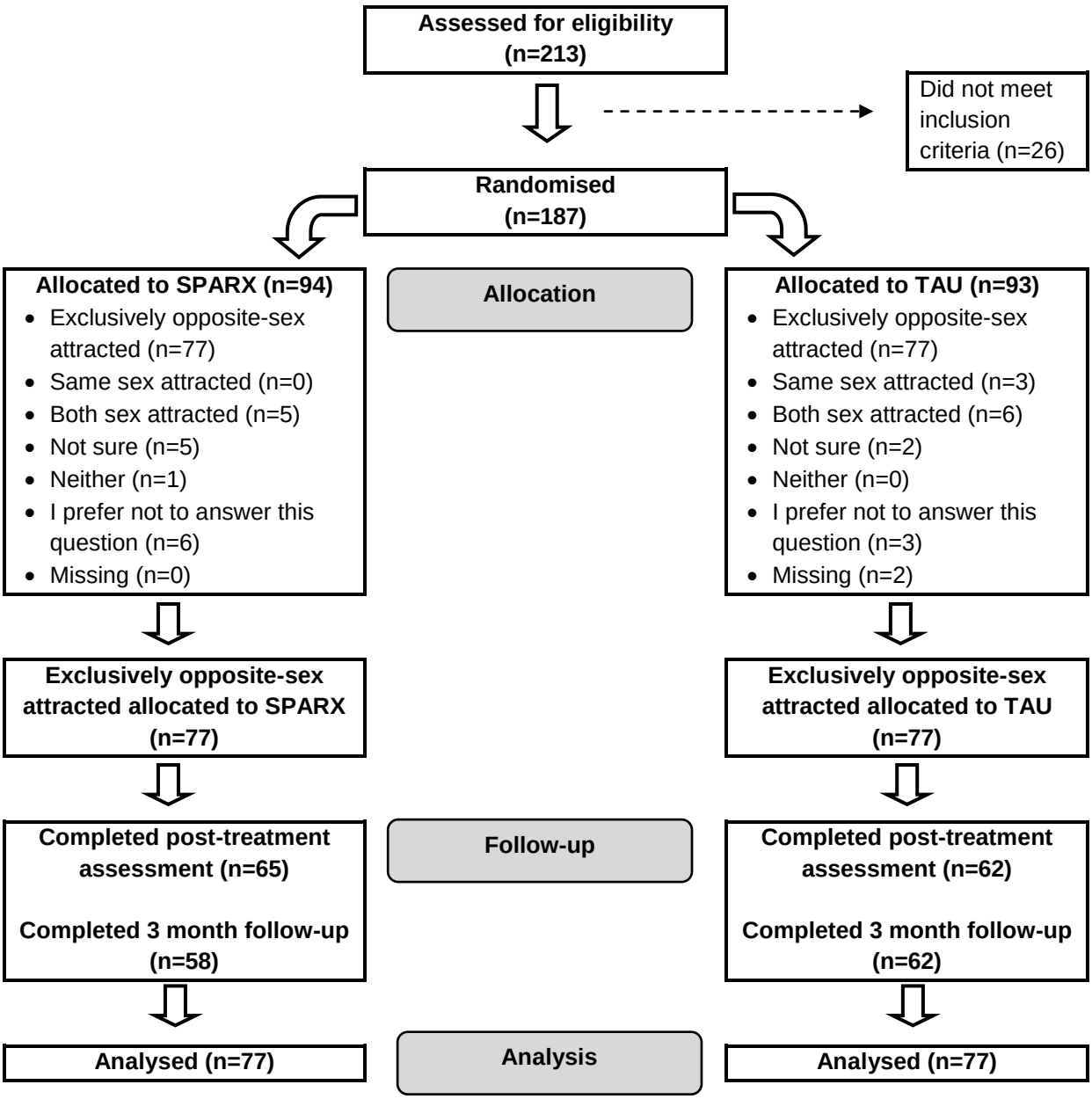
Results for the evaluation of the assumptions required for parametric analyses, normality of sampling distribution, linearity and homogeneity of variance were satisfactory for most of the variables and there were no obvious outliers. A two-tailed p-value <0.05 was taken to indicate statistical significance in all analyses, with no correction for multiple comparisons, as there is considerable correlation amongst the outcome measures.

Results

RCT - Participant flow

The figure below indicates that 187 participants were enrolled in the RCT, 94 in SPARX (CCBT) and 93 in TAU. The research assistants (RAs) who completed all the assessments were blinded to allocation, as only the local investigators (LIs) and participants were aware of treatment allocation. One hundred and fifty four participants were exclusively opposite-sex attracted and were allocated equally (n=77) to both SPARX and TAU. Ten sexual minority youth completed SPARX and eleven completed TAU in the RCT. Due to the small number of sexual minority youth in the RCT, particularly same-sex attracted youth, these data were not further analysed. Post-intervention (n=65 & n=62) and three-month follow-up assessment completion rates (n=58 & n=62) were high (76.6% to 85.7%).

Figure 6. RCT Participant flow – Exclusively opposite-sex attracted young people



Demographic data

Participants across the three treatment groups did not differ significantly in terms of sex, ethnicity and educational status (see Table 24). However, participants in the open trial group were significantly older, being on average one year older than participants from the RCT. Not surprisingly given that open trial participants were older, larger proportions of these participants were in tertiary education or paid employment (although these differences in relation to educational status were not significantly different).

Table 24. Baseline demographic characteristics – Comparisons

	Open Trial (n=21)	RCT- SPARX (n=77)	RCT - TAU (n=77)	Statistical comparison
Age				
Mean age (SD)	16.52 (1.57)	15.55 (1.55)	15.56 (1.71)	*F*=3.269
Age range	13-19	12-19	12-21	p=0.04
Sex[35]				χ^2=3.375
Female	47.6% (n=10)	61.0% (n=47)	68.8% (n=53)	df=2
Male	52.4% (n=11)	39.0% (n=30)	31.2% (n=24)	p=0.185
Ethnicity				
NZ European	71.4% (n=15)	61.0% (n=47)	61.0% (n=47)	
Māori	9.5% (n=2)	24.7% (n=19)	23.4% (n=18)	
Pacific	4.8% (n=1)	6.5% (n=5)	5.2% (n=4)	-
Asian	14.3% (n=3)	3.9% (n=3)	7.8% (n=6)	
Other	0% (n=0)	3.9% (n=3)	2.6% (n=2)	
				χ^2=0.849
NZ European	71.4% (n=15)	61.0% (n=47)	61.0% (n=47)	df=2
Non-NZ European	28.6% (n=6)	39.0% (n=30)	39.0% (n=30)	p=0.654
Educational Status				χ^2=3.438
High School	66.7% (n=14)	84.4% (n=65)	81.8% (n=63)	df=2
Non High School	33.3% (n=7)	15.6% (n=12)	18.2% (n=14)	p=0.179
< Year 9 at School	-	3.9% (n=3)	9.1% (n=7)	
Tertiary Education	14.3% (n=3)	1.3% (n=1)	1.3% (n=1)	
Work	4.8% (n=1)	2.6% (n=2)	-	-
Training Course	4.8% (n=1)	2.6% (n=2)	2.6% (n=2)	
Other	9.5% (n=2)	5.2% (n=4)	5.2% (n=4)	

[35] As indicated by participants on the "Questions About You" form.

Treatment completion rates

Open trial participants were significantly more likely to complete treatment[36] than exclusively opposite-sex attracted RCT participants randomised to SPARX and TAU (90.5% compared with 75.3% and 58.4% respectively). However, there were no significant differences in relation to assessment completion rates by treatment group (see Table 25).

Table 25. Treatment and assessment completion rates

	Open Trial (n=21)	RCT - SPARX (n=77)	RCT – TAU (n=77)	Statistical Comparison
Completed treatment	90.5% (n=19)	75.3% (n=58)	58.4% (n=45)	χ^2=10.07 p=0.007
Completed post-intervention assessments	95.2% (n=20)	85.7% (n=66)	79.2% (n=61)	χ^2=3.45 p=0.178
Missing Data	4.8% (n=1)	14.3% (n=11)	20.8% (n=16)	
Completed 3 month follow-up assessments	81.0% (n=17)	76.6% (n=59)	80.5% (n=62)	χ^2=0.413 p=0.813
Missing Data	19.0% (n=4)	23.4% (n=18)	19.5% (n=15)	

Sessions of treatment completed

The mean number of treatment sessions completed by group ranged from 4.46 to 6.60, with a much wider range of number of potential treatment sessions for the RCT-TAU group compared with the other two groups (where the maximum number of Rainbow SPARX or SPARX sessions could not exceed seven) (see the table below for details).

Table 26. Treatment sessions completed by group

	Open Trial (n=20)	RCT - SPARX (n=65)	RCT – TAU (n=71)
Mean number of sessions completed (SD)	6.60 (1.35)	5.78 (2.06)	4.46 (2.94)
Range	1-7	0-7	0-18

[36] Treatment completion was defined as completing four or more levels of CCBT or four or more sessions of TAU.

Treatment satisfaction data

More than 80% of open trial participants and exclusively opposite-sex attracted RCT-SPARX participants indicated that they thought the intervention would appeal to other young people and that they would recommend Rainbow SPARX or SPARX to their friends (Table 27).

Some of the treatment satisfaction data is missing, as not all of the participants answered all of the post-intervention Satisfaction Questionnaire or the Satisfaction Questionnaire (Month Five) questionnaire items. However (as evident in the following tables) only a small number of data are missing.

Table 27. Post-intervention satisfaction – Appeal & recommendation comparisons

	Open Trial (n=20)	RCT - SPARX (n=65)	Statistical Comparison
Would recommend this treatment to friends			
Yes	80.0% (n=16)	81.0% (n=51)	Fisher's Exact Test
No	20.0% (n=4)	19.0% (n=12)	p=1.00
Missing Data	-	(n=2)	
Treatment would appeal to other young people			
Yes	85.0% (n=17)	96.9% (n=63)	Fisher's Exact Test
No	15.0% (n=3)	3.1% (n=2)	p=0.082

Open trial participants appeared to complete more levels of CCBT and rated the usefulness of Rainbow SPARX more favourably. However, these differences were not significant (Table 28).

Table 28. Summary of results for post-intervention satisfaction (Means)

	Open Trial (n=20) Mean (SD)	RCT - SPARX (n=65) Mean (SD)	Statistical Comparison
Mean number of CCBT levels completed (out of 7)	6.60 (1.35)	5.78 (2.06)	t=-1.661 p=0.10
Total Usefulness of SPARX: The Rainbow Version/SPARX (out of 50)	38.15 (7.46)	35.67 (9.86)	t=-1.034 p=0.304
Total Likeability of SPARX: The Rainbow Version/SPARX (out of 35[37])	27.15 (5.08)	27.34 (5.16)	t=0.148 p=0.883

[37] Three of the ten likability items were excluded from this total score due to their high number of 'not applicable' ratings.

The mean CCBT usefulness ratings ranged from 3.54 to 4.10, indicating that aspects of the interventions were rated as just below or just above a 'Useful' rating (3='Not sure' score and 4='Useful'). These mean scores did not differ significantly for open trial and exclusively opposite-sex attracted RCT-SPARX participants (see table below).

Table 29. Mean post-intervention usefulness ratings SPARX: The Rainbow Version & SPARX

	Open Trial Mean (SD) (n=20)	**RCT - SPARX Mean (SD) (n=64)**	**Statistical Comparison**
Overall usefulness	3.55 (0.89)	3.67 (1.16)	t=0.433 p=0.666
Rated as not applicable	[0]	[0]	
Learning about depression	4.05 (0.89)	3.92 (0.90)	t=-0.559 p=0.577
Rated as not applicable [n]	[0]	[0]	
Do it – Doing more makes you feel better	3.95 (0.94)	3.77 (0.97)	t=-0.712 p=0.479
Rated as not applicable [n]	[0]	[2]	
Relax – Slow breathing & muscle relaxation	4.10 (1.07)	3.63 (1.31)	t=-1.439 p=0.154
Rated as not applicable [n]	[0]	[1]	
Solve it – Problem solving & using STEPS	3.55 (0.94)	3.60 (1.11)	t=0.170 p=0.866
Rated as not applicable [n]	[0]	[2]	
Sort it – Listening, being assertive and negotiation skills	3.65 (0.93)	3.54 (1.01)	t=-0.427 p=0.671
Rated as not applicable [n]	[0]	[3]	
Sort it – Dealing with angry and hurt feelings	3.95 (0.76)	3.77 (0.97)	t=-0.752 p=0.454
Rated as not applicable [n]	[0]	[3]	
Spot it – Spotting negative feelings and thoughts (Gnats)	3.90 (1.07)	3.80 (1.05)	t=-0.357 p=0.722
Rated as not applicable [n]	[0]	[3]	
Spot it – Spotting positive or helpful thoughts (Sparks)	3.75 (1.02)	3.67 (1.02)	t=-0.317 p=0.752
Rated as not applicable [n]	[0]	[4]	
Swap it – Changing negative thoughts (using RAPA)	3.70 (1.03)	3.55 (1.13)	t=-0.526 p=0.6
Rated as not applicable [n]	[0]	[4]	

Ratings: "Very useful"=5 to "Not at all useful"=1

Overall the mean Rainbow SPARX and SPARX likability ratings were favourable, with the items "You can learn things [from it] by yourself at your own pace", "It is different from talking to a doctor/counsellor", "I could do it at home" and "It is made especially for young people" receiving 'Liked' ratings (i.e. scores above 4) for both open trial and exclusively opposite-sex attracted RCT-SPARX participants. The item, "It has video clips of celebrities giving advice" received the lowest mean, and this was because many participants stated that they could not actually find the video clips (as evident by the high number of participants rating this item as not applicable). Apart from for one exception ("I could do it at… [school/GP clinic/youth centre/University]"), the mean ratings by treatment group did not differ significantly. This one item received comparatively less favourable ratings in the open trial, because it was inconvenient for most of these participants to complete Rainbow SPARX anywhere other than at home (refer to the table below for details). However, caution is required when interpreting this result due to the high proportion of open trial participants who rated this item as not applicable.

Table 30. Mean post-intervention likability ratings SPARX: The Rainbow Version & SPARX

	Open Trial Mean (SD) (n=20)	**RCT - SPARX Mean (SD) (n=64)**	**Statistical Comparison**
It looks like a computer game	3.65 (1.14)	3.84 (1.06)	t=0.703 p=0.484
Rated as not applicable [n]	[0]	[0]	
You can learn things [from it] by yourself at your own pace	4.00 (0.92)	4.26 (0.89)	t=1.123 p=0.265
Rated as not applicable [n]	[0]	[2]	
It has video clips of celebrities giving advice	2.70 (1.34)	3.26 (1.21)	t=1.183 p=0.246
Rated as not applicable [n]	[10]	[41]	
It is different from talking to a doctor/counsellor	4.05 (1.05)	4.02 (1.10)	t=-0.122 p=0.903
Rated as not applicable [n]	[0]	[1]	
It showed me things I didn't know	3.90 (0.97)	3.98 (1.13)	t=0.300 p=0.765
Rated as not applicable [n]	[0]	[1]	
I could do it at…[school/GP clinic/youth centre/University]	3.75 (0.89)	4.40 (0.72)	t=2.342 p=0.022
Rated as not applicable [n]	[12]	[4]	
I could do it at home	4.67 (0.69)	4.26 (1.05)	t=-1.460 p=0.151
Rated as not applicable [n]	[2]	[30]	
It comes with a Notebook that I can keep	4.26 (1.10)	3.78 (1.37)	t=-1.569 p=0.125
Rated as not applicable [n]	[1]	[5]	
It is made especially for young people	4.05 (0.89)	4.03 (1.12)	t=-0.066 p=0.947
Rated as not applicable (n)	[0]	[1]	
It has a New Zealand look and feel	3.63 (1.30)	4.05 (1.00)	t=1.284 p=0.211
Rated as not applicable (n)	[1]	[0]	

Ratings: "really liked"=5 to "didn't like"=1

A sizeable number of participants shared what they had learnt or discovered with regards to the treatment that they received. The vast majority of open trial participants completed Rainbow SPARX at home, whereas a small proportion of RCT participants completed treatment at home. On average TAU sessions were more than 30 minutes in duration, whereas most participants completing CCBT took less than 30 minutes to complete a level. Half of the open trial participants indicated that the levels should be longer, whilst the bulk of RCT participants thought that the sessions or levels should remain as they were. Most of the open trial participants and RCT-SPARX participants reported completing at least some of the challenges set at the end of each level. Half of the RCT-TAU participants rated this item as not applicable, as they were not specifically set challenges (see the table below for details).

Table 31. Summary of results for post-intervention satisfaction questionnaire (Percentages)

	Open Trial (n=20)	**RCT - SPARX (n=65)**	**RCT – TAU (n=62)**
Shared what was learnt/discovered with others			
Yes	40.0% (n=8)	40.0% (n=26)	51.6% (n=32)
No	60.0% (n=12)	60.0% (n=39)	45.2% (n=28)
Missing Data	-	-	3.2% (n=2)
Where levels were completed/ treatment carried out			
Home	80.0% (n=16)	10.8% (n=7)	3.2% (n=2)
School	10.0% (n=2)	41.5% (n=27)	46.8% (n=29)
GP clinic	-	3.1% (n=2)	1.7% (n=1)
Youth Centre	-	44.6% (n=29)	40.3% (n=25)
Somewhere else	10.0% (n=2)	-	3.2% (n=2)
Missing Data	-	-	4.8% (n=3)
Length of time required to complete a level/session			
< 20 minutes	25.0% (n=5)	29.2% (n=19)	9.7% (n=6)
20-30 minutes	70.0% (n=14)	47.7% (n=31)	6.4% (n=4)
30-40 minutes	5.0% (n=1)	20.0% (n=13)	19.4% (n=12)
> 40 minutes	-	3.1% (n=2)	58.1% (n=36)
Missing Data	-	-	6.4% (n=4)
Should sessions/levels be			
Longer	50.0% (n=10)	44.6% (n=29)	14.5% (n=9)
Shorter	5.0% (n=1)	1.5% (n=1)	-
Stay as they are	45.0% (n=9)	52.4% (n=34)	79.0% (n=49)
Missing Data	-	1.5% (n=1	6.5% (n=4)
Challenges set at the end of sessions/levels completed			
All of them	40.0% (n=8)	29.2% (n=19)	8.1% (n=5)
Most of them	20.0% (n=4)	29.2% (n=19)	19.4% (n=12)
Some of them	30.0% (n=6)	27.7% (n=18)	11.3% (n=7)
None of them	10.0% (n=2)	10.8% (n=7)	6.4% (n=4)
Missing	-	3.1% (n=2)	3.2% (n=2)
Not applicable	-	-	51.6% (n=32)

Treatment satisfaction data – Three-month follow-up

Most participants rated their treatment as either 'Very useful' or 'Useful' and the vast majority reported that they had utilised the skills that they learnt as a result of treatment (Table 32). The 'Relax' component of Rainbow SPARX and SPARX was identified as the most commonly used skill and it was perceived to be the most useful.

Table 32. Summary of results for Satisfaction Questionnaire (Month Five)

	Open Trial (n=17)	RCT - SPARX (n=58)	RCT – TAU (n=62)
How useful was the support/programme for you?			
Very useful	35.4% (n=6)	27.6% (n=16)	38.7% (n=24)
Useful	29.4% (n=5)	39.7% (n=23)	51.6% (n=32)
Fair	17.6% (n=3)	20.7% (n=12)	6.5% (n=4)
Not very useful	17.6% (n=3)	6.9% (n=4)	-
Not at all useful	-	5.2% (n=3)	1.6% (n=1)
Other	-	-	1.6% (n=1)
Since finishing treatment have you used any of the skills you learnt?			
Yes	100% (n=17)	81.0% (n=47)	79.0% (n=49)
No	-	19.0% (n=11)	21.0% (n=13)
Which SPARX skills have you used [multiple answers possible]?			
Do it	17.7% (n=3)	22.4% (n=13)	-
Relax	76.5% (n=13)	70.7% (n=41)	
Sort it	35.3% (n=6)	24.1% (n=14)	
Solve it	23.5% (n=4)	20.7% (n=12)	
Spot it	35.3% (n=6)	29.3% (n=17)	
Swap it	29.4% (n=5)	8.6% (n=5)	
Ask for help	29.4% (n=5)	22.4% (n=13)	
Which SPARX skill has been the most useful?			
Do it	11.8% (n=2)	10.3% (n=6)	-
Relax	41.2% (n=7)	53.4% (n=31)	
Sort it	5.8% (n=1)	-	
Solve it	11.8% (n=2)	5.2% (n=3)	
Spot it	11.8% (n=2)	6.9% (n=4)	
Swap it	5.8% (n=1)	-	
Ask for help	11.8% (n=2)	3.4% (n=2)	
Other	-	6.9% (n=4)	
Missing Data	-	13.8% (n=8)	

Approximately two-thirds of open trial participants and exclusively opposite-sex attracted RCT - SPARX participants rated their treatment as useful (with 'Very useful' or 'Useful' scores) and about one-third rated it as fair or not useful (with 'Fair', 'Not very useful' and 'Not at all useful' scores). By comparison, exclusively opposite-sex attracted RCT-TAU participants rated their treatment significantly more favourably, with 92% indicating that it was useful (see table below).

Table 33. Perceived treatment usefulness at three-month follow-up

	Open Trial (n=17)	RCT - SPARX (n=58)	RCT – TAU (n=61)	Statistical Comparison
Useful	64.7% (n=11)	67.2% (n=39)	91.8% (n=56)	χ^2=12.41
Fair or not useful	35.3% (n=6)	32.8% (n=19)	8.2% (n=5)	p=0.002

Clinical data

Description of TAU

Information detailing TAU was available for 71 of the 77 exclusively opposite-sex attracted participants randomised to this intervention. Of those 71 participants, three-quarters (77.5%, n=55) received counselling in some form. This included individual counselling (n=48), psychotherapy (n=1), group counselling (n=9), family therapy (n=4) and psycho-education (n=2) or a combination of these four interventions (i.e. seven participants received two forms of counselling and one participant received three forms of counselling). A total of 22.5% of participants (n=16) were provided "support/watchful waiting" and three participants were prescribed medication. Most TAU sessions were fairly long in duration; for 39 participants their sessions averaged 45 minutes or longer and for 17 participants their sessions averaged between 30 and 45 minutes in length.

Results for baseline data

At baseline the primary and secondary outcome measures did not differ significantly by group (Table 34). Participants in the open trial and RCT had scores approximating mild to moderate depressive symptoms. For instance, the mean score for the CDRS-R across the three treatment groups was just above the cut-off for depression (i.e. a raw score of 40), the mean scores for the RADS-2 were just below cut-off (i.e. scores ≥77), and the mean scores for MFQ were close to the cut-off (i.e. scores ≥27) for depression. Group mean results for the PQ-LES-Q, SCAS and Kazdin HPLS indicated reduced quality of life, notable co-morbid features of anxiety, and elevated hopelessness in participants.

Table 34. Baseline clinical characteristics

	Open Trial (n=21)	RCT - SPARX (n=77)	RCT - TAU (n=77)	Statistical Comparison
CDRS-R				
Mean CDRS-R	41.48	42.14	41.56	F=0.071
(SD) at Baseline	(10.35)	(10.78)	(10.40)	p=0.931
RADS-2				
Mean RADS	71.33	73.65	75.43	F=0.771
(SD) at Baseline	(15.03)	(13.09)	(15.10)	p=0.464
MFQ				
Mean MFQ	25.10	26.62	29.57	F=1.561
(SD) at Baseline	(12.97)	(11.93)	(13.31)	p=0.213
PQ-LES-Q				
Mean PQ-LES-Q	29.43	28.88	27.71	F=0.445
(SD) at Baseline	(8.19)	(9.07)	(9.68)	p=0.641
SCAS				
Mean Spence	38.81	35.82	33.71	F=0.97
(SD) at Baseline	(15.53)	(15.83)	(15.47)	p=0.381
Kazdin HPLS				
Mean Score	4.76	5.65	6.35	F=1.763
(SD) at Baseline	(3.10)	(3.66)	(4.46)	p=0.18

Comparisons of symptom and functioning results

Pre-, post- and follow-up results by treatment group show a general pattern of improvements pre- to post- intervention, often with further (but generally minor) improvements between post-intervention and the three-month follow-up results (Table 35). Changes in assessment scores pre- to post-intervention and post-intervention to three-month follow-up did not differ significantly by treatment group (Table 36). The analyses in Table 36 were also repeated, controlling for age (as open trial participants were significantly older than RCT participants). However the significance of the results did not change after controlling for this variable.

Table 35. Assessment scores across all time points

	Open Trial (n=21)			RCT – CCBT (n=77)			RCT – TAU (n=77)		
	Pre	**Post**	**F/Up**	**Pre**	**Post**	**F/Up**	**Pre**	**Post**	**F/Up**
CDRS-R (SD)	41.48 (10.35)	34.05 (10.24)	33.43 (12.04)	42.14 (10.78)	33.57 (11.10)	29.11 (9.38)	41.56 (10.40)	36.04 (11.92)	29.85 (10.04)
RADS (SD)	71.33 (15.03)	63.43 (14.84)	62.57 (17.60)	73.65 (13.09)	64.35 (14.80)	59.82 (13.70)	75.43 (15.10)	69.70 (14.34)	61.90 (15.42)
MFQ (SD)	25.10 (12.97)	18.90 (13.71)	19.57 (14.68)	26.62 (11.93)	18.55 (12.70)	15.29 (10.83)	29.57 (13.31)	23.71 (13.14)	18.30 (12.57)
PQ-LES-Q (SD)	29.43 (8.19)	32.24 (9.98)	34.76 (9.35)	28.88 (9.07)	33.61 (10.24)	35.41 (9.63)	27.71 (9.68)	30.40 (10.54)	34.15 (10.01)
SCAS (SD)	38.81 (15.53)	30.95 (16.11)	27.29 (15.79)	35.82 (15.83)	27.90 (15.21)	24.74 (14.94)	33.71 (15.47)	29.96 (16.08)	25.86 (14.91)
Kazdin HPLS (SD)	4.76 (3.10)	3.33 (2.85)	2.95 (2.20)	5.65 (3.66)	4.10 (3.43)	3.29 (3.03)	6.35 (4.46)	5.35 (4.50)	3.79 (3.93)

Table 36. Changes in assessment scores across time

	Change Pre to Post				Change Post to F/Up			
	Open Trial (n=21)	**RCT - SPARX (n=77)**	**RCT-TAU (n=77)**	**Statistical Comparison**	**Open Trial (n=21)**	**RCT - SPARX (n=77)**	**RCT-TAU (n=77)**	**Statistical Comparison**
CDRS-R								
Mean Change	-7.43	-8.57	-5.52	F=1.87	-0.62	-4.47	-6.19	F=2.87
(CI)	(-10.79 to -4.07)	(-11.05 to -6.08)	(-7.65 to -3.38)	p=0.158	(-5.82 to 4.58)	(-6.47 to -2.46)	(-8.45 to -3.92)	p=0.06
RADS								
Mean Change	-7.90	-9.30	-5.73	F=2.72	-0.86	-4.53	-7.80	F=2.22
(CI)	(-12.17 to -3.64)	(-12.48 to -6.13)	(-8.49 to -2.97)	p=0.07	(-5.41 to 3.70)	(-7.39 to 1.69)	(-11.18 to -4.43)	p=0.112
MFQ								
Mean Change	-6.19	-8.07	-5.86	F=1.96	0.67	-3.26	-5.41	F=1.97
(CI)	(-11.13 to -1.25)	(-10.76 to -5.38)	(-8.53 to -3.18)	p=0.144	(-5.58 to 6.92)	(-5.55 to -0.97)	(-8.08 to -2.74)	p=0.143
PQ-LES-Q								
Mean Change	2.81	4.73	2.69	F=1.74	2.52	1.80	3.75	F=0.85
(CI)	(-1.18 to 6.80)	(2.66 to 6.79)	(0.99 to 4.39)	p=0.178	(-0.55 to 5.60)	(-0.08 to 3.67)	(1.69 to 5.81)	p=0.431
SCAS								
Mean Change	-7.86	-7.92	-3.74	F=2.29	-3.67	-3.16	-4.10	F=0.28
(CI)	(-11.62 to -4.10)	(-10.32 to -5.32)	(-6.47 to -1.02)	p=0.105	(-7.73 to 0.39)	(-5.57 to -0.75)	(-6.59 to -1.62)	p=0.754
Kazdin HPLS								
Mean Change	-1.43	-1.55	-1.00	F=1.82	-0.38	-0.80	-1.56	F=1.17
(CI)	(-2.43 to -0.43)	(-2.41 to -0.69)	(-1.85 to -0.14)	p=0.165	(-1.31 to 0.55)	(-1.40 to -0.20)	(-2.39 to -0.73)	p=0.312

RCT - Adverse Events (AE) data

In total, 36 AEs were recorded for the exclusively opposite-sex attracted participants from the RCT. Thirteen AEs occurred among six individuals (five participants had two events and one participant had three events). AEs classified as 'unrelated' to treatment included physical illnesses, injuries, and reactions to situations such as family stressors. Worsening in mood or increased self-harm was coded as 'possibly' related to treatment, on the grounds that the allocated intervention may not have been sufficiently effective. In both cases the 'probable' events were situations where there were family disagreements about the young person's involvement in the RCT and these disagreements led to a worsening of mood. The majority of AEs were unrelated to the study and participants were able to continue their participation. All AEs were rated by severity, the least severe events (categorised as 'low' severity) included increased anxiety, disengagement from school, and a family disagreement about treatment. AEs categorised as 'moderate' severity included worsening of mood, running away from home, increased suicidal thinking or deliberate self-harm (e.g. cutting oneself) or referral to specialist care. A suicide attempt was categorised as 'serious' severity, however this suicide attempt was deemed to be unrelated to the RCT and the participant withdrew from the study. All but one AE were in the 'low' and 'moderate' severity category (see Table 37 for details).

Table 37. Adverse events recorded during the RCT

	RCT - SPARX	RCT - TAU
Number of adverse events	21	15
Relationship to study		
Unrelated	12	8
Possibly	8	6
Probable	1	1
Outcome		
Continue with study	19	14
Withdrawn from study	2	1
Severity of adverse events		
Low	9	5
Moderate	11	10
Serious	1	-

RCT - Additional support at baseline

Participants enrolled in the RCT did not receive or were not receiving CBT, interpersonal therapy or antidepressant medication at baseline, as these would have made them ineligible for participation.

Discussion

Statement of principal findings

The results of the 21 sexual minority youth enrolled in the open trial were compared with the results of the 154 exclusively opposite-sex attracted participants from a RCT equally randomised to SPARX or TAU. More than 90% of sexual minority youth completed treatment and they were significantly more likely to complete treatment than exclusively opposite-sex attracted participants randomised to SPARX or TAU. SPARX: The Rainbow Version and SPARX were both perceived to be useful and likable interventions. Although CCBT was perceived to be very useful, TAU was rated as significantly more useful than CCBT at the three-month follow-up assessment. This is not surprising given that Rainbow SPARX and SPARX are generic computer-based interventions, whereas TAU primarily consisted of face-to-face counselling. In face-to-face sessions participants could presumably focus on issues specific to their current situation. These results also suggest that the quality of TAU in this study was high.

The reductions in depressive symptoms of sexual minority participants as measured using the CDRS-R, RADS-2 and MFQ and changes in other assessments (PQ-LES-Q, SCAS and Kazdin HPLS) were similar to those of RCT participants. The significance of these results did not change after controlling for age (as open trial participants were significantly older than RCT participants). However, caution is required when interpreting the non-significance of the comparisons to the RCT, as the open trial may have been under-powered to detect the significance of certain findings (e.g. for the results presented in Table 36).

Relevance of current study

Critical reviews of research on sexual minority youth have highlighted that the majority of previous studies do not include comparisons to exclusively opposite-sex attracted young people (Almeida et al., 2009; Safren & Heimberg, 1999) and as discussed above, all prior treatment-based studies for depression in sexual minority youth have been case studies with four or fewer participants. I have been able to advance the field, not only by conducting the largest treatment study of depressive symptoms in sexual minority youth, but by also comparing the results with those of two comparison groups of exclusively opposite-sex attracted young people, one completing SPARX and the other having TAU.

Initially I thought that sexual minority participants might rate Rainbow SPARX more favourably than SPARX was rated by exclusively opposite-sex attracted participants. This was because there is a lack of 'culturally appropriate' health services for sexual minority individuals (Mayer et al., 2008) and because many sexual minority individuals prefer 'gay affirmative' therapy (Liddle, 1997). Sexual minority youth were more likely to complete treatment, possibly indicating increased treatment acceptability amongst open trial participants. However, post-intervention Rainbow SPARX and SPARX received comparable total usefulness and likability ratings, with SPARX also receiving good ratings on these dimensions.

Open trial participants experienced a clinically meaningful reduction in depressive symptoms immediately post-intervention and the magnitude of this reduction was comparable to that experienced by exclusively opposite-sex attracted RCT participants randomised to either SPARX or TAU. Caution is required when comparing these results as open trial participants were eligible to receive additional help (e.g. antidepressant medication),

whereas RCT participants were excluded from the study if they were receiving additional help for their depressive symptoms at baseline.

Strengths and limitations of the study

Strengths of the current study

This study consisted of an open trial and two comparison groups from a parallel RCT. The large exclusively opposite-sex attracted groups from the RCT meant that the results from the open trial could be compared with those of participants randomised to both TAU and SPARX. These comparisons were made possible by asking participants to categorise their sexual attractions and by using the same assessments across the open trial and RCT.

Rainbow SPARX and SPARX are the only CCBT programs delivered in a 3-D fantasy-based game-like format designed with and for New Zealand adolescents. Utilising a game-like program which was locally produced may have been one of the factors that contributed towards the high treatment completion rates and favourable satisfaction results for CCBT.

The use of three assessments of depression was particularly relevant, as two of the assessments were 'pen and paper' self-report measures (i.e. RADS-2 and MFQ) and the third was a clinical assessment administered by researchers. Comparisons across assessments demonstrated that open trial participants consistently had equivalent depressive symptoms to the exclusively opposite-sex attracted participants, thus indicating that the reductions in depressive symptoms were not a result of a bias on my part (as the sole assessor utilising the CDRS-R with open trial participants).

Limitations of the current study

Some caution is required when making comparisons between the open trial and the RCT, as there were several differences between the studies. Firstly, open trial participants were young people recruited from locations that were primarily for social support related to their sexuality. Young people at these settings who were feeling 'stressed or low' were actively recruited, whereas RCT participants were all adolescents seeking professional help for their depression. Secondly, in the RCT participants were ineligible for participation in the study if they were receiving antidepressant medication or other relevant therapies, whereas in order to maximise the number of sexual minority participants, open trial participants were able to receive these additional forms of support. Despite the differences between the studies, every effort was made to replicate (where possible) the same features. For example, the CBT content of Rainbow SPARX and SPARX was largely the same (with modifications to content of examples and the look of the avatars), both studies utilised the same assessments, the open trial and RCT were conducted according to the same timeframes and for participants completing CCBT, the level of professional support offered was comparable.

It could be argued that the increased rates at which sexual minority participants completed treatment was to do with certain personal factors. In particular, open trial participants might have finished four or more levels of Rainbow SPARX to please me. However, I was involved in approximately 10% of all the RCT assessments and the other RAs associated with the RCT were very personable. Once a RA completed the pre-intervention assessment with a RCT participant they were then expected to complete all subsequent assessments for that

particular individual, and this resulted in broadly similar assessor-participant relationships across the open trial and RCT. Treatment completion was determined by participants' self-report in both studies.

Comparisons to prior research

The current study will be a useful addition to the field of CCBT research and in research on sexual minority young people. Of the six CCBT programs evaluated in adolescents with depressive symptoms, three programs (Stressbusters, Master your mood online and Reach Out! Central) have not been evaluated with a control or comparison group (Abeles et al., 2009; Gerrits et al., 2007; Shandley et al., 2010). Furthermore, with a combined total of 175 participants (i.e. 21 sexual minority youth from the open trial and 154 exclusively opposite-sex attracted participants from the RCT) the current study is a large CCBT study, with only two other comparable CCBT studies having larger samples (Calear et al., 2009; Shandley et al., 2010). There have been no other depression studies that compare outcomes between sexual minority young people and exclusively opposite-sex attracted young people.

Ten of the 22 studies reviewed in a meta-analysis of CCBT for adults provided patient satisfaction data, with 86% of patients reporting that they were satisfied or very satisfied with treatment (Andrews et al., 2010). Our participants also reported similar satisfaction ratings. However, at three-month follow-up TAU participants had the highest satisfaction scores, and this is probably indicative of the fact that face-to-face counselling was more sensitive to client-specific requirements of therapy. However, workforce shortages (Mental Health Commission, 2001, 2004) mean that most young people who need psychological help are not getting it. Ideally, in the future there would be a stepped-care approach, where young people with mild to moderate depressive symptoms would first be offered CCBT and, should they need further assistance, face-to-face therapy could be offered subsequently.

Having an open trial study conducted alongside a RCT provided an opportunity to compare the depressive symptoms of sexual minority youth pre- and post-intervention and at three-month follow-up with those of two comparison groups of exclusively opposite-sex attracted youth. The study design has permitted comparisons to be made between a specially adapted form of CCBT (SPARX: The Rainbow Version) and two additional interventions; SPARX and treatment as usual (TAU). This is relevant because it allows for comparisons to be made between Rainbow SPARX and SPARX and to the usual treatment of adolescent depression, which for most young people was face-to-face counselling. By contrast, all previous studies in the field of sexual minority youth and depression have been case studies with no control group (e.g. Goff, 1990; Hart & Heimberg, 2001; Hussain & Roberts, 1998; Jackson et al., 2005).

Assessment of gender diversity

One of the open trial participants was questioning his gender identity and another considered herself transgender[38]. This information was disclosed when the participants were more familiar with me during the post-intervention and three-month follow-up assessments, as they were being interviewed using the CDRS-R. In retrospect it would have been useful to add a specific question to the demographic questionnaire pertaining to gender identity. For example, participants could have been asked whether they considered themselves to be

[38] She was biologically male at birth and had recently started hormone treatment.

transgender (with responses “yes”, “no”, “don’t know”), as this item has been used successfully in a population-based survey in Boston (Almeida et al., 2009). This additional item would have more formally established the number of transgender participants in the study. However, I suspect that although an item assessing gender diversity would not have been problematic amongst open trial participants, it would have been less acceptable to exclusively opposite-sex attracted participants from the RCT and therefore its inclusion could have been controversial.

Conclusions

This study formally evaluated Rainbow SPARX with 21 sexual minority adolescents in an open trial and compared the results to 154 exclusively opposite-sex attracted participants from a RCT randomised to SPARX or TAU. Sexual minority youth were significantly more likely to complete treatment than RCT participants. SPARX: The Rainbow Version and SPARX were both consistently rated as useful and likable interventions, however TAU was rated as significantly more useful than CCBT at the three-month follow-up assessment. Sexual minority participants experienced similar improvements in symptoms and functioning compared to exclusively opposite-sex attracted participants, when compared using the same assessment tools.

Chapter Five - STUDY FOUR

Qualitative evaluation of SPARX: The Rainbow Version

Aims

To complement the quantitative evaluation of SPARX: The Rainbow Version and in order to obtain sufficient depth and detail in relation to the acceptability of SPARX: The Rainbow Version amongst sexual minority youth (and to obtain participants' feedback about their experiences of the research process), a qualitative study was also completed. This study took the form of semi-structured interviews conducted with all participants that were enrolled in the open trial. The aim of the interviews was to determine participants' views on:

- What they liked and did not like about Rainbow SPARX;
- How Rainbow SPARX might benefit others;
- What they thought of the sexuality-specific content of Rainbow SPARX;
- What they thought about completing the weekly challenges (or homework tasks) associated with SPARX: The Rainbow Version;
- Whether or not SPARX: The Rainbow Version helped them feel better or less depressed;
- What it was like being involved in the project and their motivation to participate in the study;
- How to conduct future research with sexual minority youth; and
- Their sexual orientation or sexual attractions and how they would describe these.

Methods

Interview recruitment

All the participants enrolled in the open trial (n=27), were eligible to take part in a post-Rainbow SPARX semi-structured interview (including those without mild to moderate depressive symptoms (raw score ≤29 on the CDRS-R) or those who did not meet the sexuality inclusion criteria for Study Three). These youth were included in the current study as it was thought that these 'outliers' would further enrich the data and help to ensure the sample best reflected the diversity within the sexual minority youth population (Barbour, 2000).

Interviewer

It is important to 'own one's perspective' when conducting qualitative research (Elliott, Fischer, & Rennie, 1999), therefore from the outset I was open about some of my professional and personal details so that participants were aware of my background. I carried out all of the semi-structured interviews and participants were aware that I was a co-developer of Rainbow SPARX and so was well orientated to and knowledgeable about the computer program being discussed. Although this was a potential advantage, it was also a potential disadvantage, as participants may have felt reluctant to say negative things about Rainbow SPARX, knowing that I was involved in its development. I was known to all of the participants, as they had previously met me whilst they completed the pre- and post-intervention assessments. All of the participants knew that I was a PhD student, as this was explicitly stated in the participant information sheet. I made a decision to state that I was gay when promoting the study, as I thought this would support participants' legitimization of their own experience of being a sexual minority young person (Allen, 2006) and I did this so that I would not be seen as an outsider in

the eyes of the participants (Allen, 2006). However, I incorrectly assumed that all the participants knew I was gay, as one participant asked me about my sexuality before agreeing to take part in an interview, indicating that not all of the participants were aware of my sexual orientation.

Participants' sexuality

At study enrolment participants provided demographic information, which included two survey items on their sexuality. Toward the beginning of each semi-structured interview I stated: *"Since my research is focused on same/both-sex attracted youth and young people questioning their sexuality, and because different people like to use different words to describe themselves, how would you describe your sexual orientation or attraction/s?"* I explained that I was asking this question to guarantee that I 'got the terminology right' in order to ensure that I used the correct terms and so that I did not cause any offense during the interview. The responses participants provided were classified as their verbal description of their sexual orientation or attractions.

Interview design

I used semi-structured individual interviews rather than focus groups for both practical and theoretical reasons. It was more practical to offer individual interviews after each participant had completed the intervention, rather than waiting for a certain number of individuals to finish Rainbow SPARX before facilitating a focus group. Separate interviews were more convenient as they could be conducted at a time suitable to each participant. Individual interviews were carried out for theoretical reasons also, as individual interviews are thought to glean more socially sensitive data in comparison to focus groups (Kaplowitz, 2000) and to allow collection of more detailed information from each individual (Heary & Hennessy, 2006). Facilitating collection of in-depth data of a sensitive nature seemed especially relevant, given that the young people were to talk about issues pertaining to their sexuality.

To further ensure that participants felt sufficiently comfortable discussing potentially challenging matters, I covered the following points at the beginning of each interview:

- My name, designation and the purpose of the interview, highlighting that I was particularly interested in how SPARX: The Rainbow Version was useful or not so useful and how it could be improved;
- That I was interested in participants' experiences of being recruited into the study and their thoughts about what would work when recruiting sexual minority youth into future studies;
- That the interview would be audio-taped;
- That the names of people and places mentioned would remain confidential;
- That the audio-recordings would be erased after transcription;
- That the information would be kept securely at the Department of Psychological Medicine, University of Auckland;
- That all computer records of the audio-recording would be password protected;
- That all future use of the information collected would be strictly controlled in accordance with the Privacy Act; and
- I also asked each interviewee how they would describe their sexual orientation or attraction(s) by asking certain questions (e.g. *"What do you think of labels like gay, lesbian, bisexual or queer?"* and *"What label or labels would you prefer that I use for the rest of the interview today?"*).

A semi-structured interview format was used when conducting interviews (see Appendix P for a copy of the interview schedule). The initial questions for each section tended to be broad and open, followed by more specific questions (when needed).

For example, a very broad question:

- What did you think of SPARX?

Followed by a more specific question:

- What did you like [didn't you like] about SPARX?

Followed by a series of even more precise questions:

- What did you like [didn't you like] about the design or look of SPARX?
- What did you like [didn't you like] about the mini-games or puzzles in SPARX?
- What did you like [didn't you like] about the characters and the messages they gave?
- Was there anything else you liked [didn't you like] about SPARX?

Interview analysis

Thematic analysis based on the general inductive approach (as also used in Study Two) was utilised to investigate common themes, points of agreement/disagreement and interrelationships between themes from the interviews (Thomas, 2006). This approach allows the inherent "frequent, dominant or significant themes" (Thomas, 2006, p. 3) to be identified from the raw data. This approach was selected as it is a straightforward approach to qualitative data analysis (Thomas, 2006). NVivo8 software was used to manage the data and support the thematic analyses.

Each interview was audio-recorded and professionally transcribed. According to the method described by Braun and Clarke (2006) the transcripts were thoroughly checked against the original audio recordings for accuracy. This process highlighted a few minor transcription errors which were corrected before data analysis occurred.

As suggested by Braun and Clarke (2006) I was not overly rigid in making decisions about what constituted a theme, but considered a theme to be something that occurred repeatedly and was important in relation to the research aims (e.g. acceptability of SPARX: The Rainbow Version and suggestions on how to best conduct research with sexual minority youth).

After reading and re-reading the transcripts several times, interesting features across the interviews were coded. At this stage an independent researcher reviewed a random sample of uncoded transcripts (equivalent to 10% of each interview) and independently coded these excerpts after familiarising herself with the study's aims and the questions from the semi-structured interview. After this, the independently coded excerpts were compared with my original coded transcripts. The result of cross-checking showed that the interpretation of data was valid and objective, although some minor discrepancies in interpretation and naming of codes were identified and then resolved through discussion. After the coding check was completed, codes were then collated into potential themes, after which themes were developed and checked against the other themes and back to the original data set. The above mentioned independent researcher also provided feedback on the naming of the themes and sub-themes. A preliminary summary of themes was also sent to participants for feedback. Only one participant responded, but no changes were suggested.

Interview ethics

Ethical approval for the semi-structured interviews was obtained from the Multi Region Ethics Committee (Ref: MEC/09/01/002). Before beginning the intervention participants were given an information sheet, which clearly stated that they would be invited to take part in an individual interview about SPARX: The Rainbow Version immediately after the post-intervention assessment. Written consent from each participant (and for those 13 to 15 years old, from a parent or guardian) was obtained before any interviews were conducted. Each participant received a $20 Westfield shopping voucher as a gratuity for their feedback on SPARX: The Rainbow Version.

Results

Interview participants

All of the young people who completed a post-intervention assessment also participated in the post-Rainbow SPARX semi-structured interview. The interviews were conducted between the 7th of September 2009 and the 2nd of September 2010 and lasted from eight minutes to thirty-six minutes (mean=17 minutes and 43 seconds, SD=6 minutes and 52 seconds). In total 25 interviews were carried out with 20 of these interviews conducted with participants from Study Three. Of the remaining five interviews, four interviewees did not have depressive symptoms at baseline (John, Ruby, Sapphire and Maree) and one interviewee identified as being *"straight"* (Jamie). Six of the participants were adolescents between the ages of 13 and 15 years old, and these young people required the consent of a parent or guardian to participate in the study. The remaining 19 participants were adolescents between the ages of 16 and 19 years old (mean age of all participants=16.36 years). Twelve participants identified as male and 13 participants identified as female during baseline assessment. The participants were an ethnically diverse group. However, based on prioritised ethnicity (Lang, 2002), the majority were New Zealand European (15 participants) with the remainder being classified as Māori (n=3), Asian (n=2), Pasifika (n=1) or an 'Other' ethnicity (n=4). To ensure that participants could not be identified they were given pseudonyms and their ethnicity information has not been presented in Table 38. Therefore, the table summarizes participants' age, self-identified sex, and their self-reported sexual attraction (based on the Youth'07 sexual attraction question) and self-labelled sexuality.

Table 38. Interviewees' demographic information at baseline

Name	Sex	Age	Which are you sexually attracted to?	Self-labelled sexuality
Participants from Study Three				
Max	Male	18	Same Sex	Gay or Lesbian (attracted to the same sex)
Steven	Male	16	Same Sex	Gay or Lesbian (attracted to the same sex)
Andy	Male	19	Same Sex	Gay or Lesbian (attracted to the same sex)
Georgie	Male	17	Same Sex	Gay or Lesbian (attracted to the same sex)
Alex	Female	16	Opposite Sex[39]	Gay or Lesbian (attracted to the same sex)
Dan	Male	18	Both Sexes	Bisexual (attracted to both sexes)
Tina	Female	19	Same Sex	Gay or Lesbian (attracted to the same sex)
Lara	Female	17	Same Sex	Gay or Lesbian (attracted to the same sex)
Natasha	Female	19	Both Sexes	Bisexual (attracted to both sexes)
Kelly	Female[40]	17	Both Sexes	Other – "pansexual"
Goldie	Female	16	Same Sex	Other – "emotionally/mentally lesbian. Physically bisexual"
Helen	Female	16	Both Sexes	Bisexual (attracted to both sexes)
Sasha	Female	15	Both Sexes	Bisexual (attracted to both sexes)
Stefan	Male	17	Same Sex	Gay or Lesbian (attracted to the same sex)
Danu	Female	16	Same Sex	Gay or Lesbian (attracted to the same sex)
Jack	Male	14	Both Sexes	Bisexual (attracted to both sexes)
Bob	Male	13	Both Sexes	Bisexual (attracted to both sexes)
Troy	Male	16	Both Sexes	Bisexual (attracted to both sexes)
Julia	Female	17	Both Sexes	Bisexual (attracted to both sexes)
Jay	Male	15	Not Sure	Other – "mostly homosexual with bisexual tendencies"
Not participants in Study Three				
John	Male	17	Same Sex	Gay or Lesbian (attracted to the same sex)
Ruby	Female	16	Both Sexes	Bisexual (attracted to both sexes)
Sapphire	Female	16	Both Sexes	Bisexual (attracted to both sexes)
Maree	Female	15	Both Sexes	Bisexual (attracted to both sexes)
Jamie	Male	14	Opposite Sex	Mostly heterosexual

[39] Alex was born female (i.e. his sex at birth) and this is why he reported being of female sex, but his gender identity was male. Hence he selected "opposite sex attracted" (i.e. a male attracted to females) for this item.

[40] Kelly's biological sex at birth was male; however her gender identity was female.

Participants' sexuality

Nineteen of the participants verbally summarised their sexual orientation or attractions in a way that appeared similar across the three sexuality items (i.e. selected sexual attraction, selected sexual orientation and verbal description of sexual orientation or attractions). Ten participants were attracted to people of both sexes and verbally described their sexuality as being bisexual or 'bi' and nine participants were attracted to people of the same sex and they verbally described their sexuality as being lesbian or gay.

Of the remaining six participants there are some features worthy of mention. Kelly and Alex both described having a gender identity that was different to their biological sex at birth. This helps to explain why Alex selected being opposite-sex attracted at baseline and why Kelly described herself as pansexual:

> "[Pansexuality]…*means you are attracted to all types – it is the all encompassing word. Because it is basically more because bi is usually you are attracted to males or females. The in-between isn't usually covered and pansexuality it's everyone"* (Kelly, 17 years old).

Goldie and Jay seemed to indicate a degree of being attracted to both sexes, but they selected being same-sex attracted and not sure of their sexuality respectively, Jamie, who had heard about the study at his school's gay-straight alliance and had read the study's participant information sheet before enrolling in the study selected that he was opposite-sex attracted and 'mostly heterosexual' (i.e. not exclusively heterosexual), but verbally described himself as straight. Dan did not verbalise a particular term of preference in relation to his sexual orientation or attractions, perhaps indicating that he did not want to categorise or define this. Table 39 summarises interviewees' verbal description of their sexuality.

Table 39. Interviewees' verbal description of their sexual orientation or attractions

Name	Description of sexual orientation or attractions
Max	*"…Some people use really technical stuff like same-sex and questioning, but at the end of the day it really means the same thing. But you know, gay is fine."*
Steven	*"Gay"*
Andy	*"Probably gay. I guess I could go onto specifics about what is more or less gay about my sexuality but gay will do fine."*
Georgie	*"Gay"*
Alex	Not discussed on record – but Alex identified as being a male attracted to females
Dan	*"It doesn't bother me in the least. I don't like the term fag."*
Tina	*"…I just go with the term lesbian…"*
Lara	*"A lesbian"*
Natasha	*"Bisexual"*
John	*"Gay"*
Kelly	*"Pansexual…."*
Ruby	*"Bisexual"*
Sapphire	*"Okay, so bisexual"*
Goldie	*"Gay"*
Helen	*"Bisexual"*
Sasha	*"I would consider myself to be bisexual."*
Stefan	*"Gay"*
Danu	*"Well, I like females, so I am a lesbian, obviously."*
Jack	*"Bisexual"*
Jamie	*"Oh like…straight or…yeah."*
Bob	*"Bi"*
Troy	*"I would say I am bi, except that I am kind of like 70/30…Towards women."*
Julia	*"Bisexual"*
Maree	*"Bisexual"*
Jay	*"I would call myself not straight…Not straight, or queer."*

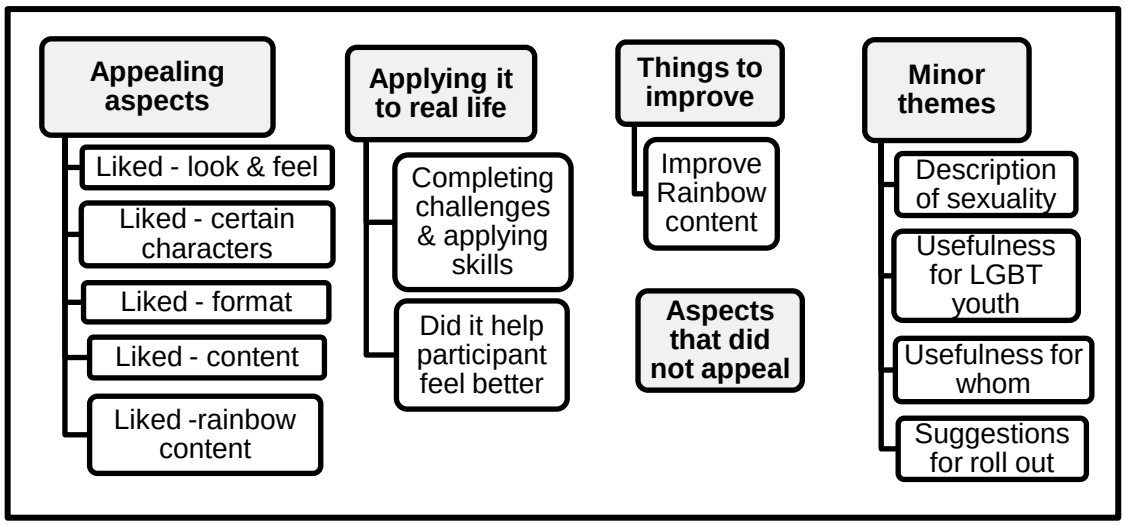
Results overview

The interview results could be broadly divided into two overarching categories: feedback about Rainbow SPARX and feedback about research with sexual minority youth. The results of these two categories are presented separately.

Feedback about SPARX: The Rainbow Version

There were five main themes associated with feedback about SPARX: The Rainbow Version. These were: appealing aspects (with five sub-themes), Applying it to real life (with two sub-themes), Things to improve (with one sub-theme), Aspects that did not appeal and Minor themes (with four sub-themes) (see Figure 8 below).

Figure 7. Feedback about SPARX: The Rainbow Version



Appealing aspects

Liked – look and feel

Most of the participants commented positively about the look and feel of Rainbow SPARX. For example, they thought the scenery and style of it were *"cool"*.

> *"I liked, like, how it looked really shiny on my computer, and it looked like a completely different world."* Bob (13 years old)

Ten of the participants liked that they could customise their avatar, for instance:

> *"One of my favourite things about it was that you could choose what your character looked like at the start because I have played quite a lot of role-playing games and it was actually quite customisable compared with a lot of other games, which I really liked."* Andy (19 years old)

Several participants also liked that the program had an explicit New Zealand look or feel.

> *"…it was awesome to see the New Zealand designs and stuff in it."* Jay (15 years old)

"I really liked that it was New Zealand orientated. You specifically know what it is – it is quite fun going 'oh, that's a Tui' and stuff like that. You know, and it makes it feel more special to you, that it is particularly New Zealand and it is not some big American brand that is trying to do stuff for the rest of the world. It is specifically, almost made for you." Goldie (16 years old)

Liked – certain characters

Six of the characters from Rainbow SPARX were perceived to be positive and likeable, specifically Hope, the Guide, the Mentor, Cass, Te Hokioi and the Yeti, with Hope being the most frequently mentioned:

"I liked Hope. I thought that was really cool. It was a really good idea." Ruby (16 years old)

Andy (19 years old) elaborated further upon the value of a character like Hope. In particular he thought that using a bird to symbolise or embody a concept like hope was useful:

"I liked Hope actually, I really liked Hope. I thought that was a cool idea…I liked the fact that it realised that hope was something tangible. Even though in real life it might not be, it was very cool to give it as a tangible thing and to talk about it as something that was real."

Liked – format

Numerous participants stated that they liked having a self-help program in a game format, they liked the accompanying notebook and they liked the overall flow or format of the program.

John (17 years old) indicated that having Rainbow SPARX in a game format made it more engaging or interesting:

"I like the concept that a computer game could work towards solving those problems [depressive symptoms] *so it was a good way of getting you interested."*

Eleven participants thought that having a notebook accompanying the CD-Rom was of value:

"The notebook was good because it had like all what you learnt in the previous level." Jamie (14 years old)

The overall flow or format of the program was also seen as valuable. For instance Maree (15 years old) said:

"I thought it was good and I liked the challenges we did and how they related to the topic of each thing. And how afterwards they went over it and at the beginning of each level they went over it again just to make sure you hadn't forgotten."

Several participants talked about the importance of the program's password or privacy features and this was linked to the merit of having Rainbow SPARX in CD-Rom format. Troy (16 years old) mentioned this:

Mathijs: *"What was it like using SPARX on a CD-Rom?"*

Troy: *"It was good because I felt that I had control in that it was something that I could just do by myself."*

Mathijs: *"How could you ensure that you had control over it?"*

Troy: *"Well, seeing as it was on the computer I could just put it in my file and no one else would go there and they would leave it to just me. It was good."*

Liked – content

Most of the participants thought that Rainbow SPARX consisted of useful messages or content and they talked about this more generally:

> *"I liked the tips given."* Natasha (19 years old)

Or, they provided detailed examples of the content that they liked or valued:

> *"…I think his name was Jarrod or something and he had all the Gnats around him because he couldn't choose which ladder to go up* [in Level 4, the Mountain Province]. *I had to get the Gnats away and they came towards me and started saying stuff about him and I sort of felt like if that was how I was feeling was like I am him. You know. I am him and there's all these Gnats are like how I am feeling. And those Gnats are saying stuff that goes round and round and round in my head and then I had to push them all away. And that was something that really helped to relate with me…"* Tina (19 years old)

Several participants said that the program was *"not too hard"* and this was something they liked. For instance Andy (19 years old) liked that he did not need to think too much whilst completing mini-games or puzzles:

> *"I liked that some of them* [mini-games and puzzles] *were obvious. That was good. It was sort of like – I don't need to think too much about that…"*

Liked – Rainbow content

Nine participants liked the 'rainbow' content and perceived this to be valuable.

> *"…I liked how it talked about problems that were relevant to people going with different sexualities and stuff."* Maree (15 years old)

"…having a game that's specific for that area that isn't straight – I am trying to word this right I think – that helps a little because it is specific towards us as opposed to a wider yeah. So it is aimed towards us and that makes it a little bit better." Georgie (17 years old)

Applying it to real life

Completing challenges and applying skills

The vast majority of young people interviewed reported having completed at least some of the challenges set at the end of each level of Rainbow SPARX. Several of these participants also gave specific examples of how they applied what they learnt from the program to real life:

"…when I was upset I did the slow breathing one and that helped." Maree (15 years old)

"…I think the 'spot it' one most appealed to me because if you can spot what it is, it is a lot easier, kind of, to be happy because you know what is bothering you." Jack (14 years old)

"He said [the Guide] *when you have thoughts in the back of your mind going around and around think of them like headphones which you don't have to listen to….I thought it was a bit helpful. It took a lot of concentration but I could get things off my mind…"* Stefan (17 years old)

John (17 years old) could appreciate the value of applying content from the program to everyday life *"…Just listening to it* [SPARX: The Rainbow Version] *won't necessarily help you that much, you need to take what it says and use it every day, in normal life."* However, seven participants thought that the challenges were not relevant to them. Natasha (19 years old) had this to say:

Mathijs: *"…What did you think about completing these challenges or tasks?"*

Natasha: *"Well, because I kind of felt bored of the game I felt relieved that it was over."*

Mathijs: *"Did you complete any of the challenges or tasks?"*

Natasha: *"No."*

Mathijs: *"No…Do you think the challenges were helpful or not helpful?"*

Natasha: *"To me, not really."*

Mathijs: *"Is there something that could have been done to have made the tasks or challenges better for you?"*

Natasha: *"Maybe if it was just displayed in a different way."*

Did it help participant feel better

Seventeen of the interviewees said that Rainbow SPARX helped them feel better, with many of these young people providing examples of how they could tell they were less depressed as a result of the program. Four participants thought that it did not help them feel better or less down, but they attributed this to the fact that they were not depressed to begin with. However, two of these adolescents could still see the value of completing a program like Rainbow SPARX, with Sapphire (16 years old) saying:

> *"It didn't impact on my feelings as such but now I have the skills so that if I do feel down or low, I know what I can do to improve it and to swap it and sort it out and deal with it which is really handy."*

Two participants thought that Rainbow SPARX was *"kind of"* helpful. With the remaining two young people (Natasha, 19 years old and Stefan, 17 years old) stating that it did not help them:

Mathijs: *"Do you think that SPARX helped you feel better? And less stressed or low?"*

Natasha: *"No, about the same."*

And:

Mathijs: *"Do you think SPARX helped you feel better?"*

Stefan: *"I wouldn't say it made me feel better, worse on some occasions."*

<u>Things to improve</u>

Eighteen participants described various technical issues that they thought needed to be addressed in SPARX: The Rainbow Version. For example they suggested that the camera angles or viewer perspectives needed improving, that there should be less 'clicking' (especially when moving one's avatar), that the graphics should have been enhanced and that some of the sound effects were faulty and required fixing. Numerous participants also stated that the mini-games or puzzles should have been harder, with the older adolescents finding this particularly so.

> *"I liked them but I think that some of them could have been a little bit harder I think that some of them were just a little bit too easy…"* Tina (19 years old)

Participants also said that there should have been less talking or dialogue directed at them, that the program should have had more game play, that the levels should have been longer, and at times participants were not sure what they were meant to do (and they implied that the program should have provided them with further instructions). For instance, Bob (13 years old) described this scenario in Level Two:

Bob: *"Oh, the one thing that really did confuse me – I think it is Level Two or Three* [Level Two] *where it comes up with that guy is speaking a different language, and then it says 'speak English' or 'I can't understand you'."*

Mathijs: *"Yes."*

Bob: *"I was sitting there for about fifteen minutes trying to work it out then I turned around and saw that lady there."*

Mathijs: *"Yes."*

Bob: *"Yes."*

Mathijs: *"So that was frustrating."*

Bob: *"I was like confused and didn't know what to do…Other than that I actually really liked it* [SPARX: The Rainbow Version]."

Three participants suggested that the storyline or plot of Rainbow SPARX should have been strengthened.

> *"…if the storyline around it was more detailed, then you would get that sense of actually feeling for the character and trying to move towards that eventual goal of getting all the gems. And I thought that a way you could do that is by having a character who you interact with throughout…"* John (17 years old)

Improve rainbow content

Nine participants thought that there was insufficient 'rainbow' content in SPARX: The Rainbow Version.

> *"…it could be a little bit more focused on gay, or all types of queer youth…Not turn it into a queer game, I don't know but maybe just a little bit more."* Andy (19 years old)

Some participants gave specific examples of how the LGBT content could have been strengthened. For instance, managing bullies/bullying and coming out should have been covered in more detail, with Jack (14 years old) having this to say:

> *"…I noticed that only one level brings up the gay, bisexual* [content] *and I think maybe if you put a lot more of that in, it could help them realise and identify, like that bullying comes from being bi and how to deal with it."*

A few participants recommended that the sexuality terminology be improved. Bob (13 years old) thought that the program should have used *"the right words"* (i.e. homosexual, bisexual and heterosexual), whereas Dan (18 years old) disliked the use of *"politically correct"* terminology (i.e. the use of terms like same-sex attraction) and would have preferred the use of sexual identity labels:

"…certainly the whole elaborate description trying to say gay or bi in essentially a paragraph – I certainly find that slightly entertaining. I can understand surely finding words to say something without using the specific words that could be offensive to some people, but I do find it slightly amusing."

Aspects that did not appeal

Three of the older participants (16 years or older) thought that the program was patronising or that it *"babied"* them. For instance Max (18 years old) thought that Rainbow SPARX was *"…designed for little kids"*, with Stefan (17 years old) providing further detail:

"…I felt that it babied me a bit when it was saying things like 'I would like to swap it with' and you write down what you would want to do. Because I felt it is not that hard to hold it in your head…"

Linked to the above point (and as previously mentioned), two older participants also stated that the program was too easy for them. However, they also acknowledged that there could be some value in keeping it that way:

"I thought some things were a little easy…Like overall it wasn't difficult to figure out what you needed to do. Those little puzzles were quite easy to do. I guess it would be hard to make them more difficult though because you would have to be careful that everyone could actually get it." Andy (19 years old)

Minor themes

Description of sexuality

Twenty-three of the 25 participants verbally described their sexuality or sexual orientation (as discussed earlier in the chapter).

Usefulness for LGBT youth

Ten of the participants said that they thought that Rainbow SPARX could help other sexual minority youth feel better or less depressed, with several of these participants giving examples of how it could help:

"It could give them techniques and stuff on how to be more open. Because like lesbians are pressured in different ways and stuff like that…because the gay community apparently is pressured more."
Lara (17 years old)

However, three participants said that they thought that the content of Rainbow SPARX would be useful for all young people irrespective of their sexuality and whether or not they were feeling down or depressed.

Usefulness for whom

Eighteen of the participants expressed an opinion on the ideal age range for use of the program, with the vast majority of these participants suggesting that Rainbow SPARX was best suited to adolescents aged about 13 to 17 years old. Three participants thought that the program would appeal to a broader cross-section of youth and that it might be suitable to those as young as eleven and as old as 20. However, some of the older interviewees cautioned against pre-teens using the program. For instance Goldie (16 years old) had this to say:

"…if it is specifically aimed at people who are questioning their sexuality or whatever, then it is only going to apply to people who are. So if someone is ten and stuff and they have no concept of sexuality…it is not going to apply for them."

Suggestions for roll out

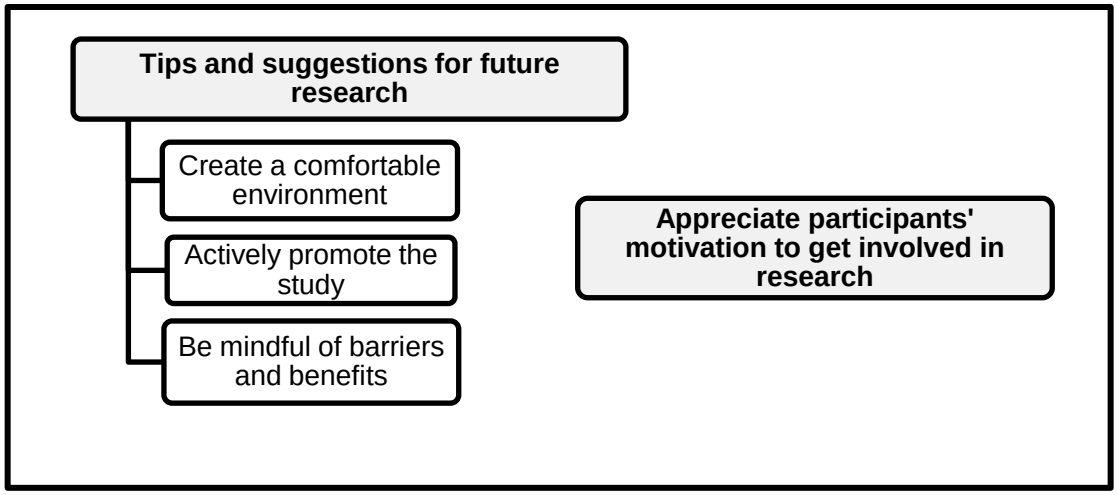
Three of the interviewees thought that school guidance counsellors would be useful when rolling out Rainbow SPARX. Sapphire (16 years old) highlighted the value of this, especially in relation to maintaining confidentiality:

"You could do it [SPARX: The Rainbow Version] *through a guidance counsellor at school possibly which I think would be easier because you get a lot of confidentiality with that. So if you are doing it at school I think through a counsellor would be a very good idea."*

Feedback about research with sexual minority youth

There were two main themes in regards to participants' feedback about conducting research with sexual minority youth, Tips and suggestions for future research and Appreciate participants' motivation to get involved in research. The first of these two main themes also contained three sub-themes, Create a comfortable environment, Actively promote the study and Be mindful of barriers and benefits (see Figure 9).

Figure 8. Feedback about research with sexual minority youth



Tips and suggestions for future research

Create a comfortable environment

Participants suggested four main elements that are required in order to create a comfortable research environment for sexual minority youth. These were the ability to bring a friend or support person to assessments, the importance of confidentiality, the importance of avoiding using sexual identity labels with participants, and the need for researchers to meet with potential participants prior to a young person's enrolment in a study.

Most of the participants came to their pre-intervention assessment with a friend or support person, and this was something that appeared to make participants more at ease. Sapphire (16 years old) had this to say about the merit of bringing a support person:

> *"…being able to bring in a support person is also a great thing to be able to do. You don't have to go in by yourself and it doesn't feel as pressured when you can bring someone in."*

Helen (16 years old) even indicated that without a support person she would not have participated in the research:

> *"…I felt like I wouldn't have wanted to come into town. I wouldn't have been motivated to come to town by myself to do nothing."*

Not surprisingly, maintaining confidentiality was of fundamental importance to participants:

> *"…if it wasn't confidential then I think people would say no, I don't want to share my details with everyone."* Max (18 years old).

Privacy and confidentiality were especially important to sexual minority youth, as they did not want to be 'outed'. Sapphire (16 years old) highlighted the importance of confidentiality and implied how it was important for her to be in control of certain information:

Mathijs: *"What sorts of things do you think would encourage young people to get involved in a project like this one?"*

Sapphire: *"Definitely knowing that they will have that privacy. Especially in case parents or family will find out and they haven't told them* [about their sexuality] *– like I haven't told my parents but I didn't mention it really. I just said I was doing part of a survey and that was fairly easy. But knowing that it won't be told to your parents and it won't be told to anyone else except the people who are involved, and even then it is pretty confidential. That is a really good thing to know."*

Mathijs: *"Yes. So you said to your parents that you were coming for a survey at the university."*

Sapphire: *"Yes. I am participating in a survey all year and I had a face-to-face interview. Yes."*

Mathijs: *"Yes."*

Sapphire: *"I just didn't say what the survey was about."*

Participants also recommended avoiding certain sexual identity labels:

> *"Keeping the terms for what sexuality is aimed at very broad because I know a lot of people who don't even consider themselves bisexual – just sort of 'there'. And 'there' is not really on a scale – they don't really have words for it. So just keep the sexuality term broad. Questioning is a good one to have in there."* Ruby (16 years old).

In terms of the language used in relation to adolescent sexuality, Alex (16 years old) cautioned against anything that was *"blatantly, very, very gay"* because *"…if the game packaging had a giant rainbow flag and said 'This is for queers' on it"* that would be off-putting.

Most of the participants had met me prior to their pre-intervention assessment. Goldie (16 years old) and Dan (18 years old), both described the value of being able to do this:

> *"I think like that you do come out to see people does encourage them* [potential participants] *because it is not just like 'okay, so I am going out somewhere to meet someone I haven't met before'…"* Goldie (16 years old).

> *"I think within the context of the meeting* [a presentation about the PhD project]*, getting to know you as a person made a difference. It made me slightly interested in the project as a whole, not just my participation in it."* Dan (18 years old).

Actively promote the study

Most of the participants suggested that future research with sexual minority youth would be best promoted via secondary schools, either by school guidance counsellors or through posters/leaflets at schools. Some participants suggested a combination of these two approaches, Bob (13 years old) recommended:

> *"…have posters up round the school where people notice them but don't take notice of them, if you know what I mean…I reckon you would get more people if you went through Kim* [a School Guidance Counsellor] *and then got Kim to get people. Because Kim would have a pretty good idea of people's sexuality in the school."*

Rainbow Youth and the internet were also highlighted as means to promote research with sexual minority youth, with one participant recommending social networking sites in addition to this:

> *"…I don't know if it is or not, but* [promoting the PhD study] *on the Rainbow Youth website or something because I check on that all the time for updates. General networking sites, if I had seen it on Facebook I would have looked into it as well."* Ruby (16 years old).

Two participants cautioned against promoting research with sexual minority youth too extensively at schools, with Tina (19 years old) saying:

> *"…Maybe putting it out there too much could be a risk. I'm not really too sure. I am not too good at that kind of area of things. But I think maybe if you tried too hard to get someone to come and do it or if you, sort of, were too 'out there'. I think that would be it…"*

Sasha (15 years old) suggested that a subtle or more discrete approach would be best when promoting research of this type in schools:

> *"…personally at my school being gay or whatever is looked down upon. And then you get mocked. So I don't know how it is with kids at other schools, but kids that I know I guess you could put out posters like these* [referring to the SPARX: The Rainbow Version study posters – see Appendix Q and Appendix R] *because this one really did help."*

Be mindful of barriers and benefits

Practical issues were seen as the biggest barriers to involvement in the research process. The specific barriers identified included having to come into the central city for assessments, being required to fill out *"all the forms"* and the time required to complete Rainbow SPARX.

Participants suggested that the stigma associated with homosexuality would be another barrier to conducting research with sexual minority adolescents. Some participants thought that those questioning their sexuality or those not 'out' to their peers or family would be especially reluctant to get involved, as they would not want to be identified with a study focused on sexual minority youth. Troy (16 years old) alluded to this particular issue:

> *"I think there is always the possibility that someone that you don't want to know. Like someone that you don't want to find out that you are bi or gay or whatever and they find out because you are in a proper research thing."*

Five participants said that the gift vouchers offered as a thank you for taking part in the study were appreciated and seen as a benefit of the study:

> *"…even if there were no vouchers offered I still would have done it. But I can definitely see the attraction and it is a nice little reward for putting a bit of time in."* Andy (19 years old)

Having viewed the SPARX trailer and having had the project promoted as something that was interesting or intriguing was also seen as beneficial.

> *"I think your presentation was quite good and having that little bit on your laptop with the trailer, the brief, I think that intrigued me a little bit more."* Georgie (17 years old).

<u>Appreciate participants' motivation to get involved in research</u>

Several participants thought that sexual minority youth would be motivated to get involved in studies that would either help the individual participant or would help others. Troy, Sapphire and Jamie all mentioned this:

> *"Just like, especially promote that fact that it can help you become happier and help you get through your issues."* Troy (16 years old)

> *"I wanted to try this program out* [SPARX: The Rainbow Version]*. It looked really interesting and I like to help. And I was interested in seeing what skills it could teach me…"* Sapphire (16 years old)

> *"…you could help other people with it* [by participating in the research]*."* Jamie (14 years old)

One participant provided very specific reasons for her involvement in the current research:

> *"…wanting to find out ways to deal with things is what made me want to do it. Combating people at school and stuff like that. That is what made me want to do it."* Julia (17 years old)

The stigma of a sexual minority orientation (as highlighted previously under the sub-theme, be mindful of barriers and benefits) negatively impacted upon potential participants' motivation to get involved in research. Two participants thought that young people questioning their sexuality would not participate in research focused on sexual minority youth, even though their involvement would be beneficial to the study, with Andy (19 years old) having this to say:

> *"People that aren't already open about their sexuality. It's hard to engage with those people regardless of the situation…it might be a little bit difficult to get them involved. I am not sure how that one could be tackled. I don't know…And in a way some of the people that are not quite so open about their sexuality are probably some of the people you want in the study."*

Discussion

Statement of principal findings

This study sought to collect the opinions of all participants enrolled in the open trial that used Rainbow SPARX and completed a post-intervention assessment. The study also included four sexual minority participants who attempted Rainbow SPARX and did not have depressive symptoms and one 'straight'/heterosexual participant whom had used the program. Seventeen participants thought SPARX: The Rainbow Version had helped them feel better or less depressed. The majority reported liking the look and feel of Rainbow SPARX and most thought the program consisted of useful messages or content. Participants made suggestions about how the program could be improved and although feedback about Rainbow SPARX was primarily positive, 18 participants highlighted technical issues that they thought needed to be addressed. SPARX: The Rainbow Version was perceived to be most suitable for younger participants, with several older participants believing that the program was less suited to their needs. Finally, participants offered suggestions or tips that would help encourage sexual minority youth to participate in future research.

Relevance of current study

A recent systematic review examining the use of CCBT for the prevention or treatment of anxiety and depression in children and adolescents concluded that very little research has been published on this topic (Richardson et al., 2010). Of the ten relevant studies cited in the review only four reported any information about participants' satisfaction with CCBT (i.e. Cunningham et al., 2009; Gerrits et al., 2007; March, Spence, & Donovan, 2009; Spence, Holmes, March, & Lipp, 2006), with all four of these evaluations being brief quantitative assessments. Hence, carrying out a more in-depth qualitative evaluation of a CCBT program (like SPARX: The Rainbow Version) is especially useful.

To date the primary focus of CCBT research in child and adolescent internalising disorders has been on investigating changes in symptoms of depression and anxiety and/or the overall functioning of study participants (e.g. Abeles et al., 2009; Cunningham, et al., 2009; Gerrits et al., 2007; March et al., 2009; O'Kearney et al., 2006; O'Kearney et al., 2009; Spence et al., 2008; Spence et al., 2006; Van Voorhees, Ellis, Stuart, Fogel, & Ford, 2005; Van Voorhees et al., 2009). The current research provides depth and detail in the form of qualitative data on participants' perceptions of SPARX: The Rainbow Version. These data complement the quantitative clinical results from the previous chapter (that focused on changes in participants' symptoms and functioning).

The current study, in combination with the quantitative satisfaction and treatment completion data, confirms that Rainbow SPARX was both engaging and acceptable to sexual minority youth. This positive finding can be at least partially attributed to the fact that the 'rainbow' content of the program was perceived favourably and thought to be of value. The acceptability of the program could also be attributed to the fact that Rainbow SPARX was delivered in a youth friendly 3-D fantasy-based game, as providing treatment in a game format is thought to increase peoples' motivation to adhere to and complete treatment (Kato, 2010). Furthermore, several study participants confirmed during their semi-structured interviews that the program's game-like format was particularly appealing.

Strengths and limitations of the study

Strengths of the current study

There are several strengths of the current study. Firstly evaluating participants' satisfaction of Rainbow SPARX qualitatively was novel and will add to what is known about making therapeutic interventions, such as CCBT, acceptable and relevant to sexual minority youth. Furthermore, this is a new field and prior research has only provided limited quantitative data in relation to participants' satisfaction of CCBT interventions with adolescents experiencing depressive symptoms, and there is no information on LGB young people with depression.

Individual interviews were conducted for both practical and theoretical reasons. They were practical in that they were carried out immediately after the post-intervention assessment, ensuring a very high rate of participation (i.e. 93% of enrolled participants took part). From a theoretical perspective, individual interviews allowed for young people to share their views on sensitive topics, without the influence of young people unknown to them discussing similar topics in a group context.

All of the participants who completed the post-intervention assessment took part in this study. As a result, 25 young people who had trialled Rainbow SPARX provided feedback on it, including one participant who did not complete treatment (Steven).

The study provided details about the participants and their life circumstances (e.g. a description of their sexual orientation, sex and age). This is of value, as this information allows fellow researchers to make inferences about the range of persons and situations to which the findings might be relevant (Elliott et al., 1999).

All of the interviews were recorded digitally and professionally transcribed, after which transcripts were thoroughly checked against the original recordings. Recording interviews in this way meant that I was focused on the interview process and not on note-writing or accurately trying to capture what the participants were saying.

As is important to sound qualitative research, credibility checks were carried out during the analysis process (Elliott et al., 1999). A colleague with extensive adolescent mental health experience independently coded 10% of transcripts and then assisted me in developing a consistent coding strategy. The same independent researcher also provided feedback on the validity of the subsequent themes and sub-themes.

Finally, the study sought to obtain participants' feedback about research with sexual minority youth and their suggestions on how best to conduct this sort of research in the future. I could find no other papers reporting research of this type that have been conducted with sexual minority youth.

Limitations of the current study

The study had several limitations. Participants knew that I was a co-developer of SPARX: The Rainbow Version, so they may have felt somewhat inhibited to say negative things about the program, meaning that results may have been 'positively skewed'. However, every participant was specifically asked to comment on what they did not like about the program (as well as comment on what they liked) and various participants seemed to be very comfortable highlighting the faults and limitations of Rainbow SPARX.

All of the participants knew me at the time of their interview as I had conducted all the pre-intervention assessments. The majority of young people had also met me prior to actually enrolling in the study. This was seen as valuable by some, as getting to know me as a person *"…made a* [positive] *difference…"* Although this is a potential advantage of the study design, it could be that having an independent interviewer would have resulted in participants being more comfortable discussing the limitations of SPARX: The Rainbow Version. On balance it seemed the advantages of having a known researcher were outweighed by the disadvantages. Participants appeared to value being able to talk to someone known to them and conducting the interviews myself was a valuable learning experience for me as a doctoral student. Moreover, I could not have afforded the costs associated with reimbursing an additional researcher to carry out the interviews.

The interviews varied in length, with some being fairly brief; in part this was because some of the participants simply had less to say. However, three of the interviews lasted for ten minutes or less (i.e. Jack's, Jay's and Maree's interviews). These interviews were necessarily made shorter, as these young people came as part of a group and they all needed to get back to school by a certain time in order to catch their school buses home. This was therefore a limitation, as these participants may have wanted to add further comments, but they were not able to do so for practical reasons.

Generalisability is limited in the current study, because most of the participants were recruited from a Gay-Straight Alliance/Diversity Group or from Rainbow Youth and were therefore, by extension, fairly confident about their sexuality. As a result, young people who are questioning their sexuality are probably under-represented in the Study Four. Despite this limitation, the feedback from study participants will still be particularly helpful for the further development and refinement of SPARX: The Rainbow Version.

Comparisons to prior research

The results are in line with earlier research evaluating adolescent satisfaction with CCBT (Cunningham, et al., 2009; Gerrits et al., 2007; March et al., 2009; Spence et al., 2006) as SPARX: The Rainbow Version was also perceived favourably with most participants liking the look and feel of it. As with two previous studies in the field (Cunningham, et al., 2009; Gerrits et al., 2007) a sizeable proportion of participants identified problematic technical issues, but these were fairly minor (e.g. reducing the amount of clicking required of participants and improve the program's graphics). One earlier CCBT study also reported having had difficulty appropriately 'pitching' their program to the right developmental level; some young people using 'Master Your Mood Online'[41] (Grip Op Je Dip Online) in the Netherlands found the course too difficult (Gerrits et al., 2007). Similarly some of

[41] 'Master Your Mood Online' is not technically a CCBT self-help programme – as it consists of computer-facilitated CBT provided by a clinician in real time.

the older participants using Rainbow SPARX reported they had thought it was pitched inappropriately, in this case they noted that the program's mini-games and puzzles were too easy. This highlights the importance of taking the developmental level of participants into account when designing CCBT programs, and overall Rainbow SPARX was deemed suitable for our target age group.

As previously mentioned, there are no known published qualitative evaluations of an adolescent CCBT program for depression, although Dr Karolina Stasiak did complete one such evaluation as part of her unpublished doctoral thesis (Stasiak, 2008). Stasiak carried out semi-structured interviews with 14 adolescents randomly assigned to either CCBT ('The Journey') or computerised psycho-education. Dr Stasiak's interviews focused on some aspects that I did not focus on directly, such as whether young people found the program enjoyable and their opinions on the use of computerised mental health self-help resources in schools and other settings (Stasiak, 2008). Despite the differences between studies, Stasiak's participants did highlight some similar points to participants in this study. Participants from both samples indicated that they liked the look and feel of the respective game-like CCBT programs, that they experienced some technical glitches/issues and that in the case of some of the older participants, they perceived The Journey and Rainbow SPARX to be *'babyish'* or to have *'babied'* them. In summary, although the CCBT programs were different, they were both trialled amongst a similar age range (13 to 18 and 13 to 19 years old) and it would appear that these programs, at least as they are currently pitched, are most appealing to the target age group (i.e. younger adolescents 13 to 17 years old).

Sexual orientation

In this study participants' were surveyed about their sexual attractions and self-labelled sexuality and they gave a verbal description of their sexual orientation or attractions. This is of value, as using multiple means of assessing sexuality is thought to give a more accurate picture of a young person's sexual orientation (Saewyc et al., 2004) and a thorough assessment of this is especially useful when conducting research focusing on sexual minority youth. However, a complete assessment of participants' sexual orientation was not carried out, as participants were not surveyed about the gender or sex of their sexual partners. This was not considered to be a major problem, as most adolescents in New Zealand are not sexually active (Adolescent Health Research Group, 2008a) so seeking to elicit this information would likely have resulted in a large 'not applicable' rate. In addition, questions pertaining to sexual behaviour may have been inappropriate, given the focus of the study was evaluating Rainbow SPARX amongst 13 to 19 year olds and the study was not a large scale population based study (where young people could be assured of their anonymity).

A review of eight population-based high school surveys in North America demonstrated that sexual attraction, sexual behaviour and sexual identity were correlated (Saewyc et al., 2004). However the results were not always congruent and when the results appeared incongruent, the responses were generally skewed towards heterosexual options. For example amongst bisexual students, one-third reported exclusive opposite-gender sexual behaviour (Saewyc et al., 2004). These results from North America are similar to the findings in this study, as most of the sexuality items were matched as expected (e.g. nine participants were attracted to the same sex and described their sexuality as being lesbian or gay). However, three participants (Goldie, Jay and Jamie) gave somewhat incongruent results that were, as expected based on previous research, skewed to heterosexual options.

Future research with sexual minority youth should attempt to assess gender identity more fully. Kelly and Alex both described having a gender identity that was different to their biological sex at birth, and this information only came to light after they felt sufficiently comfortable to discuss this with me. In retrospect it would have been preferable to add a question like the one used in a recent population-based survey in Boston where all the adolescent participants were asked if they were transgender (Almeida et al., 2009).

Conclusions

The consensus from participants was that Rainbow SPARX helped them feel better or less depressed and the majority of participants reported liking the program and they believed that it consisted of useful content. Suggestions were made about how the program could be improved (e.g. several technical issues need rectifying). As with a previous CCBT program developed at the University of Auckland in a game format (i.e. 'The Journey'), Rainbow SPARX was perceived to be most suitable for younger participants (approximately aged 13 to 17 years old). Several older participants (17 to 19 years old) believed that the program was less suited to their needs. Participants in this study also provided practical suggestions for future research with sexual minority youth that will assist researchers (such as myself) to conduct further research in the field.

Chapter Six - CONCLUSIONS

Overview of findings

In this thesis I have focused on two overarching aims:

1. To determine whether sexual minority youth have specific mental health needs in relation to overcoming depression; and to
2. Design and assess the acceptability and feasibility of a specially adapted CCBT program (SPARX: The Rainbow Version) and collect preliminary data on its efficacy.

Based on my clinical work in adolescent mental health and from my personal experience I suspected that depression was common in sexual minority youth. When I first heard about CCBT I thought it had the potential to help reduce depressive symptoms in sexual minority adolescents. However, prior to developing a specialised self-help resource for sexual minority youth it was important to know whether or not rates of depression were elevated in this group of young people and to determine whether non-heterosexual youth experience difficulty accessing professional help for emotional worries. I therefore started this body of work with a systematic literature review and a study of the prevalence of depressive symptoms to ensure the development of Rainbow SPARX was justified. Most of the population-based studies from the literature review concluded that sexual minority youth were at an increased risk of depression. Furthermore the results from my first study (Study One), which was a large population-based survey conducted with secondary school students, showed that rates of depressive symptoms were elevated in sexual minority youth. This was the first study to examine depressive symptoms, self-harm and suicidality separately for young people attracted to the same sex and both sexes in a nationally representative sample.

In Study Two I adapted a CCBT program (SPARX) developed for a general youth population with input from sexual minority individuals and created SPARX: The Rainbow Version. No previous research has sought to identify the unique challenges facing sexual minority youth and to integrate these issues into a self-help resource for sexual minority youth with depressive symptoms. The treatment completion and treatment satisfaction results from Study Three indicated that SPARX: The Rainbow Version was an acceptable intervention for sexual minority youth. Based on the uptake of Rainbow SPARX amongst sexual minority youth, delivery of this CCBT program appears feasible and SPARX: The Rainbow Version is promising as a treatment for depressive symptoms in sexual minority youth. Study Three was unique, as this open trial with 21 participants is the largest depression treatment study conducted with sexual minority youth. Furthermore, the study had two comparison groups in the form of exclusively opposite-sex attracted young people receiving SPARX or usual treatment. The qualitative results from Study Four also indicated that Rainbow SPARX was an acceptable intervention, with most participants stating that it helped them feel better or less depressed.

I will now review my initial research questions and discuss the four studies in comparison to other research, I will conclude with a discussion about future directions.

Answering the research questions

Are sexual minority youth at an increased risk of depression?

Previous research has indicated that sexual minority youth have increased rates of depressive symptoms relative to their straight, heterosexual or opposite-sex attracted counterparts. Most of the population-based studies reviewed in Chapter One concluded that young people who were not exclusively attracted to the opposite-sex were at an increased risk of depressive symptoms (Almeida et al., 2009; Bezinovic & Tkalcic, 2005; Bos et al., 2008; Espelage et al., 2008; Galliher et al., 2004; Hatzenbuehler, 2009; Lam et al., 2004; Udry & Chantala, 2002, 2005; Wilkinson & Pearson, 2009; Williams et al., 2005). The most recent research in the field indicated that adolescents who are questioning their sexuality are at greater risk of depressive symptoms in comparison to their LGB or same/both-sex attracted peers (Birkett et al., 2009; Espelage et al., 2008; Poteat et al., 2009). Study One (in Chapter Two) demonstrated that sexual minority students consistently had higher prevalence estimates of self-harm, depressive symptoms and suicide attempts when compared with their opposite-sex attracted peers. Furthermore, unlike the results from previous population-based studies in North America, it was found that students attracted to both sexes were at greater risk of depressive symptoms and suicide attempts than students attracted to the same sex and those not sure of their sexual attractions.

Do non-heterosexual youth experience more difficulty accessing professional help for emotional worries?

Contrary to my initial hypothesis, students who were non-heterosexual were more likely to have seen a health professional for emotional worries. However, as hypothesised, students who were non-heterosexual experienced more difficulty getting this help. The results from Study One will add to what is known about sexual minority youth and mental ill-health. From my literature review only two nationally representative surveys (or survey series) in the United States and Norway have investigated the relationship between adolescent sexuality and the prevalence of depressive symptoms, and none of these appear to have examined adolescent sexuality and help-seeking for emotional worries.

What are the unique challenges faced by sexual minority youth?

Sexual minority focus group participants from Study Two reported experiencing issues or challenges that their heterosexual peers did not, specifically discrimination and mistreatment related to their sexuality. Similar issues to those reported by participants in Study Two have been described in autobiographical stories by a large sample of sexual minority youth in Australia (Hillier & Harrison, 2004). Researchers in North America have also described similar findings and concluded that the experience of being homosexual or a sexual minority is comparable to the experiences of belonging to other minority groups which are sometimes stigmatized (e.g. cultural and religious minorities) (Martin & Hetrick, 1988; Telljohann & Price, 1993).

Should these unique challenges be addressed in a CCBT program?

Focus group participants wanted to adapt SPARX to better meet their unique requirements and they made numerous suggestions in relation to how it could be improved. As a result of conducting Study Two a decision was made to adapt SPARX for sexual minority youth.

How do sexual minority participants perceive prototypes of SPARX?

Participants in Study Two were generally positive about prototypes of SPARX and about the concept of CCBT, with six of the nine participants indicating that they would "use a resource like this" if they were feeling down. However, participants suggested improving SPARX's appeal to females and they highlighted problems to do with the content, scripting and the language used in prototypes of SPARX. As mentioned above, participants also discussed challenges specific to their sexuality. As a result of participants' feedback changes were made to SPARX, and a separate version of SPARX was made for sexual minority youth. Engaging sexual minority individuals in the development of a CCBT program for sexual minority youth with depressive symptoms was novel. Moreover, anecdotal evidence indicated that this collaborative approach made recruitment of participants in Study Three and Study Four easier. Several participants in Studies Three and Four were keen to evaluate Rainbow SPARX after hearing about the project from participants in Study Two.

Do young people who use SPARX: The Rainbow Version experience a change in depressive symptoms?

The results from Study Three suggest that a CCBT program like SPARX: The Rainbow Version reduces depressive symptoms in sexual minority youth. The data showed that the depressive symptoms of open trial participants decreased significantly from pre- to post-intervention, with a large pre- to post-intervention effect size that was maintained at three-month follow-up. Because these results are based on a small sample from an open trial they need to be treated as preliminary results pending further research (e.g. in a RCT of sexual minority youth).

Do sexual minority youth perceive SPARX: The Rainbow Version to be acceptable and feasible to deliver?

Although open trial participants perceived Rainbow SPARX to be an acceptable intervention, the slow pace of recruitment for participants in Study Three could be indicative of issues associated with the feasibility of providing CCBT to sexual minority youth with depressive symptoms. It took 14 months to enrol 27 participants in the open trial and although this number of participants is what was initially expected, recruitment took much longer than first planned. This slow rate of recruitment is possibly related to young people's scepticism about the value of CCBT, as previous researchers have identified this as a barrier to its delivery (Stallard et al., 2011; Stallard, Velleman, & Richardson, 2010). Participants interviewed after completing SPARX: The Rainbow Version indicated that they thought it was an acceptable intervention. The majority of young people also thought that the program helped them feel better or less depressed. Several suggestions were made about how the program could be further refined. These results are consistent with previous research evaluating adolescent satisfaction with CCBT (Cunningham, et al., 2009; Gerrits et al., 2007; March et al., 2009; Spence et al., 2006). The results from Study Four are unique, as this evaluation is the only known appraisal of CCBT for sexual minority youth. .

How do the outcome and satisfaction results for sexual minority youth with depressive symptoms completing CCBT compare with exclusively opposite-sex attracted youth with depressive symptoms from a RCT completing an intervention designed for young people generally?

Participants in the open trial experienced reductions in depressive symptoms and improvements in their functioning as much as exclusively opposite-sex attracted participants did from a RCT when compared using the same assessments. Open trial and RCT participants rated CCBT (i.e. Rainbow SPARX and SPARX) favourably. The vast majority indicated that they would recommend CCBT to friends and that they thought CCBT would

appeal to other young people. Open trial participants differed to exclusively opposite-sex attracted participants in the study as sexual minority youth were significantly more likely to complete treatment. The results from Study Three are unique, as it is the largest treatment study of depressive symptoms in sexual minority youth. Furthermore, all prior treatment studies of sexual minority youth with depression (reviewed in Chapter One) have been case studies or case reviews (e.g. Goff, 1990; Hart & Heimberg, 2001; Hussain & Roberts, 1998; Jackson et al., 2005).

How can future research be conducted with sexual minority youth?

Participants in Study Four were asked to provide feedback on how researchers could best conduct studies with sexual minority youth. This facet of the study was seen as valuable, as sexual minority youth are often hard to reach due to their geographical and social isolation (Silenzio et al., 2009). Hence, the results had the potential to inform me and other researchers about conducting studies with these young people. Some of the suggestions made were of a general nature (e.g. providing gift vouchers as a gratuity for participating in a study was seen as appealing). However, three points stood out as being particularly salient when working with sexual minority youth: be careful when using sexual identity labels; recognise the paramount importance of maintaining confidentiality in relation to a person's sexual identity; and be mindful of how the 'stigma of homosexuality' could negatively impact on potential research participants.

Recommendations for future research and program roll out

Further research related to CCBT and depression in sexual minority youth

Study Three demonstrated that CCBT shows promise as an intervention for mild to moderate depressive symptoms in sexual minority youth. However, as the study was a small open trial with 21 participants, further research is required. The next step would be to carry-out a RCT with sexual minority youth, perhaps comparing SPARX: The Rainbow Version to a control computerised intervention, such as psycho-education. This RCT would then be similar in format to an earlier pilot RCT of CCBT in adolescents (Stasiak, 2008). The challenge in conducting a RCT such as this with sexual minority youth who have depressive symptoms is recruiting a large enough sample. This could be overcome by recruiting participants from throughout New Zealand (or even from throughout Australasia), with a particular focus on recruiting in the larger urban centres, as these centres have more sexual minority individuals. Another way in which further research in the field could occur is by including a question such as the Youth'07 sexual attraction item to the demographic questionnaire of a large-scale RCT of CCBT. Yet this may prove difficult to do, as researchers in the field of CCBT may not be sufficiently motivated to add such an item to their demographic questionnaire/s. Furthermore, even if they did add such an item, obtaining a large enough sub-sample of sexual minority youth may prove too difficult. For instance, in the RCT associated with this thesis, despite recruiting a large number of adolescents with depressive symptoms (n=187), only ten participants randomised to SPARX/CCBT were sexual minority youth (and none of those participants were attracted to people of the same sex).

Further research about 'social climate' and mental health

It has been suggested that the increased rates of psychopathology in sexual minority youth are associated with a milieu that is negative and unsupportive of these adolescents (e.g. Galliher et al., 2004; Hatzenbuehler et al., 2008; Poteat & Espelage, 2007; Safren & Heimberg, 1999; Udry & Chantala, 2005; Williams et al., 2005).

Recent research has indicated that more can be done at a systemic level (e.g. in high schools) to address negative social environments (Chesir-Teran & Hughes, 2009), with improvements in a young person's social climate potentially reducing their depressive symptoms. Anti-harassment policies and programs such as Gay-Straight Alliances[42] (GSA) are thought to improve secondary schools for sexual minority youth, with GSAs promoted as yielding numerous psycho-social benefits (Lee, 2002). However, much more research is required to support the use of GSAs as a means to address depressive symptoms in sexual minority youth. Conducting such research would present several challenges, because the benefits of GSAs are probably more diffuse. Gay-Straight Alliances offer peer support and do not specifically deliver evidence-based strategies to reduce depressive symptoms. Nonetheless there is merit in conducting more research in the area of social climate and the mental health of sexual minority youth since more should be done to shift the focus (and implied responsibility for change) (Chesir-Teran & Hughes, 2009) away from the sexual minority youth who experience depressive symptoms and onto the institutions and settings which allow it to manifest. Although not conducted with adolescents, a very large representative survey of American adults (n=34,653) showed that social environments directly impacted upon the mental health of sexual minority individuals (Hatzenbuehler, Keyes, & McLaughlin, in press). In particular, the researchers found that the past-year prevalence of major depression was lower among sexual minority participants living in states (within the United States) with higher concentrations of same-sex couples, compared with sexual minority participants in states with lower concentrations (Hatzenbuehler et al., in press). The authors of this paper concluded that, as for ethnic minorities, areas with higher concentrations of similar individuals (in this case same-sex couples) conferred greater "social capital" (Hatzenbuehler et al., in press, p. 6) among sexual minority individuals. The paper advocated for investigations of a participant's social environment when carrying out research on the mental health of sexual minority individuals (Hatzenbuehler et al., in press). Future research in the area of CCBT in sexual minority youth could incorporate survey items about individual participant's social environment, and perhaps more importantly, future CCBT interventions should do more to equip sexual minority youth with the skills that they need to overcome the challenges inherent in living in unsupportive or hostile environments.

Further research on the delivery of CCBT

The delivery of CCBT could be further investigated as Internet forms of CCBT for youth are becoming increasingly popular (e.g. Gerrits et al., 2007). It is logical to assume that Internet forms of CCBT would be especially relevant to sexual minority youth, as they could potentially access sexual minority CCBT sites at a time and a setting of their choosing. Studies exploring the merits of the Internet when delivering CCBT or self-help for sexual minority youth with depressive symptoms would therefore be useful. However, broadband is currently weak in rural New Zealand (Craymer, 2011), making Internet interventions less practical for the most socially isolated sexual minority youth. Hence, the sub-group of sexual minority youth likely to benefit most would find CCBT the most difficult to access, due to technology-specific problems in rural New Zealand.

Roll out of SPARX: The Rainbow Version

Cognitive Behavioural Therapy is suitable for use by a broad cross-section of people, including sexual minority youth (Martell et al., 2004; Safren et al., 2001; Safren & Rogers, 2001). Unfortunately, barriers to accessing

[42] Student-led organisations that are intended to provide a supportive and safe environment for LGBT adolescents and their heterosexual/ straight allies. These are sometimes called 'Diversity Groups' in New Zealand.

CBT exist, such as a shortage of clinicians with skills to deliver CBT (Abeles et al., 2009) and a reluctance on the part of sexual minority youth to obtain assistance, especially if this involves others discovering that they are not heterosexual (Safren & Heimberg, 1999). Computerised interventions like Rainbow SPARX have the potential to overcome some of these barriers. Young people can use Rainbow SPARX at a time and place suitable to them and they need not fear that a program co-developed with sexual minority people and specifically adapted for sexual minority youth will be negative about their sexuality or that it will disclose their sexual orientation to others. Adolescents are generally comfortable interacting within the computer environment, and many young people would prefer to interact with a computer program than have to talk to a therapist (Abeles et al., 2009). Furthermore, technology-based treatments appear even more acceptable and beneficial to young people than to adults (Cunningham, 2008).

Rainbow SPARX appears to be an acceptable intervention for sexual minority youth, it shows promise as a treatment for depressive symptoms and it appears safe to deliver under minimal supervision. Therefore, given the above mentioned points and the interest within the sexual minority community to make this resource more widely available, some thought is required in relation to the roll out of Rainbow SPARX. It would be practical to distribute copies of the CD-Rom and the associated notebook to all the prominent sexual minority organisations in New Zealand. Copies could be distributed to OUTLine (the free national 0800 LGBT phone line), Rainbow Youth (which has recently expanded the scope of their service, so that they will have a national, as well as a regional focus) and as suggested by participants in Study Four, to School Guidance Counsellors supportive of sexual minority youth. Ideally copies should come with an information pack, explaining that the program was designed for sexual minority youth 13 to 19 years old who are 'feeling stressed out or low'. It may be worth noting that the resource was designed for and seems best suited to younger adolescents (13 to 17 years old). Those distributing the resource should offer a 'check in' comparable to the one provided in Study Three, and ensure that all young people using the program have a general practitioner or school guidance counsellor who they can access should they need additional support. In this way the roll out of the Rainbow SPARX would best match the assistance that was offered to participants in Study Three. To help guarantee the roll out best matches these suggested guidelines, a printed information sheet highlighting these points will be provided with each copy of SPARX: The Rainbow Version. In addition to this, brief training sessions on the use and safe roll out of the program could be offered to key sexual minority organisations.

It would be useful to establish the potential number of sexual minority youth who might benefit from using Rainbow SPARX. The most reliable method of determining this number is by using the results from the Youth2000 surveys. In both 2001 and 2007, roughly 6% of secondary school students could be categorised as being sexual minority youth (Le Brun et al., 2004; Rossen et al., 2009). Hence, with more than 266,000 secondary school students in New Zealand (Adolescent Health Research Group, 2008b) there are approximately 15,960 sexual minority youth in secondary school. This number would be even greater if adolescents not enrolled in school are also included. However, with 22-32% of sexual minority youth at secondary school with significant depressive symptoms (Lucassen et al., 2011) there will be approximately 3,511- 5,107 sexual minority youth experiencing depressive symptoms in New Zealand. A major challenge is that these adolescents are spread throughout the country, with many residing far away from the cities predisposed to being 'gay friendly'. Sexual minority youth in cities with well-known organisations like Rainbow Youth (in Auckland), WaQuY (in Hamilton), Schools Out (in Wellington), Q-Youth (in Nelson) and Q-topia (in Christchurch) can assist youth to

access appropriate professional help, but young people outside these areas will likely struggle to access support. Therefore SPARX: The Rainbow Version offers a solution to geographical and other barriers, as it can potentially be offered independent of a young person's location.

Computerised Cognitive Behavioural Therapy programs like Rainbow SPARX are an effective way of actively engaging adolescents (Richardson et al., 2010) and, as mentioned above, are less susceptible to barriers such as shortages in trained clinicians and geographical isolation. However, the roll out of Rainbow SPARX requires some additional consideration, especially with regards to how sexual minority youth can best access this resource and how support for the program should be offered. In addition to this, systems need to be put in place to ensure that if a young person's depressive symptoms worsen or if there is no improvement in mood, then access to more intensive individualised support should be arranged.

Conclusions

In some ways this thesis echoes the challenges Saghir and Robins (1971) cited forty years ago:

> *"…it appears that the best time to offer treatment to a homosexual male or female is during adolescence or early young adult life. However, under our present social conditions, it is unlikely for the adolescent homosexual to seek treatment on his own…"* (p. 509)

Most modern researchers in the field would agree with the above quote, with regard to the value of intervening early to ensure the best possible outcomes. The results from my research have confirmed the need to address depressive symptoms in sexual minority youth and to make sure interventions (such as CCBT) help these young people to overcome the barriers they face accessing help. Modern researchers no longer focus on 'suppressing a homosexual orientation' "in favor of the more socially acceptable heterosexual one" (Saghir & Robins, 1971, p. 509). Instead, the focus of more recent work has first been on establishing whether the rates of mental ill-health are actually elevated in representative samples of sexual minority youth and secondly on determining how certain environments contribute to psychopathology (e.g. in Hatzenbuehler et al., in press).

This thesis stands out as there is a dearth of knowledge on the treatment of depressive symptoms in sexual minority youth. To date, prior research in the field has consisted of case studies or case reviews, none of which was carried out in Australasia. Sexual minority youth at high school in New Zealand are more likely to have difficulty accessing help for emotional concerns. Therefore a CCBT program like SPARX: The Rainbow Version has the potential to address some of the barriers these young people face when attempting to access help. Rainbow SPARX was rated as useful (based on total usefulness ratings) and likeable (based on total likeability ratings) by sexual minority youth and it can be used in a private setting at a time that suits a young person. The way in which this CCBT program was developed and evaluated with the help of sexual minority youth was a strength of this thesis, as this approach appeared to assist participants' to engage in the research process. This method of engagement may be beneficial to other researchers in the future who work with other minority groups (e.g. cultural and ethnic minorities), especially when the sub-group being studied is traditionally marginalised or hard to access. More research is required to determine whether CCBT is as effective as other forms of psychotherapy for sexual minority youth. However, this thesis will add to what little is known about treating depressive symptoms in sexual minority youth, and as such it is a valuable building block to subsequent work in

the area. Finally, this project has produced a tangible resource or intervention, which in time will be made available at low cost, or ideally freely, to a number of sexual minority youth from throughout New Zealand.

References

Abeles, P., Verduyn, C., Robinson, A., Smith, P., Yule, W., & Proudfoot, J. (2009). Computerized CBT for adolescent depression ("Stressbusters") and its initial evaluation through an extended case series. *Behavioural and Cognitive Psychotherapy, 37*, 151-165.

Abelson, J., Lambevski, S., Crawford, J., Bartos, M., & Kippax, S. (2006). Factors associated with 'feeling suicidal': the role of sexual identity. *Journal of Homosexuality, 51*(1), 59-80.

Adolescent Health Research Group. (2008a). Youth'07: The Health and Wellbeing of Secondary School Students in New Zealand. Initial Findings. Auckland: University of Auckland.

Adolescent Health Research Group. (2008b). *Youth'07: The Health and Wellbeing of Secondary School Students in New Zealand. Technical Report.* Auckland: The University of Auckland.

Alanko, K., Santtila, P., Witting, K., Varjonen, M., Jern, P., Johansson, A., . . . Sandnabba, N. K. (2009). Psychiatric symptoms and same-sex sexual attraction and behavior in light of childhood gender atypical behavior and parental relationships. *Journal of Sex Research, 46*(5), 494-504.

Allen, D. M., & Tarnowski, K. J. (1989). Depressive characteristics of physically abused children. *Journal of Abnormal Child Psychology, 17*(1), 1-11.

Allen, L. (2006). Trying not to think 'straight': Conducting focus groups with lesbian and gay youth. *International Journal of Qualitative Studies in Education, 19*(2), 163-176.

Almeida, J., Johnson, R. M., Corliss, H. L., Molnar, B. E., & Azrael, D. (2009). Emotional distress among LGBT youth: The influence of perceived discrimination based on sexual orientation. *Journal of Youth and Adolescence, 38*(7), 1001-1014.

American Psychiatric Association. (1968). *Diagnostic and Statistical Manual of Mental Disorders* (Second ed.). Washington D.C.: American Psychiatric Association.

American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Disorders: DSM-IV-TR.* (4th rev. ed.). Washington D.C.: American Psychiatric Association.

Andersson, G., & Cuijpers, P. (2009). Internet-based and other computerized psychological treatments for adult depression: A meta-analysis. *Cognitive Behaviour Therapy, 38*(4), 196-205.

Andrews, G., Cuijpers, P., Craske, M. G., McEvoy, P., & Titov, N. (2010). Computer therapy for the anxiety and depressive disorders is effective, acceptable and practical health care: A meta-analysis. *PLoS ONE, 5*(10), 1-6.

Angst, J., & Merikangas, K. (1997). The depressive spectrum: Diagnostic classification and course. *Journal of Affective Disorders, 45*, 31-40.

Anthony, E. J. (1981). The paranoid adolescent as viewed through psychoanalysis. *Journal of the American Psychoanalytic Association, 29*(4), 745-787.

Ardila, R. (1985). Homosexuality in Colombia. *Acta Psiquiatría y Psicología de América Latina, 31*(3), 191-210.

Bag, B., Gencdogan, B., Reis, N., & Kilic, D. (2005). The comparison of homosexual and heterosexual males as regards their depression, eating attitudes and self-esteem ratios sample in Turkey. *Yeni Symposium, 43*(4), 179-184.

Bagley, C., & Tremblay, P. (1997). Suicidal behaviors in homosexual and bisexual males. *Crisis: The Journal of Crisis Intervention and Suicide Prevention, 18*(1), 24-34.

Bailey, J. M. (1999). Homosexuality and mental illness. *Archives of General Psychiatry, 56*(10), 883-884.

Bailey, J. M., & Zucker, K. J. (1995). Childhood sex-typed behavior and sexual orientation: A conceptual analysis and quantitative review. *Developmental Psychology, 31*(1), 43-55.

Balottin, U., & Rossi, G. (1999). Sessualita, depressione e persecuzione: L'adolescente, la psicopatologia e la terapia [Sexuality, depression, persecution: Adolescence, psychopathology, and therapy]. *Imago, 6*(1), 13-19.

Baltzer, F., Elliot, A., Katzman, D., Pinzon, J., Sankaran, K., Taddeo, D., . . . Kaufman, M. (2008). Adolescent sexual orientation. *Paediatric Child Health, 13*(7), 619-623.

Bancroft, J., Janssen, E., Strong, D., & Vukadinovic, Z. (2003). The relation between mood and sexuality in gay men. *Archives of Sexual Behavior, 32*(3), 231-242.

Barbour, R. S. (2000). The role of qualitative research in broadening the 'evidence base' for clinical practice. *Journal of Evaluation in Clinical Practice, 6*(2), 155-163.

Barrett, J. E., Williams, J. W. J., Oxman, T. E., Frank, E., Katon, W., Sullivan, M., . . . Sengupta, A. S. (2001). Treatment of dysthymia and minor depression in primary care: A randomized trial in patients aged 18 to 59 years. . *The Journal of Family Practice, 50*(5), 405-412.

Barucci, M. (1993). Osserrazioni sul 'disturbo di evitamento di personalita' (Observations on the 'Avoidant Personality Disorder'). *Neurologia Psichiatria Scienze Umane, 13*(4), 605-629.

Baum, A. L. (1998). Young females in the athletic arena. *Child and Adolescent Psychiatric Clinics of North America, 7*(4), 745-755.

Beals, K. P., & Peplau, L. A. (2005). Identity support, identity devaluation, and well-being among lesbians. *Psychology of Women Quarterly, 29*(2), 140-148.
Beck, J. S. (1995). *Cognitive therapy: Basics and beyond.* New York: The Guilford Press.
Beitchman, J. H., Zucker, K. J., Hood, J. E., DaCosta, G. A., & Akman, D. (1991). A review of the short-term effects of child sexual abuse. *Child Abuse & Neglect, 15*(4), 537-556.
Bell, A. P., & Weinberg, M. S. (1978). *Homosexualities: A study of diversity among men and women*. New York: Simon & Schuster.
Bennett, K. C., & Thompson, N. L. (1980). Social and psychological functioning of the ageing male homosexual. *British Journal of Psychiatry, 137*, 361-370.
Benton, J. (2003). Making schools safer and healthier for lesbian, gay, bisexual, and questioning students. *The Journal of School Nursing, 19*(5), 251.
Berg, M. B., Mimiaga, M. J., & Safren, S. A. (2008). Mental health concerns of gay and bisexual men seeking mental health services. *Journal of Homosexuality, 54*(3), 293-306.
Berk, L. E. (2001). *Development through the lifespan* (2nd ed.). Needham Heights, MA: Allyn & Bacon.
Bezinovic, P., & Tkalcic, M. (2005). Psychosocial aspects of adolescents' homosexual feelings in Croatia. *Review of Psychology, 12*(1), 23-30.
Bhatia, S. K., & Bhatia, S. C. (2007). Childhood and adolescent depression. *American Academy of Family Physicians, 75*(1), 73-80.
Biernbaum, M. A., & Ruscio, M. (2004). Differences between matched heterosexual and non-heterosexual college students on defense mechanisms and psychopathological symptoms. *Journal of Homosexuality, 48*(1), 125-141.
Birkett, M., Espelage, D. L., & Koenig, B. (2009). LGB and questioning students in schools: The moderating effects of homophobic bullying and school climate on negative outcomes. *Journal of Youth and Adolescence, 38*(7), 989-1000.
Blum, R. (1987). Physicians' assessment of deficiencies and desire for training in adolescent care. *Academic Medicine, 62*(5), 401-407.
Boldero, J., & Fallon, B. (1995). Adolescent help-seeking: What do they get help for and from whom? *Journal of Adolescence, 18*, 193-209.
Bos, H. M., Sandfort, T. G. M., de Bruyn, E. H., & Hakvoort, E. M. (2008). Same-sex attraction, social relationships, psychosocial functioning, and school performance in early adolescence. *Developmental Psychology, 44*(1), 59-68.
Bradford, J., Ryan, C., & Rothblum, E. D. (1994). National lesbian health care survey: Implications for mental health care. *Journal of Consulting & Clinical Psychology, 62*(2), 228-242.
Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*, 77-101.
Breiner, S. J. (1985). The adolescent who does not finish anything. *Adolescence, 20*(79), 647-653.
Breitner, I. E. (1973). Psychiatric problems of promiscuity. *Southern Medical Journal, 66*(3), 334-336.
Bridget, J., & Lucille, S. (1996). Lesbian Youth Support Information Service (LYSIS): Developing a distance support agency for young lesbians. *Journal of Community & Applied Social Psychology, 6*(5), 355-364.
Brooks, S. J., & Kutcher, S. (2001). Diagnosis and measurement of adolescent depression: A review of commonly used instruments. *Journal of Child and Adolescent Psychopharmacology, 11*(4), 341-376.
Brown, J. D., & Melchiono, M. W. (2006). Health concerns of sexual minority adolescent girls. *Current Opinion in Pediatrics, 18*(4), 359-364.
Calear, A. L., & Christensen, H. (2010). Review of Internet-based prevention and treatment programs for anxiety and depression in children and adolescents. *MJA, 192*(Supplement), S12-S14.
Calear, A. L., Christensen, H., Mackinnon, A., Griffiths, K. M., & O'Kearney, R. (2009). The YouthMood project: A cluster randomized controlled trial of an online cognitive behavioral program with adolescents. *Journal of Consulting and Clinical Psychology, 77*(6), 1021–1032.
Canadian Paediatric Society. (2008). Your teen's sexual orientation: What parents should know. *Paediatric Child Health, 13*(7), 624-625.
Carlson, H. M., & Baxter, L. A. (1984). Androgyny, depression, and self-esteem in Irish homosexual and heterosexual males and females. *Sex Roles, 10*(5-6), 457-467.
Cavanagh, K., Shapiro, D. A., Van Den Berg, S., Swain, S., Barkham, M., & Proudfoot, J. (2009). The acceptability of computer-aided cognitive behavioural therapy: A pragmatic study. *Cognitive Behaviour Therapy, 38*(4), 235-246.
Chesir-Teran, D., & Hughes, D. (2009). Heterosexism in high school and victimization among lesbian, gay, bisexual and questioning students. *Journal of Youth and Adolescence, 38*, 963-975.
Chung, K. B., & Katayama, M. (1996). Assessment of sexual orientation in lesbian/gay/bisexual studies. *Journal of Homosexuality, 30*, 49-62.
Ciro, D., Surko, M., Bhandarkar, K., Helfgott, N., Peake, K., & Epstein, I. (2005). Lesbian, gay, bisexual, sexual-orientation questioning adolescents seeking mental health services: Risk factors, worries, and desire to talk about them. *Social Work in Mental Health, 3*(3), 213-234.

Clark, T. C., Robinson, E., Crengle, S., Herd, R., Grant, S., & Denny, S. (2008). *Te Ara Whakapiki Taitamariki. Youth'07: The Health and Wellbeing of Secondary School Students in New Zealand. Results for Māori Young People.* Auckland: University of Auckland.

Cochran, S. D., & Mays, V. M. (1994). Depressive distress among homosexually active African American men and women. *American Journal of Psychiatry, 151*(4), 524-529.

Cochran, S. D., & Mays, V. M. (2000a). Lifetime prevalence of suicide symptoms and affective disorders among men reporting same-sex sexual partners: Results from NHANES III. *American Journal of Public Health, 90*(4), 573-578.

Cochran, S. D., & Mays, V. M. (2000b). Relation between psychiatric syndromes and behaviorally defined sexual orientation in a sample of the US population. *American Journal of Epidemiology, 151*(5), 516-523.

Cochran, S. D., Mays, V. M., Alegria, M., Ortega, A. N., & Takeuchi, D. (2007). Mental health and substance use disorders among Latino and Asian American lesbian, gay, and bisexual adults. *Journal of Consulting & Clinical Psychology, 75*(5), 785-794.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*(1), 155-159.

Connell, P., McKevitt, C., & Low, N. (2004). Investigating ethnic differences in sexual health: Focus groups with young people. *Sexually Transmitted Infections, 80*, 300-305.

Consolacion, T. B., Russell, S. T., & Sue, S. (2004). Sex, race/ethnicity, and romantic attractions: Multiple minority status adolescents and mental health. *Cultural Diversity and Ethnic Minority Psychology, 10*(3), 200-214.

Cox, N., Vanden Berghe, W., Dewaele, A., & Vinke, J. (2008). General and minority stress in an LGB population in Flanders. *Journal of LGBT Health Research, 4*(4), 181-193.

Craymer, L. (2011). *Vodafone invests in NZ broadband rollout to rural areas*. In Total Telecom. Retrieved 9 May, 2011, from http://www.totaltele.com/view.aspx?ID=464191

Crothers, L., Haller, E., Benton, C., & Haag, S. (2008). A clinical comparison of lesbian and heterosexual women in a psychiatric outpatient clinic. *Journal of Homosexuality, 54*(3), 280-292.

Cuijpers, P., de Graaf, R., & van Dorsselaer, S. (2004). Minor depression: Risk profiles, functional disability, health care use and risk of developing major depression. *Journal of Affective Disorders, 79*, 71-79.

Cunningham, M. (2008). Overview of design approaches in The Cool Teens CD and other computer programs for adolescent anxiety. *E-Journal of Applied Psychology, 4*(2), 6-11.

Cunningham, M. J., Wuthrich, V. M., Rapee, R. M., Lyneham, H. J., Schniering, C. A., & Hudson, J. L. (2009). The Cool Teens CD-ROM for anxiety disorders in adolescents: A pliot case series. *European Child and Adolescent Psychiatry, 18*(2), 125-129.

D'Augelli, A. R. (1993). Preventing mental health problems among lesbian and gay college students. *The Journal of Primary Prevention, 13*(4), 245-261.

D'Augelli, A. R., & Patterson, C. J. (Eds.). (2001). *Lesbian, gay, and bisexual identities and youth. Psychological perspectives.* New York: Oxford University Press.

Denny, S., Clark, T. C., Fleming, T., & Wall, M. (2004). Emotional resilience: Risk and protective factors for depression among alternative education students in New Zealand. *American Journal of Orthopsychiatry, 74*(2), 137-149.

Denny, S., Milfont, T. L., Utter, J., Robinson, E., Ameratunga, S. N., Merry, S. N., . . . Watson, P. D. (2008). Hand-held internet tablets for school-based data collection. *Biomedical Centre Research Notes, 1*(52), 1-4.

Diamant, A. L., & Wold, C. (2003). Sexual orientation and variation in physical and mental health status among women. *Journal of Women's Health, 12*(1), 41-49.

Donald, M., & Dower, J. (2002). Risk and protective factors for depressive symptomatology among a community sample of adolescents and young adults. *Australian and New Zealand Journal of Public Health, 26*(6), 555-562.

Earls, C. M., & David, H. (1989). A psychosocial study of male prostitution. *Archives of Sexual Behavior, 18*(5), 401-419.

Eisenberg, L. (1984). The epidemiology of suicide in adolescents. *Pediatric Annals, 13*(1), 47-54.

Elliott, R., Fischer, C. T., & Rennie, D. L. (1999). Evolving guidelines for publication of qualitative research studies in psychology and related fields. *British Journal of Clinical Psychology, 38*, 215-229.

Emslie, G. J. (2008). Improving outcome in pediatric depression. *The American Journal of Psychiatry, 165*(1), 1-3.

Endicott, J., Nee, J., Ruoyong, Y., & Wohlberg, C. (2006). Pediatric Quality of Life Enjoyment and Satisfaction Questionnaire (PQ-LES-Q): Reliability and validity. *Journal of the American Academy of Child and Adolescent Psychiatry, 45*(4), 401-407.

Espelage, D. L., Aragon, S. R., Birkett, M., & Koenig, B. W. (2008). Homophobic teasing, psychological outcomes, and sexual orientation among high school students: What influence do parents and schools have? *School Psychology Review, 37*(2), 202-216.

Farrand, P., Perry, J., Lee, C., & Parker, M. (2006). Adolescents' preference towards self-help: implications for service development. *Primary Care and Community Psychiatry, 11*, 73-79.

Felix, E. D., Furlong, M. J., & Austin, G. (2009). A cluster analytic investigation of school violence victimization among diverse students. *Journal of Interpersonal Violence, 24*(10), 1673-1695.
Fergusson, D. M., & Horwood, L. J. (2001). The Christchurch Health and Development Study: Review of findings on child and adolescent mental health. *Australian and New Zealand Journal of Psychiatry, 35*(3), 287-296.
Fergusson, D. M., Horwood, L. J., & Beautrais, A. L. (1999). Is sexual orientation related to mental health problems and suicidality in young people? *Archives of General Psychiatry, 56*(10), 876-880.
Fergusson, D. M., Horwood, L. J., Ridder, E. M., & Beautrais, A. L. (2005). Subthreshold depression in adolescence and mental health outcomes in adulthood. *Archives of General Psychiatry, 62*, 66-72.
Fleming, T. M., Merry, S. N., Robinson, E. M., Denny, S. J., & Watson, P. D. (2007). Self-reported suicide attempts and associated risk and protective factors among secondary school students in New Zealand. *Australian & New Zealand Journal of Psychiatry, 41*(3), 213-221.
Ford, V. (2003). Coming out as lesbian or gay: A potential precipitant of crisis in adolescence. *Journal of Human Behavior in the Social Environment, 8*(2/3), 93-110.
Frankowski, B. L. (2002). Sexual orientation of adolescent girls. *Current Women's Health Reports, 2*(6), 457-463.
Friedman, M., Marshal, M., Stall, R., Cheong, J., & Wright, E. (2008). Gay-related development, early abuse and adult health outcomes among gay males. *AIDS and Behavior, 12*(6), 891-902.
Friedman, R. C. (1999). Homosexuality, psychopathology, and suicidality. *Archives of General Psychiatry, 56*(10), 887-888.
Frost, D. M., & Bastone, L. M. (2007). The role of stigma concealment in the retrospective high school experiences of gay, lesbian, and bisexual individuals. *Journal of LGBT Youth, 5*(1), 27-36.
Frost, D. M., & Meyer, I. H. (2009). Internalized homophobia and relationship quality among lesbians, gay men, and bisexuals. *Journal of Counseling Psychology, 56*(1), 97-109.
Galliher, R. V., Rostosky, S. S., & Hughes, H. K. (2004). School belonging, self-esteem, and depressive symptoms in adolescents: An examination of sex, sexual attraction status, and urbanicity. *Journal of Youth and Adolescence, 33*(3), 235-245.
Garofalo, R., & Katz, E. (2001). Healthcare issues of gay and lesbian youth. *Current Opinion in Pediatrics, 13*, 298-302.
Garofalo, R., Wolf, R. C., Kessel, S., Palfrey, S. J., & DuRant, R. H. (1998). The association between health risk behaviors and sexual orientation among a school-based sample of adolescents. *Pediatrics, 101*(5), 895-902.
Gencoz, T., & Yuksel, M. (2006). Psychometric properties of the Turkish version of the internalized homophobia scale. *Archives of Sexual Behavior, 35*(5), 597-602.
Gerrig, R. J., Zimbardo, P. G., Campbell, A. J., Cumming, S. R., & Wilkes, F. J. (2008). *Psychology and life: Australian edition*. Frenchs Forest, NSW: Pearson Education Australia.
Gerrits, R. S., van der Zanden, R. A. P., Visscher, R. F. M., & Conijn, B. P. (2007). Master your mood online: A preventive chat group intervention for adolescents. *Australian e-Journal for the Advancement of Mental Health, 6*(3), 1-11.
Gledhill, J., & Garralda, M. E. (2010). The short-term outcome of depressive disorder in adolescents attending primary care: A cohort study. *Social Psychiatry & Psychiatric Epidemiology, Online*, 1-10.
Glover, J. A., Galliher, R. V., & Lamere, T. G. (2009). Identity development and exploration among sexual minority adolescents: Examination of a multidimensional model. *Journal of Homosexuality, 56*(1), 77-101.
Goff, J. L. (1990). Sexual confusion among certain college males. *Adolescence, 25*(99), 599-614.
Graham, L. F., Braithwaite, K., Spikes, P., Stephens, C. F., & Edu, U. F. (2009). Exploring the mental health of black men who have sex with men. *Community Mental Health Journal, 45*(4), 272-284.
Haines, M. E., Erchull, M. J., Liss, M., Turner, D. L., Nelson, J. A., Ramsey, L. R., & Hurt, M. M. (2008). Predictors and effects of self-objectification in lesbians. *Psychology of Women Quarterly, 32*(2), 181-187.
Halpern-Felsher, B. L., Ozer, E. M., Millstein, S. G., Wibbelsman, C. J., Fuster, C. D., Elster, A. B., & Irwin Jr, C. E. (2000). Preventive services in a health maintenance organization: How well do pediatricians screen and educate adolescent patients? *Archives of Pediatrics & Adolescent Medicine, 154*(2), 173-179.
Hankin, B. L., Abramson, L. Y., Moffitt, T. E., Silva, P. A., McGee, R., & Angell, K. E. (1998). Development of depression from preadolescence to young adulthood: Emerging gender differences in a 10-year longitudinal study. *Journal of Abnormal Psychology, 107*(1), 128-140.
Harrison, A. E. (1996). Primary care of lesbian and gay patients: Educating ourselves and our students. *Family Medicine, 28*(1), 10-23.
Harrison, T. W. (2003). Adolescent homosexuality and concerns regarding disclosure. *Journal of School Health, 73*(3), 107-112.
Hart, T. A., & Heimberg, R. G. (2001). Presenting problems among treatment-seeking gay, lesbian, and bisexual youth. *Journal of Clinical Psychology, 57*(5), 615-627.
Hatzenbuehler, M. L. (2009). How does sexual minority stigma "get under the skin"? A psychological mediation framework. *Psychological Bulletin, 135*(5), 707-730.

Hatzenbuehler, M. L., Keyes, K. M., & McLaughlin, K. A. (in press). The protective effects of social/contextual factors on psychiatric morbidity in LGB populations. *International Journal of Epidemiology*, Epub ahead of print retrieved May 9, 2011, from http://ije.oxfordjournals.org/content/early/2011/2002/2016/ije.dyr2019.full. Retrieved from

Hatzenbuehler, M. L., McLaughlin, K. A., & Nolen-Hoeksema, S. (2008). Emotion regulation and internalizing symptoms in a longitudinal study of sexual minority and heterosexual adolescents. *The Journal of Child Psychology and Psychiatry, 49*(12), 1270-1278.

Heary, C., & Hennessy, E. (2006). Focus groups versus individual interview with children: A comparison of data. *The Irish Journal of Psychology, 27*(1-2), 58-68.

Hegna, K., & Wichstrom, L. (2007). Suicide attempts among Norwegian gay, lesbian and bisexual youths: General and specific risk factors. *Acta Sociologica, 50*(1), 21-37.

Herek, G. M., Gillis, J. R., Cogan, J. C., & Glunt, E. K. (1997). Hate crime victimization among lesbian, gay, and bisexual adults. *Journal of Interpersonal Violence, 12*(2), 195-215.

Hetrick, E. S., & Martin, A. D. (1987). Developmental issues and their resolution for gay and lesbian adolescents. *Journal of Homosexuality, 14*(1-2), 25-43.

Hetrick, E. S., Merry, S. N., McKenzie, J., Sindahl, P., & Proctor, M. (2007). Selective serotonin reuptake inhibitors (SSRIs) for depressive disorders in children and adolescents. *Cochrane Database of Systematic Reviews, 3*, Art. No.: CD004851.

Hidaka, Y., & Operario, D. (2006). Attempted suicide, psychological health and exposure to harassment among Japanese homosexual, bisexual or other men questioning their sexual orientation recruited via the Internet. *Journal of Epidemiology & Community Health, 60*(11), 962-967.

Hillier, L., & Harrison, L. (2004). Homophobia and the production of shame: Young people and same sex attraction. *Culture, health & sexuality, 6*(1), 79-94.

Hinderliter, A. C. (2009). Methodological issues for studying asexuality. *Archives of Sexual Behavior, 38*, 619-621.

Hird, M. J. (2006). Sex diversity and evolutionary psychology. *The Psychologist, 19*(1), 30-32.

Hirshfield, S., Wolitski, R. J., Chiasson, M. A., Remien, R. H., Humberstone, M., & Wong, T. (2008). Screening for depressive symptoms in an online sample of men who have sex with men. *AIDS Care, 20*(8), 904-910.

Hochberg, R. (1977). Psychotherapy of a suicidal boy: Dynamics and interventions. *Psychotherapy: Theory, Research & Practice, 14*(4), 428-433.

Hunt, B., Matthews, C., Milsom, A., & Lammel, J. A. (2006). Lesbians with physical disabilities: A qualitative study of their experiences with counseling. *Journal of Counseling & Development, 84*(2), 163-173.

Hussain, S., & Roberts, N. (1998). The psychiatric presentation of adolescent homosexuality. *The Canadian Journal of Psychiatry, 43*(4), 420-421.

Igartua, K. J., Gill, K., & Montoro, R. (2003). Internalized homophobia: A factor in depression, anxiety, and suicide in the gay and lesbian population. *Canadian Journal of Community Mental Health 22*(2), 15-30.

Jackson, J. A., Telingator, C. J., Pleak, R. R., & Pollack, W. S. (2005). Acting (to) out: Approaching homosexuality in a 15-year-old boy with anxiety and depression. *Harvard Review of Psychiatry, 13*(1), 43-53.

Jafri, A. B., & Greenberg, W. M. (1991). Fluoxetine side effects. *Journal of the American Academy of Child and Adolescent Psychiatry, 30*(5), 852.

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher, 33*(7), 14-26.

Jordan, K. M. (2000). Substance abuse among gay, lesbian, bisexual, transgender, and questioning adolescents. *School Psychology Review, 29*(2), 201-206.

Joseph, H. B., Reznik, I., & Mester, R. (2003). Suicidal behavior of adolescent girls: profile and meaning. *Israel Journal of Psychiatry & Related Sciences, 40*(3), 209.

Josephson, G., & Whiffen, V. (2007). An integrated model of gay men's depressive symptoms. *American Journal of Mens Health, 1*(1), 60-72.

Joyce, P. R., Romans, S. E., Ellis, P. M., & Silverstone, T. S. (Eds.). (1995). *Affective disorders*. Christchurch: Christchurch School of Medicine.

Kaplan, H. I., & Sadock, B. J. (1991). *Synopsis of psychiatry: Behavioural sciences clinical psychiatry* (6th ed.). Baltimore: Williams and Wilkins.

Kaplowitz, M. D. (2000). Statistical analysis of sensitive topics in group and individual interviews. *Quality & Quantity, 34*, 419-431.

Kataoka, S., Zhang, L., & Wells, K. (2002). Unmet need for mental health care among U.S. children: Variations by ethnicity and insurance status. *American Journal of Psychiatry, 159*(9), 1548-1555.

Kato, P. M. (2010). Video games in health care: Closing the gap. *Review of General Psychology, 14*(2), 113-121.

Kazdin, A. E., French, N. H., Unis, A. S., Esveldt-Dawson, K., & Sherick, R. B. (1983). Hopelessness, depression, and suicidal intent among psychiatrically disturbed inpatient children. *Journal of Consulting & Clinical Psychology, 51*(4), 504-510.

Kazdin, A. E., Rodgers, A., & Colbus, D. (1986). The Hopelessness Scale for Children: Psychometric charateristics and concurrent validity. *Journal of Consulting & Clinical Psychology, 54*(2), 241-245.
Keefer, B. P., & Reene, K. (2002). Female adolescence: Difficult for heterosexual girls, hazardous for lesbians. *The Annual of Psychoanalysis, 30*, 245-252.
Keller, M. B., Ryan, N. D., Strober, M., Klein, R. G., Kutcher, S. P., Birmaher, B., . . . McCafferty, J. P. (2001). Efficacy of paroxetine in the treatment of adolescent major depression: A randomized, controlled trial. *Journal of the American Academy of Child and Adolescent Psychiatry, 40*(7), 762-772.
Kent, L., Vostanis, P., & Feehan, C. (1997). Detection of major and minor depression in children and adolescents: Evaluation of the Mood and Feelings Questionnaire. *Journal of Child Psychology and Psychiatry, 38*(5), 565-573.
Kertzner, R. M., Meyer, I. H., Frost, D. M., & Stirratt, M. J. (2009). Social and psychological well-being in lesbians, gay men, and bisexuals: The effects of race, gender, age and sexual identity. *American Journal of Orthopsychiatry, 79*(4), 500-510.
Klein, J. D., Allan, M. J., Elster, A. B., Stevens, D., Cox, C., Hedberg, V. A., & Goodman, R. A. (2001). Improving adolescent preventive care in community health centers. *Pediatrics, 107*(2), 318.
Kovacs, M., Goldston, D., & Gatsonis, C. (1993). Suicidal behaviors and childhood-onset depressive disorders: A longitudinal investigation. *Journal of the American Academy of Child and Adolescent Psychiatry, 32*(1), 8-20.
Kreiss, J. L., & Patterson, D. L. (1997). Psychosocial issues in primary care of lesbian, gay, bisexual, and transgender youth. *Journal of Pediatric Health Care, 11*(6), 266-274.
Lam, T. H., Stewart, S. M., Leung, G. M., Lee, P. W. H., Wong, J. P. S., & Ho, L. M. (2004). Depressive symptoms among Hong Kong adolescents: Relation to atypical sexual feelings and behaviors, gender dissatisfaction, pubertal timing, and family and peer relationships. *Archives of Sexual Behavior, 33*(5), 487-496.
Lang, K. (2002). *Measuring Ethnicity in the New Zealand Census*. Wellington: Statistics New Zealand.
Laumann, E., Gagnon, J. H., Michael, R. T., & Michaels, S. (1994). *The social organization of sexuality: Sexual practices in the United States*. Chicago: University of Chicago Press.
Le Brun, C., Robinson, E., Warren, H., & Watson, P. D. (2004). Non-heterosexual youth: A profile of their health and well-being. Auckland: University of Auckland.
Lee, C. (2002). The impact of belonging to a high school gay/straight alliance. *The High School Journal, Feb/Mar*, 13-26.
Lehrer, J. A., Shrier, L. A., Gortmaker, S., & Buka, S. (2006). Depressive symptoms as a longitudinal predictor of sexual risk behaviors among US middle and high school students. *Pediatrics, 118*(1), 189-200.
Leino, E. V., & Kisch, J. (2005). Correlates and Predictors of Depression in College Students: Results from the Spring 2000 National College Health Assessment. *American Journal of Health Education, 36*(2), 66-74.
Lester, D. (2006). Sexual orientation and suicidal behavior. *Psychological Reports, 99*(3), 923-924.
Lewinsohn, P. M., Hops, H., Roberts, R. E., Seeley, J. R., & Andrews, J. A. (1993). Adolescent psychopathology: I. Prevalence and incidence of depression and other DSM-III-R disorders in high school students. *Journal of Abnormal Psychology, 102*(1), 133-144.
Lewinsohn, P. M., Rohde, P., & Seeley, J. R. (1998). Major depressive disorder in older adolescents: Prevalence, risk factors, and clinical implications. *Clinical Psychology Review, 18*(7), 765-794.
Lewis, R. J., Derlega, V. J., Berndt, A., Morris, L. M., & Rose, S. (2001). An empirical analysis of stressors for gay men and lesbians. *Journal of Homosexuality, 42*(1), 63-88.
Liddle, B. J. (1997). Gay and lesbian clients' selection of therapists and utilization of therapy. *Psychotherapy: Theory, Research, Practice, Training, 34*(1), 11-18.
Lie, N. (1988). Boys who became offenders. A follow-up study of 2203 boys tested with projective methods. *Acta psychiatrica Scandinavica, 342*(Supplementum), 1-122.
Lindsey, B. J., Fabiano, P., & Stark, C. (2009). The prevalence and correlates of depression among college students. *College Student Journal, 43*(4), 999-1014.
Lock, J., & Steiner, H. (1999). Gay, lesbian, and bisexual youth risks for emotional, physical, and social problems: Results from a community-based survey. *Journal of the American Academy of Child and Adolescent Psychiatry, 38*(3), 297-304.
Lucassen, M. F. G., Merry, S. N., Robinson, E. M., Denny, S., Clark, T. C., Ameratunga, S., . . . Rossen, F. V. (2011). Sexual attraction, depression, self-harm, suicidality and help-seeking behaviour in New Zealand secondary school students. *Australian and New Zealand Journal of Psychiatry, 45*(5), 376-383.
March, S., Spence, S. H., & Donovan, C. L. (2009). The efficacy of an Internet-based cognitive-behavioral therapy intervention for child anxiety disorders. *Journal of Pediatric Psychology, 34*(5), 474-487.
Mariu, K. R., Merry, S. N., Robinson, E. M., & Watson, P. D. (2012). Seeking professional help for mental health problems, among New Zealand secondary school students. *Clinical Child Psychology and Psychiatry, 17*(2), 284-297.
Marks, I. M., Mataix-Cols, D., Kenwright, M., Cameron, R., Hirsch, S., & Gega, L. (2003). Pragmatic evaluation of computer-aided self-help for anxiety and depression. *British Journal of Psychiatry, 183*(July), 57-65.

Martell, C. R., Safren, S. A., & Prince, S. E. (2004). *Cognitive-behavioral therapies with lesbian, gay, and bisexual clients*. New York: The Guilford Press.
Martin, A. D., & Hetrick, E. S. (1988). The stigmatization of the gay and lesbian adolescent. *Journal of Homosexuality, 15*(1), 163-183.
Martin, R. L., Cloninger, C. R., Guze, S. B., & Clayton, P. J. (1985). Mortality in a follow-up of 500 psychiatric outpatients II. Cause-specific mortality. *Archives of General Psychiatry, 42*(1), 58-66.
Mayer, H. M., Bradford, J. B., Makadon, H. J., Stall, R., Goldhammer, H., & Landers, S. (2008). Sexual and gender minority health: What we know and what needs to be done. *American Journal of Public Health, 98*(6), 989-995.
McLaren, S. (2009). Sense of belonging to the general and lesbian communities as predictors of depression among lesbians. *Journal of Homosexuality, 56*(1), 1-13.
McQuillan, C., & Rodriguez, J. (2000a). Adolescent suicide: A review of the literature. *Boletin - Asociacion Medica de Puerto Rico, 92*(1/3), 30-38.
McQuillan, C., & Rodriguez, J. (2000b). Suicide, adolescents and Puerto Rico. *Boletin - Asociacion Medica de Puerto Rico, 92*(1/3), 22-29.
Mental Health Commission. (2001). Report of progress 1998-2000 - Towards implementing the Blueprint for Mental Health Services in New Zealand. Wellington: Mental Health Commission.
Mental Health Commission. (2004). Report on progress 2002-2003 - Towards implementing the Blueprint for Mental Health Services in New Zealand. Wellington: Mental Health Commission.
Merry, S. N., McDowell, H. H., Hetrick, S. E., Bir, J. J., & Muller, N. (2004). Psychological and/or educational interventions for the prevention of depression in children and adolescents. *Cochrane Database of Systematic Reviews* (2), 1-128.
Merry, S. N., Stasiak, K., Mariu, K., Frampton, C., Shepherd, M., Fleming, T., & Lucassen, M. (2011). The development and evaluation of SPARX: A computerized cognitive behavioural (CCBT) programme for adolescents with mild to moderate depression. Auckland: University of Auckland.
Merry, S. N., Stasiak, K., Shepherd, M., Frampton, C., Fleming, T., & Lucassen, M. (2011). *A randomised controlled trial of the effectiveness of SPARX: A computerised self-help intervention for adolescents with depression.* Unpublished manuscript. Auckland: The University of Auckland.
Merry, S. N., Stasiak, K., Shepherd, M., Frampton, C., Fleming, T., & Lucassen, M. F. G. (2012). The effectiveness of SPARX, a computerised self help intervention for adolescents seeking help for depression: randomised controlled non-inferiority trial. *British Medical Journal, 344*(e2598), 1-16.
Milfont, T. L., Merry, S., Robinson, E., Denny, S., Crengle, S., & Ameratunga, S. (2008). Evaluating the short form of the Reynolds Adolescent Depression Scale in New Zealand adolescents. *Australian & New Zealand Journal of Psychiatry, 42*, 950-954.
Milin, R., Walker, S., & Chow, J. (2003). Major depressive disorder in adolescence: A brief review of the recent treatment literature. *Canadian Journal of Psychiatry, 48*(9), 600-606.
Mills, T. C., Paul, J., Stall, R., Pollack, L., Canchola, J., Chang, Y. J., . . . Catania, J. A. (2004). Distress and depression in men who have sex with men: The Urban Men's Health Study. *American Journal of Psychiatry, 161*(2), 278-285.
Mitchell, N., & Dunn, K. (2007). Pragmatic evaluation of the viability of CCBT self-help for depression in higher education. *Counselling and Psychotherapy Research, 7*(3), 144-150.
Moher, D., Hopewell, S., Schulz, K. F., Montori, V., Gøtzsche, P. C., Devereaux, P. J., . . . Altman, D. G. (2010). CONSORT 2010 explanation and elaboration: Updated guidelines for reporting parallel group randomised trials. *British Medical Journal, Online First*, 1-28.
Myers, K., & Winters, N. C. (2002). Ten-year review of rating scales II: Scales for internalizing disorders. *Journal of the American Academy of Child and Adolescent Psychiatry, 41*, 634-659.
National Institute for Health and Clinical Excellence (NICE). (2005). *Depression in children and young people: Identification and management in primary, community and secondary care*. London: National Institute for Health and Clinical Excellence.
Nelson, J. A. (1994). Comment of special issue on adolescence. *American Psychologist, 49*(6), 523-524.
Noell, J. W., & Ochs, L. M. (2001). Relationship of sexual orientation to substance use, suicidal ideation, suicide attempts, and other factors in a population of homeless adolescents. *Journal of Adolescent Health, 29*(1), 31-36.
O'Donnell, L., O'Donnell, C., Wardlaw, D. M., & Stueve, A. (2004). Risk and resiliency factors influencing suicidality among urban African American and Latino youth. *American Journal of Community Psychology, 33*(1-2), 37-49.
O'Gorman, E. C. (1982). A retrospective study of epidemiological and clinical aspects of 28 transsexual patients. *Archives of Sexual Behavior, 11*(3), 231-236.
O'Kearney, R., Gibson, M., Christensen, H., & Griffiths, K. M. (2006). Effects of a cognitive-behavioural Internet program on depression, vulnerability to depression and stigma in adolescent males: A school-based controlled trial. *Cognitive Behaviour Therapy, 35*(1), 43-54.
O'Kearney, R., Kang, K., Christensen, H., & Griffiths, K. (2009). A controlled trial of a school-based Internet program for reducing depressive symptoms in adolescent girls. *Depression and Anxiety, 26*, 65-72.

Osman, A., Gutierrez, P. M., Bagge, C. L., Fang, Q., & Emmerich, A. (2010). Reynolds Adolescent Depression Scale-Second Edition: A reliable and useful instrument. *Journal of Clinical Psychology, 66*(12), 1324-1345.

Pachankis, J. E., & Goldfried, M. R. (2010). Expressive writing for gay-related stress: Psychosocial benefits and mechanisms underlying improvement. *Journal of Consulting and Clinical Psychology, 78*(1), 98-110.

Park, H. S., Schepp, K. G., Jang, E. H., & Koo, H. Y. (2006). Predictors of suicidal ideation among high school students by gender in South Korea. *Journal of School Health, 76*(5), 181-188.

Parkes, G., Hall, I., & Wilson, D. (2009). Cross dressing and gender dysphoria in people with learning disabilities: A descriptive study. *British Journal of Learning Disabilities, 37*(2), 151-156.

Parrott, D. J., Adams, H. E., & Zeichner, A. (2002). Homophobia: Personality and attitudinal correlates. *Personality and Individual Differences, 32*(7), 1269-1278.

Pastore, D. R., & Techow, B. (2004). Adolescent school-based health care: A description of two sites in their 20th year of service. *Mount Sinai Journal of Medicine, 71*(3), 191-196.

Perrin, E. C., & Sack, S. (1998). Health and development of gay and lesbian youths: Implications for HIV/AIDS. *AIDS Patient Care and STDs, 12*(4), 303-313.

Phoenix, A., Frosh, S., & Pattman, R. (2003). Producing contradictory masculine subject positions: Narratives of threat, homophobia and bullying in 11–14 year old boys. *Journal of Social Issues, 59*(1), 179-195.

Pietrantoni, L. (1999). Il tentato suicidio negli adolescenti omosessuali (suicide attempts among gay male adolescents). *Minerva Psichiatrica, 40*(2), 75-80.

Pine, D. S., Cohen, E., Cohen, P., & Brook, J. (1999). Adolescent depressive symptoms as predictors of adult depression: Moodiness or mood disorder? *American Journal of Psychiatry, 156*(1), 133-135.

Polders, L. A., Nel, J. A., Kruger, P., & Wells, H. L. (2008). Factors affecting vulnerability to depression among gay men and lesbian women in Gauteng, South Africa. *South African Journal of Psychology, 38*(4), 673-687.

Poteat, V. P., Aragon, S. R., Espelage, D. L., & Koenig, B. W. (2009). Psychosocial concerns of sexual minority youth: Complexity and caution in group differences. *Journal of Consulting Psychology, 77*(1), 196-201.

Poteat, V. P., & Espelage, D. L. (2005). Exploring the relation between bullying and homophobic verbal content: the Homophobic Content Agent Target (HCAT) scale. *Violence & Victims, 20*(5), 513-528.

Poteat, V. P., & Espelage, D. L. (2007). Predicting psychosocial consequences of homophobic victimization in middle school students. *The Journal of Early Adolescence, 27*(2), 175-191.

Poznanski, E. O., & Mokros, H. B. (1995). *Childern's Depression Rating Scale, Revised (CDRS-R): Administration Booklet*. Los Angeles: Western Psychological Services.

Poznanski, E. O., & Mokros, H. B. (1996). *Manual for the Children's Depression Rating Scale-Revised*. Los Angeles: Western Psychological Services.

Prensky, M. (2001). Digital Natives, Digital Immigrants Part 1. *On the Horizon, 9*(5), 1-6.

Proudfoot, J., Goldberg, D., Mann, A., Everitt, B., Marks, I., & Gray, J. A. (2003). Computerized, interactive, multimedia cognitive-behavioural program for anxiety and depression in general practice. *Psychological Medicine, 33*(2), 217-227.

Proudfoot, J., Ryden, C., Everitt, B., Shapiro, D. A., Goldberg, D., Mann, A., . . . Gray, J. A. (2004). Clinical efficacy of computerised cognitive-behavioural therapy for anxiety and depression in primary care: Randomised controlled trial. *British Journal of Psychiatry, 185*(July), 46-54.

Purcell, D. W., Campos, P. E., & Perilla, J. L. (1996). Therapy with lesbians and gay men: A cognitive-behavioral perspective *Cognitive and Behavioral Practice, 2*, 391-415.

Radkowsky, M., & Siegel, L. J. (1997). The gay adolescent: Stressors, adaptations, and psychosocial interventions. *Clinical Psychology Review, 17*(2), 191-216.

Ramage, C., Bir, J., Towns, A., Vague, R., Cargo, T., & Niumata-Faleafa, M. (2005). *Stocktake of Child and Adolescent Mental Health Services in New Zealand.* Auckland: Werry Centre: University of Auckland.

Rao, U., Ryan, N. D., Birmaher, B., Dahl, R. E., Williamson, D. E., Kaufman, J., . . . Nelson, B. (1995). Unipolar depression in adolescents: Clinical outcome in adulthood. *Journal of the American Academy of Child and Adolescent Psychiatry, 34*, 566-578.

Raviv, A., Sills, R., Raviv, A., & Wilansky, P. (2000). Adolescents' help-seeking behaviour: The difference between self- and other-referral. *Journal of Adolescence, 23*(6), 721-740.

Remafedi, G. (1999). Suicide and sexual orientation: Nearing the end of controversy? *Archives of General Psychiatry, 56*, 885-886.

Reynolds, W. M. (1986). *RADS Professional Manual*. Odessa, FL: Psychological Assessment Resources.

Reynolds, W. M. (2002). *Reynolds Adolescent Depression Scale, 2nd Edition (RADS-2)*. Lutz: Psychological Assessment Resources.

Richardson, T., Stallard, P., & Velleman, S. (2010). Computerised cognitive behavioural therapy for the prevention and treatment of depression and anxiety in children and adolescents: A systematic review. *Clinical Child & Family Psychology Review, 13*(3), 275-290.

Rivers, I. (2004). Recollections of bullying at school and their long-term implications for lesbians, gay men, and bisexuals. *The Journal of Crisis Intervention and Suicide Prevention, 25*(4), 169-175.

Rivers, I., & Noret, N. (2008). Well-being among same-sex- and opposite-sex-attracted youth at school. *School Psychology Review, 37*(2), 174-187.
Roberts, M. C., Lazicki-Puddy, T. A., Puddy, R. W., & Johnson, R. J. (2003). The outcomes of psychotherapy with adolescents: A practitioner-friendly research review. *Journal of Clinical Psychology, 59*(11), 1177-1191.
Roberts, S. J., Grindel, C. G., Patsdaughter, C. A., Reardon, K., & Tarmina, M. S. (2004). Mental health problems and use of services of lesbians: Results of the Boston lesbian health project II. *Journal of Gay & Lesbian Social Services, 17*(4), 1-15.
Rogers, G. (2007). Health priorities and perceived health determinants among South Australians attending GLBTI festival events. *Health Promotion Journal of Australia, 18*(1), 57-62.
Rohde, P., Noell, J., Ochs, L., & Seeley, J. R. (2001). Depression, suicidal ideation and STD-related risk in homeless older adolescents. *Journal of Adolescence, 24*(4), 447-460.
Rosario, M., Rotheram-Borus, M. J., & Reid, H. (1996). Gay-related stress and its correlates among gay and bisexual male adolescents of predominantly Black and Hispanic background. *Journal of Community Psychology, 24*(2), 136-159.
Rosario, M., Schrimshaw, E. W., & Hunter, J. (2005). Psychological distress following suicidality among gay, lesbian, and bisexual youths: Role of social relationships. *Journal of Youth and Adolescence, 34*(2), 149-161.
Rosario, M., Schrimshaw, E. W., Hunter, J., & Gwadz, M. (2002). Gay-related stress and emotional distress among gay, lesbian and bisexual youths: A longitudinal examination. *Journal of Consulting & Clinical Psychology, 70*(4), 967-975.
Rosenberg, M. (2003). Recognizing gay, lesbian, and transgender teens in a child and adolescent psychiatry practice. *Journal of the American Academy of Child and Adolescent Psychiatry, 42*(12), 1517-1521.
Rossen, F. V., Lucassen, M. F. G., Denny, S., & Robinson, E. (2009). Youth'07 The health and wellbeing of secondary school students in New Zealand: Results for young people attracted to the same sex or both sexes. Auckland: The University of Auckland.
Rosser, B. R., Bockting, W. O., Ross, M. W., Miner, M. H., & Coleman, E. (2008). The relationship between homosexuality, internalized homo-negativity, and mental health in men who have sex with men. *Journal of Homosexuality, 55*(2), 185-203.
Rostosky, S. S., Riggle, E. D. B., Horne, S. G., & Miller, A. D. (2009). Marriage amendments and psychological distress in lesbian, gay, and bisexual (LGB) adults. *Journal of Counseling Psychology, 56*(1), 56-66.
Ruangkanchanasetr, S., Plitponkarnpim, A., Hetrakul, P., & Kongsakon, R. (2005). Youth risk behavior survey: Bangkok, Thailand. *Journal of Adolescent Health, 36*(3), 227-235.
Russell, S., & Joyner, K. (2001). Adolescent sexual orientation and suicide risk: Evidence from a national study. *American Journal of Public Health, 91*(8), 1276-1281.
Russell, S., Seif, H., & Truong, N. (2001). School outcomes of sexual minority youth in the United States: Evidence from a national study. *Journal of Adolescence, 21*, 11-127.
Saewyc, E. M., Bauer, G. R., Skay, C. L., Bearinger, L. H., Resnick, M. D., Reis, E., & Murphy, A. (2004). Measuring sexual orientation in adolescent health surveys: Evaluation of eight school-based surveys. *Journal of Adolescent Health, 35*(4), 345-360.
Safren, S. A., & Heimberg, R. G. (1999). Depression, hopelessness, suicidality, and related factors in sexual minority and heterosexual adolescents. *Journal of Consulting & Clinical Psychology, 67*(6), 859-866.
Safren, S. A., Hollander, G., Hart, T. A., & Heimberg, R. G. (2001). Cognitive-behavioral therapy with lesbian, gay, and bisexual youth. *Cognitive and Behavioral Practice, 8*(3), 215-223.
Safren, S. A., & Rogers, T. (2001). Cognitive-behavioral therapy with gay, lesbian, and bisexual clients. *Journal of Clinical Psychology, 57*(5), 629-643.
Saghir, M. T., & Robins, E. (1971). Male and female homosexuality: Natural history. *Comprehensive Psychiatry, 12*(6), 503-510.
Salmond, C., Crampton, P., Sutton, F., & Atkinson, J. (2006). *NZDep2006 Census Area Unit Data*. Retrieved 25 January, 2010from http://www.wnmeds.ac.nz/academic/dph/research/socialindicators.html
Salomon, E. A., Mimiaga, M. J., Husnik, M. J., Welles, S. L., Manseau, M. W., Montenegro, A. B., . . . Mayer, K. H. (2009). Depressive symptoms, utilization of mental health care, substance use and sexual risk among young men who have sex with men in EXPLORE: Implications for age-specific interventions. *AIDS and Behavior, 13*(4), 811-821.
Salzman, M., Dede, C., & Loftin, R. B. (1999). VR's frames of reference: A visualization technqiue for mastering abstract multidimensional information *CHI 99, May*, 489-495.
Savin-Williams, R. C. (1990). *Gay and lesbian youth: Epressions of identity*. New York: Hemisphere.
Savin-Williams, R. C. (2001). A critique of research on sexual-minority youths. *Journal of Adolescence, 24*, 5-13.
Savin-Williams, R. C., & Diamond, L. M. (2000). Sexual identity trajectories among sexual-minority youths: Gender comparisons. *Archives of Sexual Behavior, 29*(6), 607-627.
Schreiber, R. (2001). Wandering in the dark: Women's experiences with depression. *Health Care for Women International, 22*(1-2), 85-98.

Shandley, K., Austin, D., Klein, B., & Kyrios, M. (2010). An evaluation of 'Reach Out Central': An online gaming program for supporting the mental health of young people. *Health Education Research, 25*(4), 563-574.
Sheets Jr, R. L., & Mohr, J. J. (2009). Perceived social support from friends and family and psychosocial functioning in bisexual young adult college students. *Journal of Counseling Psychology, 56*(1), 152-163.
Sigelman, C. K., & Rider, E. A. (2006). *Life-Span Human Development* (Fifth ed.). Belmont, CA: Thomson Higher Education.
Silenzio, V. M., Pena, J. B., Duberstein, P. R., Cerel, J., & Knox, K. L. (2007). Sexual orientation and risk factors for suicidal ideation and suicide attempts among adolescents and young adults. *American Journal of Public Health, 97*(11), 2017-2019.
Silenzio, V. M. B., Duberstein, P. R., Tang, W., Naiji, L., Tu, X., & Homan, C. M. (2009). Connecting the invisible dots: Reaching lesbian, gay and bisexual adolescents and young adults at risk of suicide through online social networks. *Social Science & Medicine, 69*, 469-474.
Simonsen, G., Blazina, C., & Watkins, C. E. (2000). Gender role conflict and psychological well-being among gay men. *Journal of Counselling Psychology, 47*(1), 85.
Slipp, S., & Nissenfeld, S. (1981). An experimental study of psychoanalytic theories of depression. *Journal of the American Academy of Psychoanalysis, 9*(4), 583-600.
Smith, N. G., & Ingram, K. M. (2004). Workplace heterosexism and adjustment among lesbian, gay, and bisexual individuals: The role of unsupportive social interactions. *Journal of Counseling Psychology, 51*(1), 57-67.
Sorensen, L., & Roberts, S. J. (1997). Lesbian uses of and satisfaction with mental health services: Results from Boston Lesbian Health Project. *Journal of Homosexuality, 33*(1), 35-50.
Spence, S. H. (1998). A measure of anxiety symptoms among children. *Behaviour Research and Therapy, 36*, 545-566.
Spence, S. H., Barrett, P. M., & Turner, C. M. (2003). Psychometric properties of the Spence Children's Anxiety Scale with young adolescents. *Journal of Anxiety Disorders, 17*(6), 605-625.
Spence, S. H., Donovan, C. L., March, S., Gamble, A., Anderson, R., Prosser, S., . . . Kenardy, J. (2008). Online CBT in the treatment of child and adolescent anxiety disorders: Issues in the development of BRAVE-ONLINE and two case illustrations. *Behavioural and Cognitive Psychotherapy 36*, 411-430.
Spence, S. H., Holmes, J. M., March, S., & Lipp, O. V. (2006). The feasibility and outcome of clinic plus Internet delivery of cognitive-behavior therapy for childhood anxiety. *Journal of Consulting & Clinical Psychology, 74*(3), 614-621.
Spirito, A., & Esposito-Smythers, C. (2006). Attempted and completed suicide in adolescence. *Annual Review of Clinical Psychology, 2*, 237-266.
Stallard, P., Richardson, T., Velleman, S., & Attwood, M. (2011). Computerized CBT (Think, Feel, Do) for depression and anxiety in children and adolescents: Outcomes and feedback from a pilot randomized controlled trial. *Behavioural and Cognitive Psychotherapy, 39*, 273-284.
Stallard, P., Velleman, S., & Richardson, T. (2010). Computer use and attitudes towards computerised therapy amongst young people and parents attending child and adolescent mental health services. *Child and Adolescent Mental Health, 15*(80-84).
Stasiak, K. (2008). *Computer-administered cognitive behavioural self-help intervention for adolescents with mild to moderate depressive symptoms: Programme development and examination of feasibility, efficacy and acceptability.* (PhD thesis). The University of Auckland, Auckland.
Statistics New Zealand. (2005). *Statistical Standard for Ethnicity*. Retrieved 14 July, 2008from http://www.stats.govt.nz/statistical-methods/classifications-and-related-statistical-standards/ethnicity/download+of+classification.htm
Stine, K. (1994). Lesbians also need attention as adolescents. *The Nurse practitioner, 19*(5), 21-22.
Stronski Huwiler, S. M., & Remafedi, G. (1998). Adolescent homosexuality. *Advances in Pediatrics, 45*, 107-144.
Sullivan, M., & Wodarski, J. S. (2002). Social alienation in gay youth. *Journal of Human Behavior in the Social Environment, 5*(1), 1-17.
Sullivan, T., & Schneider, M. (1987). Development and identity issues in adolescent homosexuality. *Child and Adolescent Social Work, 4*(1), 13-24.
Tan, P. P. (2005). The importance of spirituality among gay and lesbian individuals. *Journal of Homosexuality, 49*(2), 135-144.
Taylor, I., & Robertson, A. (1994). The health needs of gay men: A discussion of the literature and implications for nursing. *Journal of Advanced Nursing, 20*, 560-566.
Telljohann, S. K., & Price, J. H. (1993). A qualitative examination of adolescent homosexuals' life experiences: Ramifications for secondary school personnel. *Journal of Homosexuality, 26*(1), 41-56.
Thomas, D. R. (2006). A general inductive approach for analyzing qualitative evaluation data. *American Journal of Evaluation, 27*(2), 237-246.
Toro-Alfonso, J., Diaz, N. V., Andujar-Bello, I., & Nieves-Rosa, L. E. (2006). Strengths and vulnerabilities of a sample of gay and bisexual male adolescents in Puerto Rico. *Interamerican Journal of Psychology, 40*(1), 59-68.

Treatment for Adolescents with Depression Study (TADS) Team. (2004). Fluoxetine, cognitive-behavioral therapy, and their combination for adolescents with depression: Treatment for adolescents with depression study (TADS) randomized controlled trial. *JAMA, 292*(7), 807-820.
Troiden, R. R. (1989). The formation of homosexual identities. *Journal of Homosexuality, 17*(43-73).
Udry, R. J., & Chantala, K. (2002). Risk assessment of adolescents with same-sex relationships. *Journal of Adolescent Health, 31*(1), 84-92.
Udry, R. J., & Chantala, K. (2005). Risk factors differ according to same-sex and opposite-sex interest. *Journal of Biosocial Science, 37*(4), 481-497.
van Griensven, F., Kilmarx, P. H., Jeeyapant, S., Manopaiboon, C., Korattana, S., Jenkins, R. A., . . . Mastro, T. D. (2004). The prevalence of bisexual and homosexual orientation and related health risks among adolescents in Northern Thailand. *Archives of Sexual Behavior, 33*(2), 137-147.
van Heeringen, C., & Vincke, J. (2000). Suicidal acts and ideation in homosexual and bisexual young people: A study of prevalence and risk factors. *Social Psychiatry & Psychiatric Epidemiology, 35*(11), 494-499.
Van Voorhees, B. W., Ellis, J., Stuart, S., Fogel, J., & Ford, D. E. (2005). Pilot study of a primary care Internet-based depression prevention intervention for late adolescents. *The Canadian Child and Adolescent Psychiatry Review, 14*(2), 40-43.
Van Voorhees, B. W., Fogel, J., Reinecke, M. A., Gladstone, T., Stuart, S., Gollan, J., . . . Bell, C. (2009). Randomized clinical trial of an Internet-based depression prevention program for adolescents (project CATCH-IT) in primary care: 12-week outcomes. *Journal of Developmental & Behavioral Pediatrics, 30*(1), 23-37.
Van Voorhees, B. W., Vanderplough-Booth, K., Fogel, J., Gladstone, T., Bell, C., Stuart, S., . . . Reinecke, M. A. (2008). Integrative Internet-based depression prevention for adolescents: A randomized clinical trial in primary care for vulnerability and protective factors. *Journal of the Canadian Academy of Child and Adolescent Psychiatry, 17*(4), 184-196.
Vare, J. W., & Norton, T. L. (2004). Bibliotherapy for gay and lesbian youth overcoming the structure of silence. *The Clearing House, 77*(5), 190-195.
Vincke, J., & Bolton, R. (1994). Social support, depression, and self-acceptance among gay men. *Human Relations, 47*(9), 1049-1062.
Vincke, J., De Rycke, L., & Bolton, R. (1999). Gay identity and the experience of gay social stress. *Journal of Applied Social Psychology, 29*(6), 1316-1331.
Vincke, J., & Van Heeringen, K. (2002). Confidant support and the mental wellbeing of lesbian and gay young adults: A longitudinal analysis. *Journal of Community & Applied Social Psychology, 12*(3), 181-193.
Vincke, J., & Van Heeringen, K. (2004). Summer holiday camps for gay and lesbian young adults: An evaluation of their impact on social support and mental well-being. *Journal of Homosexuality, 47*(2), 33-46.
Vitlello, B., Rohde, P., Silva, S., Wells, K., Casat, C., Waslick, B., . . . The TADS Team. (2006). Functioning and quality of life in the Treatment for Adolescents With Depression Study (TADS). *Journal of the American Academy of Child and Adolescent Psychiatry, 45*(12), 1419-1426.
Walien, M. S. C., & Cohen-Kettenis, P. T. (2008). Psychosexual outcome of gender-dysphoric children. *Journal of the American Academy of Child and Adolescent Psychiatry, 47*(12), 1413-1423.
Walker, L., Merry, S., Watson, P. D., Robinson, E., Crengle, S., & Schaaf, D. (2005). The Reynolds Adolescent Depression Scale in New Zealand. *Australian & New Zealand Journal of Psychiatry, 39*, 136-140.
Waller, R., & Gilbody, S. (2009). Barriers to the uptake of computerized cognitive behavioural therapy: A systematic review of the quantitative and qualitative evidence. *Psychological Medicine, 39*(705-712), 705.
Watanabe, N., Hunot, V., Omori, I. M., Churchill, R., & Furukawa, T. A. (2007). Psychotherapy for depression among children and adolescents: A systematic review. *Acta Psychiatrica Scandinavica, 116*, 84-95.
Watson, P. D., Denny, S., Adair, V., Ameratunga, S. N., Clark, T. C., Crengle, S. M., . . . Sporle, A. A. (2001). Adolescents' perceptions of a health survey using multimedia computer-assisted self-administered interview. *Australian and New Zealand Journal of Public Health, 25*(6), 520-524.
Weber, S. (2009). Results of psychometric testing of the RADS-2 with school-based adolescents seeking assistance for sexual orientation and gender identity concerns. Part 2: Research brief. *Journal of Child and Adolescent Psychiatric Nursing, 22*(3), 126-131.
Weissman, M. M., Wolk, S., Goldstein, R. B., Moreau, D., Adams, P., Greenwald, S., . . . Wickramaratne, P. (1999). Depressed adolescents grown up. *Journal of the Americam Medical Association, 281*(18), 1707-1713.
Weisz, J. R., McCarty, C. A., & Valeri, S. M. (2006). Effects of psychotherapy for depression in children and adolescents: A meta-analysis. *Psychological Bulletin, 132*(1), 132-149.
Whitbeck, L. B., Chen, X., Hoyt, D. R., Tyler, K. A., & Johnson, K. D. (2004). Mental disorder, subsistence strategies, and victimization among gay, lesbian, and bisexual homeless and runaway adolescents. *The Journal of Sex Research, 41*(4), 329-342.
White, J. C., & Dull, V. T. (1997). Health risk factors and health-seeking behavior in lesbians. *Journal of Women's Health, 6*(1), 103-112.

White, J. C., & Levinson, W. (1995). Lesbian health care. What a primary care physician needs to know. *Western Journal of Medicine, 162*(5), 463-466.
White, M. R. (1991). AIDS prevention in adolescent gays: Health locus of control and self-disclosure. *Journal of Gay & Lesbian Psychotherapy, 1*(4), 115-118.
Whitfield, G., Hinshelwood, R., Pashely, A., Campsie, L., & Williams, C. (2006). The impact of a novel computerized CBT CD Rom (Overcoming Depression) offered to patients referred to clinical psychology. *Behavioural and Cognitive Psychotherapy, 34*, 1-11.
Whittington, C. J., Kendall, T., Fonagy, P., Cottrell, D., Cotgrove, A., & Boddington, E. (2004). Selective serotonin reuptake inhibitors in childhood depression: systematic review of published versus unpublished data. *The Lancet, 363*, 1341-1345.
Wichstrom, L., & Hegna, K. (2003). Sexual orientation and suicide attempt: A longitudinal study of the general Norwegian adolescent population. *Journal of Abnormal Psychology, 112*(1), 144-151.
Wilkinson, L., & Pearson, J. (2009). School culture and the well-being of same-sex-attracted youth. *Gender & Society, 23*(4), 542-568.
Williams, T., Connolly, J., Pepler, D., & Craig, W. (2005). Peer victimization, social support, and psychosocial adjustment of sexual minority adolescents. *Journal of Youth and Adolescence, 34*(5), 471-482.
Woods, E. R., Lin, Y. G., Middleman, A., Beckford, P., Chase, L., & DuRant, R. H. (1997). The associations of suicide attempts in adolescents. *Pediatrics, 99*(6), 791-796.
Wright, J. H., Wright, A. S., Albano, A. M., Basco, M. R., Goldsmith, L. J., Raffield, T., & Otto, M. W. (2005). Computer-assisted cognitive therapy for depression: Maintaining efficacy while reducing therapist time. *American Journal of Psychiatry, 162*, 1158-1164.
Yates, G. L., MacKenzie, R. G., Pennbridge, J., & Swofford, A. (1991). A risk profile comparison of homeless youth involved in prostitution and homeless youth not involved. *Journal of Adolescent Health, 12*(7), 545-548.
Zakalik, R. A., & Wei, M. (2006). Adult attachment, perceived discrimination based on sexual orientation, and depression in gay males: Examining the mediation and moderation effects. *Journal of Counseling Psychology, 53*(3), 302-313.

Appendix A – Summary of articles which were excluded upon further review

Adolescent data not presented separately from adult data or only adult data provided (n=79)
(Author & Year) Location
(Pachankis & Goldfried, 2010) 22 Universities, USA.
(Alanko et al., 2009), Finland.
(Frost & Meyer, 2009) New York City, USA.
(Graham, Braithwaite, Spikes, Stephens, & Edu, 2009) Atlanta, USA.
(Kertzner, Meyer, Frost, & Stirratt, 2009), New York City.
(Lindsey, Fabiano, & Stark, 2009) a Pacific North West University, USA.
(McLaren, 2009) Victoria, Australia.
(Parkes, Hall, & Wilson, 2009) Hertfordshire & London, England.
(Rostosky, Riggle, Horne, & Miller, 2009) nine States, USA.
(Salomon et al., 2009) various cities, USA.
(Sheets Jr & Mohr, 2009) 32 universities, USA.
(Cox, Vanden Berghe, Dewaele, & Vinke, 2008) Flanders, Belgium.
(Berg, Mimiaga, & Safren, 2008) Boston, USA.
(Crothers, Haller, Benton, & Haag, 2008) USA.
(Friedman, Marshall, Stall, Cheong, & Wright, 2008) USA.
(Haines et al., 2008) Internet.
(Hirshfield et al., 2008) online – various countries.
(Polders, Nel, Kruger, & Wells, 2008) Gauteng, South Africa.
(Rosser, Bockting, Ross, Miner, & Coleman, 2008) Midwestern, USA.
(Walien & Cohen-Kettenis, 2008), the Netherlands.
(Cochran, Mays, Alegria, Ortega, & Takeuchi, 2007) USA.
(Frost & Bastone, 2007) Internet, USA.
(Hegna & Wichstrom, 2007) Norway.
(Josephson & Whiffen, 2007) Internet recruitment, Canada.
(Rogers, 2007) Adelaide, Australia.
(Silenzio, Pena, Duberstein, Cerel, & Knox, 2007) USA.
(Abelson, Lambevski, Crawford, Bartos, & Kippax, 2006) Sydney & Melbourne, Australia.
(Gencoz & Yuksel, 2006) Turkey.
(Hidaka & Operario, 2006) Japan.
(Hunt, Matthews, Milsom, & Lammel, 2006) all regions of the USA.
(Lester, 2006) Body modification website, www.bmezine.com.
(Toro-Alfonso, Diaz, Andujar-Bello, & Nieves-Rosa, 2006) Puerto Rico.
(Zakalik & Wei, 2006) Internet and various states, USA.
(Bag, Gencdogan, Reis, & Kilic, 2005) Turkey.
(Beals & Peplau, 2005) UCLA, USA.
(Leino & Kisch, 2005) USA.
(Tan, 2005) Midwest, USA.
(Biernbaum & Ruscio, 2004) North West, USA.
(Mills et al., 2004) Four cities, USA.
(Rivers, 2004) UK.
(Roberts, Grindel, Patsdaughter, Reardon, & Tarmina, 2004) USA.
(Smith & Ingram, 2004) two Mid-Atlantic cities, USA.
(Vincke & Van Heeringen, 2004), Belgium.
(Bancroft, Janssen, Strong, & Vukadinovic, 2003) USA.
(Diamant & Wold, 2003) Los Angeles, USA.
(Igartua, Gill, & Montoro, 2003) Canada.
(Donald & Dower, 2002) Queensland, Australia.
(Parrott et al., 2002) Georgia, USA.
(Vincke & Van Heeringen, 2002) Belgium.
(Lewis et al., 2001) USA.
(Schreiber, 2001) Canada.
(Cochran & Mays, 2000a) USA.
(Cochran & Mays, 2000b) USA.
(Halpern-Felsher et al., 2000) USA.
(Simonsen, Blazina, & Watkins, 2000) USA.

(van Heeringen & Vincke, 2000) Belgium.
(Pietrantoni, 1999) Northern Italy.
(Vincke et al., 1999) Belgium.
(Bagley & Tremblay, 1997) Calgary, Canada.
(Herek, Gillis, Cogan, & Glunt, 1997) California, USA.
(Sorensen & Roberts, 1997) USA.
(White & Dull, 1997) Oregon, USA.
(Bridget & Lucille, 1996) Lancashire, England.
(Bradford, Ryan, & Rothblum, 1994) USA.
(Cochran & Mays, 1994) USA.
(Vincke & Bolton, 1994) Flanders, Belgium.
(White, 1991) USA.
(Yates, MacKenzie, Pennbridge, & Swofford, 1991) Los Angeles, USA.
(Earls & David, 1989) Montreal, Canada.
(Lie, 1988) Sweden.
(Blum, 1987) USA.
(Ardila, 1985) Bogota, Colombia.
(Martin, Cloninger, Guze, & Clayton, 1985) USA.
(Carlson & Baxter, 1984) Dublin, Ireland.
(O'Gorman, 1982) Belfast, Northern Ireland.
(Slipp & Nissenfeld, 1981) New York, USA.
(Bennett & Thompson, 1980) Australia.
(Breitner, 1973) New York, USA.
(Saghir & Robins, 1971) USA.

Opinion pieces or commentary (n=18)

(Author & Year) Location

(Baltzer et al., 2008) Canada.
(Canadian Paediatric Society, 2008) Canada.
(Vare & Norton, 2004) South Carolina, USA.
(Benton, 2003) USA.
(Harrison, 2003) USA.
(Rosenberg, 2003) USA.
(Frankowski, 2002) Vermont, USA.
(Bailey, 1999) USA.
(Friedman, 1999) New York, USA.
(Baum, 1998) New York, USA.
(Perrin & Sack, 1998) Massachusetts, USA.
(Kreiss & Patterson, 1997) Seattle, USA.
(Harrison, 1996) Minnesota, USA.
(White & Levinson, 1995) Portland, USA.
(Nelson, 1994) New York, USA.
(Stine, 1994) USA.
(Hetrick & Martin, 1987) New York, USA.
(Breiner, 1985) USA.

Literature reviews or theoretical pieces (n=16)

(Author & Year) Location

(Hatzenbuehler, 2009) USA.
(Brown & Melchiono, 2006) USA.
(Spirito & Esposito-Smythers, 2006) USA.
(Ford, 2003) USA.
(Joseph, Reznik, & Mester, 2003) Israel.
(Roberts, Lazicki-Puddy, Puddy, & Johnson, 2003) USA.
(Keefer & Reene, 2002) USA.
(Sullivan & Wodarski, 2002) USA.
(Jordan, 2000) USA.
(McQuillan & Rodriguez, 2000b) Puerto Rico.
(McQuillan & Rodriguez, 2000a) Puerto Rico.
(Stronski Huwiler & Remafedi, 1998) Minneapolis, USA.
(Radkowsky & Siegel, 1997) USA.
(Taylor & Robertson, 1994) Edinburgh, Scotland.
(D'Augelli, 1993) USA.
(Beitchman, Zucker, Hood, DaCosta, & Akman, 1991) Canada.

Case studies or case reviews (n=9)
(Author & Year) Location
(Jackson et al., 2005) USA.
(Hart & Heimberg, 2001) USA.
(Balottin & Rossi, 1999) Italy**.**
(Hussain & Roberts, 1998) Calgary, Canada.
(Barucci, 1993) Italy.
(Jafri & Greenberg, 1991) USA.
(Goff, 1990) a college counselling centre, USA.
(Anthony, 1981) USA.
(Hochberg, 1977) USA.
After full review found to be not relevant (n=4)
(Author & Year) Location
(Felix, Furlong, & Austin, 2009), California, USA.
(Poteat & Espelage, 2007) Illinois, USA.
(Poteat & Espelage, 2005) Central Illinois, USA.
(Klein et al., 2001) 4 states, USA.

Appendix B – Participant information sheet (Study Two)

We would like to host focus groups with Gay, Lesbian, Bisexual, Transgender, Takataapui and Fa'afafine young people to discuss a computer game to help young people deal with low mood. Focus groups will also be separately facilitated with heterosexual young people from various organizations and schools.

Background

People are worried about how depressed teenagers can become. Studies in New Zealand and overseas indicate that non-heterosexual youth frequently experience depression. Fortunately, some research has shown that fairly simple and sensible strategies may help teenagers deal with depression before it develops into a more serious problem. Those skills can be taught using interactive computer programmes. Two years ago we developed and piloted a prototype of such a programme with encouraging results and positive feedback.
This project

The Ministry of Health has given us funds to improve the game (e.g. improve graphics, include new characters, music etc). Based on the previous feedback we are also looking at new scenarios and the inclusion of stories from various celebrities.

We would like to hear your views and feedback on our ideas so that we can make the programme attractive and useful. We are running a series of focus groups in a number of schools and youth organisations.

What would be involved?

If you're 16 or older, we would like to invite you to a focus group at your organisation/youth group venue (or a pre-arranged alternative location). The group will take approximately 1.5 hours and it will be run by two researchers. We will bring a laptop to show our design ideas and ask everyone for their feedback on our design/characters/scenarios and suggestions for improvements. We would also like to hear from participants about the challenges facing non-heterosexual youth and whether or not some or all of these should be addressed in the computer game. We would like to come back to your school/organisation about 6-8 weeks later and bring our refined ideas and discuss them further. As a thank you for your time and contribution to this project you will get a gift voucher for $20.00.

What about confidentiality?

Given the nature of the focus group, confidentiality cannot be guaranteed. You can withdraw from the discussion at any time but the information provided up to that point has to remain. The interviews will be audio taped and the recordings will be transcribed by someone who has signed a confidentiality agreement. You will not be able to be identified when we write up the results. All the identifying information about you will be kept under lock and key at the Department of Psychological Medicine at the University of Auckland for six years and only the research team will have access to it.

What if the discussion makes me feel worried about my health?

We hope that you will find the discussion enjoyable and fun. However, if during or after the discussion you feel worried about your health, we would like you to let us know. You could tell a staff member from your organisation/youth group facilitator or contact any one of us and we will help you find appropriate support.

More questions?

We are happy to give you more information and answer questions. You can contact us directly - just give us a ring on the numbers below or email Mathijs [Ma-tace] directly. We can arrange to see you if you'd like.

Dr Sally Merry	Mathijs Lucassen	Prof Rob Kydd
Principal investigator	PhD student	Head
Office: 3737599 ext 86981	Office: 3737599 ext 84938	Dept of Psychological Medicine
Email: s.merry@auckland.ac.nz	Email: m.lucassen@auckland.ac.nz	Office 3737999

Any ethical concerns?

Contact: The Chair, The University of Auckland Human Participants Ethics Committee, The University of Auckland, Room 005 Alfred Nathan House, 24 Princes Street, Private Bag 92019, Auckland. Tel: 3737599 extn. 83711.

Approved by the University of Auckland Human Participation Ethics Committee on 14 May 2008 for a period of three years, from May 2008 to May 2011 Reference 2008/078.

Appendix C – Focus group questionnaire (Study Two)

THE UNIVERSITY OF AUCKLAND
FACULTY OF MEDICAL AND HEALTH SCIENCES

the WERRY CENTRE for child & adolescent mental health

Your Opinion Counts! Focus Groups – Written Feedback

Thank you for participating in the group!

1) How much were you able to express your opinions in the focus group? (Circle one answer)

1	2	3	4	5
Not at all	a little	half the time	a lot	totally

Comment (a chance to explain why you picked the answer you chose):

2) Overall what did you think about the look and style of the game? (Circle one answer)

1	2	3	4	5
Didn't like it at all	liked it a little	it was neither good nor bad	liked it	liked it a lot

Is there anything you would like to say about the style or look of the game that wasn't already said in the group?

3) Overall what did you think about the content (messages and information to help people) in the game? (Circle one answer)

1	2	3	4	5
Didn't like it at all	liked it a little	it was neither good nor bad	liked it	liked it a lot

Is there anything you would like to say about the content (messages and information to help people) that wasn't already said in the group?

4) Any other comments you would like to make?

5) To help us understand how well the game suits different types of people please tell us a little about you.

Your age_____ Your gender/gender identity _____ Your ethnic group_____

Please circle which applies to you: gay, lesbian, bisexual, transgender, takataapui, fa'afafine, other (please expand _____).

Have you ever suffered from feeling down or low for more than a few days in a row? YES/NO

If you were feeling down, would you use a resource like this? YES/NO

Thank you for your feedback ☺

Appendix D – Participant information sheet (Study Three & Four)

We would like to invite you to take part in a study to see if using a computer programme can help young people that are feeling down and are questioning their sexuality, are attracted to people of the same sex (e.g. a guy attracted to other guys or a girl attracted to other girls) or are attracted to both sexes (e.g. a girl attracted to both guys and girls or a guy attracted to both guys and girls).

Background

Lots of young people feel down, including same-sex attracted and both-sex attracted young people and youth questioning their sexuality and most don't get help. Two years ago researchers at the University of Auckland ran a small study in which they trialled a computer programme to help young people when they were feeling low. This worked well and young people gave ideas on how to improve the programme further. Our new programme, called SPARX, is designed as a 3D game with challenges and puzzles, as well as information about ways of managing feelings. We would like to see how it compares for opposite-sex attracted (i.e. 'straight') young people and same-sex and both-sex attracted and questioning youth. Whilst Mathijs Lucassen (PhD candidate) is running the study on same-sex or both-sex attracted and questioning youth, other researchers in the same department are also running an almost identical study with opposite-sex attracted youth in mind.

How did we choose you?

You have probably seen our poster, the website or our flier. Or you heard about the study from someone you knew. Participation in this study is entirely voluntary. You do not have to take part. No one will mind if you decide not to take part. You can also opt out of the study at any time without explanation.

What would be involved?

You will be asked to complete questionnaires and talk about your mood and feelings, which will take about 45 minutes. Most of these you can do by yourself, and some will be done with Mathijs or a trained research assistant at the University of Auckland or the Rainbow Youth Centre. You will then be given SPARX/the computer programme.

You will be asked to complete SPARX's seven modules over a period of four to eight weeks (in total about four hours). You can complete the programme at the University of Auckland or the Rainbow Youth Centre (in a designated private space) or take it home.

One month after you start the study, Mathijs or the trained researcher will phone you to check how you are doing. After you complete the programme we will want to see you again so that you can fill out some questionnaires and talk about your mood and feelings. At this stage you will be invited to talk about your experiences of using the computer programme (and this will be audio-recorded and take about half an hour). We would then like to see you 3 months later to talk about your mood and feelings and to complete some questionnaires (which would take half an hour), to see how you are getting on. The whole study will take up to 5 months from consent to completion of follow-up.

If you decide to join in, you will be free to change your mind and withdraw from the study at any time without giving reasons. You will also be able to remove the information you provide us, up to two weeks after the completion of each questionnaire.

Are there any risks to being in the study?

We don't think that there will be any significant risks to those taking part in the study and we hope that everyone who takes part will feel much better at the end. In the unlikely event that you start to feel much worse while using SPARX we will advise you to contact your GP or school guidance counsellor so that you can get additional help. We have also given you our contact details at the end of this information sheet, should you need information on how to get extra support.

Are there any benefits to being in the study?

In general, people taking part in studies benefit from them, probably because of the extra help they get and the questions they are asked. All participants will also get a copy of SPARX and as a thank you for your time and contribution to this project you will get a gift voucher for $50 at the five month follow-up meeting. Those participants that would like to be interviewed about their experiences using the computer programme (straight after they complete

SPARX) will be given a $20 voucher as an acknowledgement of the time it has taken to do this. Transport and parking costs to and from the University or the Rainbow Youth Centre will also be reimbursed.

What about confidentiality?
All the information you give us will be confidential and you will not be identified when we write up the results. All information about you will be stored securely at the University and only the researchers directly involved in this study will have access to it.

We will contact your GP or School Guidance Counsellor (we will let you know before doing so) if we are worried about you because we think you are very depressed or suicidal. We will also encourage you to inform your parents of this or give us permission to inform parents/guardians. However, we will not disclose that you are same-sex attracted, both-sex attracted or that you are questioning your sexuality.

What about the Treaty of Waitangi and cultural issues?
SPARX has been designed in consultation with Pakeha, Maori, Pacific and Asian groups and we hope that the programme will be acceptable to all.

Will we hear about the results?
Yes, we will let you all know what we have found. We will also publish the results in scientific journals and present the results at meetings and conferences. If the programme is successful we will be talking to policy makers and community groups about it.

More questions?
We are happy to give you more information and answer your questions. You can contact us directly on the numbers below. We can also arrange to see you if you'd like.

Mr Mathijs [Ma-tace] Lucassen
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Auckland mental health crisis services for emergencies only – Auckland Central = 0800 800 717, West Swanson, Piha & Titirangi = (09) 822 8500, Henderson = (09) 822 8600, North Shore/East Rodney - ask for the CATT team North = (09) 486 1491, South Auckland = (09) 270 4742.

If you have any questions or concerns about your rights as a participant in this study, you can contact an independent health and disability advocate. This is a free service provided under the Health and Disability Commissioner Act.

Telephone: (NZ wide) 0800 555 050
Free Fax (NZ wide): 0800 2787 7678 (0800 2 SUPPORT)
Email (NZ wide): advocacy@hdc.org.nz

Statement of Approval
This study has received ethical approval from the Multi-region Ethics Committee (reference: MEC/09/01/002) which reviews National and Multi regional studies.

Appendix E – Participant information sheet (participants under 16 years) (Study Three & Four)

We would like to invite you to take part in a study to see if using a computer programme can help young people that are feeling down and are questioning their sexuality, are attracted to people of the same sex (e.g. a guy attracted to other guys or a girl attracted to other girls), or attracted to both sexes (e.g. a girl attracted to both guys and girls or a guy attracted to both guys and girls).

Background

Lots of young people feel down, including same-sex attracted and both-sex attracted young people and youth questioning their sexuality and most don't get help. Two years ago researchers at the University of Auckland ran a small study in which they trialled a computer programme to help young people when they were feeling low. This worked well and young people gave us ideas on how to improve the programme further. Our new programme, called SPARX, is designed as a 3D game with challenges and puzzles, as well as information about ways of managing feelings. We would like to see how it compares for opposite-sex attracted (i.e. 'straight') young people and same-sex and both-sex attracted and questioning youth. Whilst Mathijs Lucassen (PhD candidate) is running the study with same-sex or both-sex attracted and questioning youth, other researchers in the same department are also running an almost identical study with opposite-sex attracted youth in mind.

How did we choose you?

You have probably seen our poster, the website or our flier. Or you heard about the study from someone you knew. Participation in the study is entirely voluntary. You do not have to take part. No one will mind if you decide not to take part. You can opt out of the study at any time without explanation. Your parent/s or guardian will need to sign the attached consent form in order for you to participate if you under the age of 16.

What would be involved?

You will be asked to complete questionnaires and talk about your mood and feelings, which will take about 45 minutes. You can do most of these by yourself, and some will be done with Mathijs or a trained research assistant at the University of Auckland or the Rainbow Youth Centre. You will then be given SPARX/the computer programme.

You will be asked to complete SPARX's seven modules over a period of four to eight weeks (in total about four hours). You can complete the programme at the University of Auckland or the Rainbow Youth Centre (in a designated private space) or take it home.

One month after you start the study, Mathijs or the trained researcher will phone to check how you are doing. After you complete the programme we will want to see you again so that you can fill out some questionnaires and talk about your mood and feelings. At this stage you will be invited to talk about your experiences of using the computer programme (and this will be audio-recorded and take about half an hour). We would then like to see you 3 months later to talk about your mood and feelings and to complete some questionnaires (which would take half an hour), to see how you are getting on. The whole study will take up to 5 months from consent to completion of follow-up.

If you decide to join in, you will be free to change your mind and withdraw from the study at any time without giving reasons. You will also be able to remove the information you provide us, up to two weeks after the completion of each questionnaire.

Are there any risks to being in the study?

We don't think that there will be any risks to those taking part in the study and we hope that everyone who takes part will feel much better at the end. In the unlikely event that you start to feel much worse while using SPARX we will advise you and your parent/s or guardian to contact your GP or school guidance counsellor so that you can get additional help. We have also given you our contact details at the end of this information sheet, should you need information on how to get extra support.

Are there any benefits to being in the study?

In general, people taking part in studies benefit from them, probably because of the extra help they get and the questions they are asked. All participants will also get a copy of SPARX and as a thank you for your time and contribution to this project you will get a gift voucher for $50 at the five month follow-up meeting. Those participants

that would like to be interviewed about their experiences using the computer programme (straight after they complete SPARX) will be given a $20 voucher as an acknowledgement of the time it has taken to do this. Transport and parking costs to and from the University or the Rainbow Youth Centre will also be reimbursed.

What about confidentiality?
All the information you give us will be confidential and you will not be identified when we write up the results. All information about you will be stored securely at the University and only the researchers directly involved in this study will have access to it.

We will contact your GP or School Guidance Counsellor (we will tell you before doing so) if we are worried about you because we think you are very depressed or suicidal, we will tell your parent/s or guardian about our concerns if you are under the age of 16 and we will make a referral to your GP or School Guidance Counsellor. If over the age of 16, we will inform the young person's GP or School Guidance Counsellor and they will provide the appropriate intervention. We will also encourage those over 16 to inform their parents or give us permission to inform parents/guardians.

What about the Treaty of Waitangi and cultural issues?
SPARX has been designed in consultation with Pakeha, Maori, Pacific and Asian groups and we hope that the programme will be acceptable to all.

Will we hear about the results?
Yes, we will let you all know what we have found. We will also publish the results in scientific journals and present the results at meetings and conferences. If the programme is successful we will be talking to policy makers and community groups about it.

More questions?
We are happy to give you more information and answer your questions. You can contact us directly on the numbers below. We can also arrange to see you if you'd like.

Mr Mathijs [Ma-tace] Lucassen
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If you have any questions or concerns about your rights as a participant in this study, you can contact an independent health and disability advocate. This is a free service provided under the Health and Disability Commissioner Act.
Telephone: (NZ wide) 0800 555 050
Free Fax (NZ wide): 0800 2787 7678 (0800 2 SUPPORT)
Email (NZ wide): advocacy@hdc.org.nz

Statement of Approval
This study has received ethical approval from the Multi-region Ethics Committee (reference: MEC/09/01/002) which reviews National and Multi regional studies.

Appendix F – Questions about you (Study Three & Four)

ID#: ☐☐-☐☐☐ Initials: ☐☐☐ Date: _____/_____/_____
DD MM YYYY

Instruction: We need to collect general demographic information about people participating in the study. **Fill in this form by yourself** (if you need help please ask for assistance).

1. Date of Birth:_____(dd)/_____(mm)/_____(yyyy) 2. Sex: ☐ Male ☐ Female

3. We would like to ask you about the ethnic group or groups you belong to. By this we mean where your family is from, or which group of people you feel you belong to (circle one answer on each line).

New Zealand European	Yes	No
Niuean	Yes	No
Māori	Yes	No
Chinese	Yes	No
Samoan	Yes	No
Cook Island Māori	Yes	No
Tongan	Yes	No
Other (such as Dutch, Japanese, Tokelauan)	Yes	No
If Other (specify):		

4. How many people, including you, usually live in your home? _____

5. Do you feel that people at school care about you (like teachers, coaches or other adults)? Yes No

6. Do you go to (please tick one) High school _____ Alternative Education _____ Training course _____
Other (please specify) _____

7. Sexuality, friendships and attractions are an important part of growing up. Which are you sexually attracted to? (tick one only)

- ☐ The opposite sex (e.g. I am a male attracted to females, or I am a female attracted to males).
- ☐ The same sex (e.g. I am a male attracted to males, or I am a female attracted to females)
- ☐ Both sexes (e.g. I am attracted to males and females)
- ☐ Not sure
- ☐ Neither
- ☐ I prefer not to answer this question

8. How would you describe your sexual orientation? (tick one only)

- ☐ Heterosexual (sexually attracted to the opposite sex)
- ☐ Mostly heterosexual
- ☐ Bisexual (attracted to both sexes)
- ☐ Gay or lesbian (attracted to the same sex)
- ☐ Other, please specify: _____
- ☐ I am not sure yet
- ☐ I don't understand this question

Appendix G – CDRS-R (Study Three)

ID#: ☐☐-☐☐☐ Initials: ☐☐☐ Date: ____ /____ /____
DD MM YYYY

Instructions: Rate each symptom area for the young person by circling only one number for each item.

Evaluated Symptom Area	**Rating**						
Impaired school work	1	2	3	4	5	6	7
Difficulty having fun	1	2	3	4	5	6	7
Social withdrawal	1	2	3	4	5	6	7
Sleep disturbance	1	2	3	4	5		
Appetite disturbance	1	2	3	4	5		
Excessive fatigue	1	2	3	4	5	6	7
Physical complaints	1	2	3	4	5	6	7
Irritability	1	2	3	4	5	6	7
Excessive guilt	1	2	3	4	5	6	7
Low self-esteem	1	2	3	4	5	6	7
Depressed feelings	1	2	3	4	5	6	7
Morbid ideation	1	2	3	4	5	6	7
Suicidal ideation	1	2	3	4	5	6	7
Excessive weeping	1	2	3	4	5	6	7
Depressed facial affect	1	2	3	4	5	6	7
Listless speech	1	2	3	4	5		
Hypoactivity	1	2	3	4	5	6	7

= No apparent difficulties = Clinically significant difficulties = Severe clinical difficulties

Raw Score: ☐☐ t-Score: ☐☐

Appendix H – RADS-2 (Study Three)

ID#: ☐☐-☐☐☐ Initials: ☐☐☐ Date: _____/____/____
DD MM YYYY

DIRECTIONS: Listed below are some sentences about how you feel. Read each sentence and decide how often you've felt this way over the last two weeks. Decide if you feel this way "almost never", "hardly ever", "sometimes", or "most of the time" and circle the answer that best describes how you really feel. Remember, there are no right or wrong answers.

1. I feel happy	Almost never	Hardly ever	Sometimes	Most of the time
2. I worry about school	Almost never	Hardly ever	Sometimes	Most of the time
3. I feel lonely	Almost never	Hardly ever	Sometimes	Most of the time
4. I feel my parents don't like me	Almost never	Hardly ever	Sometimes	Most of the time
5. I feel important	Almost never	Hardly ever	Sometimes	Most of the time
6. I feel like hiding from people	Almost never	Hardly ever	Sometimes	Most of the time
7. I feel sad	Almost never	Hardly ever	Sometimes	Most of the time
8. I feel like crying	Almost never	Hardly ever	Sometimes	Most of the time
9. I feel that no one cares about me	Almost never	Hardly ever	Sometimes	Most of the time
10. I feel like having fun with other students	Almost never	Hardly ever	Sometimes	Most of the time
11. I feel sick	Almost never	Hardly ever	Sometimes	Most of the time
12. I feel loved	Almost never	Hardly ever	Sometimes	Most of the time
13. I feel like running away	Almost never	Hardly ever	Sometimes	Most of the time
14. I feel like hurting myself	Almost never	Hardly ever	Sometimes	Most of the time
15. I feel that other students don't like me	Almost never	Hardly ever	Sometimes	Most of the time
16. I feel upset	Almost never	Hardly ever	Sometimes	Most of the

				time
17. I feel life is unfair	Almost never	Hardly ever	Sometimes	Most of the time
18. I feel tired	Almost never	Hardly ever	Sometimes	Most of the time
19. I feel I am bad	Almost never	Hardly ever	Sometimes	Most of the time
20. I feel I am no good	Almost never	Hardly ever	Sometimes	Most of the time
21. I feel sorry for myself	Almost never	Hardly ever	Sometimes	Most of the time
22. I feel mad about things	Almost never	Hardly ever	Sometimes	Most of the time
23. I feel like talking to other students	Almost never	Hardly ever	Sometimes	Most of the time
24. I have trouble sleeping	Almost never	Hardly ever	Sometimes	Most of the time
25. I feel like having fun	Almost never	Hardly ever	Sometimes	Most of the time
26. I feel worried	Almost never	Hardly ever	Sometimes	Most of the time
27. I get stomachaches	Almost never	Hardly ever	Sometimes	Most of the time
28. I feel bored	Almost never	Hardly ever	Sometimes	Most of the time
29. I like eating meals	Almost never	Hardly ever	Sometimes	Most of the time
30. I feel like nothing I do helps any more	Almost never	Hardly ever	Sometimes	Most of the time

Appendix I – MFQ (Study Three)

ID#: ☐☐-☐☐☐ Initials: ☐☐☐ Date: ____ /____ /____
DD MM YYYY

INSTRUCTION: This form is about how you might have been feeling or acting recently. For each question, please circle how much you have felt or acted this way in the past two weeks. If a sentence was true about you most of the time, circle 'True'. If it was only sometimes true, circle 'Sometimes'. If a sentence was not true about you, circle 'Not true'.

I felt miserable or unhappy	True	Sometimes	Not true
I didn't enjoy anything at all	True	Sometimes	Not true
I was less hungry than usual	True	Sometimes	Not true
I ate more than usual	True	Sometimes	Not true
I felt so tired I just sat around and did nothing	True	Sometimes	Not true
I was moving and walking more slowly than usual	True	Sometimes	Not true
I was very restless	True	Sometimes	Not true
I felt I was no good anymore	True	Sometimes	Not true
I blamed myself for things that weren't my fault	True	Sometimes	Not true
It was hard for me to make up my mind	True	Sometimes	Not true
I felt grump and cross with my parents	True	Sometimes	Not true
I felt like talking less than usual	True	Sometimes	Not true
I was talking more slowly than usual	True	Sometimes	Not true
I cried a lot	True	Sometimes	Not true
I thought there was nothing good for me in the future	True	Sometimes	Not true
I thought that life wasn't worth living	True	Sometimes	Not true
I thought about death and dying	True	Sometimes	Not true
I thought my family would be better off without me	True	Sometimes	Not true
I thought about killing myself	True	Sometimes	Not true
I didn't want to see my friends	True	Sometimes	Not true
I found it hard to think properly or concentrate	True	Sometimes	Not true
I thought bad things would happen to me	True	Sometimes	Not true
I hated myself	True	Sometimes	Not true
I felt I was a bad person	True	Sometimes	Not true
I thought I looked ugly	True	Sometimes	Not true
I worried about aches and pains	True	Sometimes	Not true
I felt lonely	True	Sometimes	Not true
I thought nobody really loved me	True	Sometimes	Not true
I didn't have any fun at school	True	Sometimes	Not true
I thought I could never be as good as other students	True	Sometimes	Not true
I did everything wrong	True	Sometimes	Not true
I didn't sleep as well as I usually sleep	True	Sometimes	Not true
I slept a lot more than usual	True	Sometimes	Not true

Appendix J – PQ-LES-Q (Study Three)

ID#: ☐☐-☐☐☐ Initials: ☐☐☐ Date: ____ /____ /____
DD MM YYYY

INSTRUCTIONS: This survey asks for your views about your general health, well-being, and feelings about your life. Please answer EVERY question by circling the response that best fits with how things have been for you in the past two weeks. If you are not sure about how to answer a question, please give the best answer you can. Remember, there are no right or wrong answers.

Over the past two weeks, how have things been with…

1) ... your health?	Very poor	Poor	Fair	Good	Very good
2) ... your mood or feelings?	Very poor	Poor	Fair	Good	Very good
3) ... school or learning?	Very poor	Poor	Fair	Good	Very good
4) ... helping out at home?	Very poor	Poor	Fair	Good	Very good
5) ... getting along with friends?	Very poor	Poor	Fair	Good	Very good
6) ... getting along with your family?	Very poor	Poor	Fair	Good	Very good
7) ... play or free time?	Very poor	Poor	Fair	Good	Very good
8) ... getting things done?	Very poor	Poor	Fair	Good	Very good
9) ... your love or affection?	Very poor	Poor	Fair	Good	Very good
10) ... getting or buying things?	Very poor	Poor	Fair	Good	Very good
11) ... the place where you live?	Very poor	Poor	Fair	Good	Very good
12) ... paying attention?	Very poor	Poor	Fair	Good	Very good
13) ... your energy level?	Very poor	Poor	Fair	Good	Very good
14) ... feelings about yourself?	Very poor	Poor	Fair	Good	Very good
15)... Overall, how has your life been?	Very poor	Poor	Fair	Good	Very good

Appendix K – SCAS (Study Three)

ID#: ☐☐-☐☐☐ Initials: ☐☐☐ Date: ____ /____ /____
DD MM YYYY

INSTRUCTIONS: Please put a circle around the word that shows how often each of these things have happened to you in the last two weeks. There are no right or wrong answers.

1. I worry about things	Never	Sometimes	Often	Always
2. I am scared of the dark	Never	Sometimes	Often	Always
3. When I have a problem, I get a funny feeling in my stomach	Never	Sometimes	Often	Always
4. I feel afraid	Never	Sometimes	Often	Always
5. I would feel afraid of being on my own at home	Never	Sometimes	Often	Always
6. I feel scared when I have to take a test	Never	Sometimes	Often	Always
7. I feel afraid if I have to use public toilets or bathrooms	Never	Sometimes	Often	Always
8. I worry about being away from my parents	Never	Sometimes	Often	Always
9. I feel afraid that I will make a fool of myself in front of people	Never	Sometimes	Often	Always
10. I worry that I will do badly at my school work	Never	Sometimes	Often	Always
11. I am popular amongst other students my own age	Never	Sometimes	Often	Always
12. I worry that something awful will happen to someone in my family	Never	Sometimes	Often	Always
13. I suddenly feel as if I can't breathe when there is no reason for this	Never	Sometimes	Often	Always
14. I have to keep checking that I have done things (like the switch is off, or the door is locked)	Never	Sometimes	Often	Always
15. I feel scared if I have to sleep on my own	Never	Sometimes	Often	Always
16. I have trouble going to school in the mornings because I feel nervous or afraid	Never	Sometimes	Often	Always
17. I am good at sports	Never	Sometimes	Often	Always
18. I am scared of dogs	Never	Sometimes	Often	Always
19. I can't seem to get bad or silly thoughts out of my head	Never	Sometimes	Often	Always
20. When I have a problem, my heart beats really fast	Never	Sometimes	Often	Always
21. I suddenly start to tremble or shake when there is no reason for this	Never	Sometimes	Often	Always
22. I worry that something bad will happen to me	Never	Sometimes	Often	Always
23. I am scared of going to the doctors or dentists	Never	Sometimes	Often	Always
24. When I have a problem, I feel shaky	Never	Sometimes	Often	Always
25. I am scared of being in high places or lifts (elevators)	Never	Sometimes	Often	Always
26. I am a good person	Never	Sometimes	Often	Always
27. I have to think of special thoughts to stop bad things from happening (like numbers or words)	Never	Sometimes	Often	Always
28. I feel scared if I have to travel in the car, or on a bus or a train	Never	Sometimes	Often	Always
29. I worry what other people think of me	Never	Sometimes	Often	Always
30. I am afraid of being in crowded places (like shopping centres, the movies, buses, busy places)	Never	Sometimes	Often	Always
31. I feel happy	Never	Sometimes	Often	Always
32. All of a sudden I feel really scared for no reason at all	Never	Sometimes	Often	Always
33. I am scared of insects or spiders	Never	Sometimes	Often	Always

34. I suddenly become dizzy or faint when there is no reason for this	Never	Sometimes	Often	Always
35. I feel afraid if I have to talk in front of my class	Never	Sometimes	Often	Always
36. My heart suddenly starts to beat too quickly for no reason	Never	Sometimes	Often	Always
37. I worry that I will suddenly get a scared feeling when there is nothing to be afraid of	Never	Sometimes	Often	Always
38. I like myself	Never	Sometimes	Often	Always
39. I am afraid of being in small closed places, like tunnels or small rooms	Never	Sometimes	Often	Always
40. I have to do some things over and over again (like washing my hands, cleaning or putting things in a certain order)	Never	Sometimes	Often	Always
41. I get bothered by bad or silly thoughts or pictures in my mind	Never	Sometimes	Often	Always
42. I have to do some things in just the right way to stop bad things happening	Never	Sometimes	Often	Always
43. I am proud of my school work	Never	Sometimes	Often	Always
44. I would feel scared if I had to stay away from home overnight	Never	Sometimes	Often	Always
45. Is there something else that you are really afraid of?	Yes	No		
Please write down what it is _____ _____ _____				
46. How often are you afraid of this thing?	Never	Sometimes	Often	Always

Appendix L – Kazdin HPLS (Study Three)

ID#: ☐☐-☐☐☐ Initials: ☐☐☐ Date: ____/____/____
DD MM YYYY

INSTRUCTIONS: These sentences are about how some young people feel about their lives. Your answers let us know about how young people feel about things. There are no right or wrong answers.

Please circle the response (True/False) that most closely fits your opinion of whether the sentence is like or not like you for the last two weeks.

1. I want to grow up because I think things will be better	True	False
2. I might as well give up because I can't make things better for myself	True	False
3. When things are going badly, I know that they won't be bad all of the time	True	False
4. I can imagine what my life will be like when I'm grown up	True	False
5. I have enough time to finish the things I really want to do	True	False
6. Someday, I will be good at doing the things that I really care about	True	False
7. I will get more of the good things in life than most other young people	True	False
8. I don't have good luck and there's no reason to think I will when I grow up	True	False
9. All I can see ahead of me are bad things, not good things	True	False
10. I don't think I will get what I really want	True	False
11. When I grow up, I think I will be happier than I am now	True	False
12. Things just won't work out the way I want them to	True	False
13. I never get what I want, so it's dumb to want anything	True	False
14. I don't think I will have any real fun when I grow up	True	False
15. Tomorrow seems unclear and confusing to me	True	False
16. I will have more good times than bad times	True	False
17. There's no use in really trying to get something I want because I probably won't get it	True	False

Appendix M – Satisfaction Questionnaire (Study Three)

ID#: ☐☐-☐☐☐ Initials: ☐☐☐ Date: ____/____/____
DD MM YYYY

We are interested to know if you liked SPARX: The Rainbow Version and what worked well for you.
Can you rate the programme according to whether the following topics were useful to you? (Circle one response for each question/statement).

Overall, how useful was SPARX: The Rainbow Version for you?	Very useful	Useful	Not sure	Not very useful	Not at all useful
Learning about depression	Very useful	Useful	Not sure	Not very useful	Not at all useful
DO IT - Doing more makes you feel better	Very useful	Useful	Not sure	Not very useful	Not at all useful
RELAX – slow breathing and muscle relaxation	Very useful	Useful	Not sure	Not very useful	Not at all useful
SOLVE IT – problem solving & using STEPS	Very useful	Useful	Not sure	Not very useful	Not at all useful
SORT IT – listening, being assertive and negotiation skills	Very useful	Useful	Not sure	Not very useful	Not at all useful
SORT IT– dealing with angry and hurt feelings	Very useful	Useful	Not sure	Not very useful	Not at all useful
SPOT IT – spotting negative feelings and thoughts (Gnats)	Very useful	Useful	Not sure	Not very useful	Not at all useful
SPOT IT- spotting positive or helpful thoughts (Sparks)	Very useful	Useful	Not sure	Not very useful	Not at all useful
SWAP IT – changing negative thoughts (using RAPA)	Very useful	Useful	Not sure	Not very useful	Not at all useful

Anything else - please specify: _____

Can you rate the main features of SPARX: The Rainbow Version – from what you really liked (rating of 5) to what you didn't like (rating of 1). If any question isn't applicable to you, please put a tick in the N/A column.

		☹	😐	☺	N/A
12.	It looks like a computer game	1.....2…….....3…….....4…….....5			☐
13.	You can learn things from it by yourself at your own pace	1.....2…….....3…….....4…….....5			☐
14.	It has video clips of celebrities giving advice	1.....2…….....3…….....4…….....5			☐
15.	It is different from talking to a doctor/counsellor	1.....2…….....3…….....4…….....5			☐
16.	It showed me things I didn't know	1.....2…….....3…….....4…….....5			☐
17.	I could do it at the University of Auckland	1.....2…….....3…….....4…….....5			☐

		☹	😐	☺	N/A
18.	I could do it at home	1.....2…….....3…….....4…….....5			☐
19.	It comes with a Notebook that I can keep	1.....2…….....3…….....4…….....5			☐
20.	It is made especially for young people	1.....2…….....3…….....4…….....5			☐
21.	It has a New Zealand look and feel	1.....2…….....3…….....4…….....5			☐

Finally, please could you answer the following questions by either circling an answer or writing answers in the spaces provided.

22.	Where did you complete SPARX: The Rainbow Version?	Home	School	University	Youth centre	Somewhere else
23.	Of the seven levels which levels did you complete?	_____	If you didn't complete all 7 levels, can you let us know why? _____			
24.	How long did it take you to complete each level?		Less than 20 mins	20-30 mins	30-40 mins	More than 40 mins
25.	Do you think the levels should be			Longer	Shorter	Stay as they are
26.	Did you share any of the messages (what you learnt/discovered) with any other people?		Yes		No	
27.	If Yes, who did you talk to about SPARX: The Rainbow Version?	Family	Teachers	Friends	The person who gave it to me	Other, please specify: _____
28.	How many challenges set at the end of each level did you complete? (e.g. using STEPTS to solve a problem)		All of them	Most of them	Some of them	None of them
29.	Do you think SPARX: The Rainbow Version would appeal to other young people?	Yes	No	If no, why not_____		
30.	Would you recommend this programme to your friends?	Yes	No	If no, why not_____		

31. Any ideas for making it better? _____

32. Any other comments?_____
_____
_____

Appendix N – Satisfaction Questionnaire (Month 5) (Study Three)

ID#: ☐☐-☐☐☐ Initials: ☐☐☐ Date: ____/____/____
DD MM YYYY

We'd like to know how you feel about SPARX: The Rainbow Version 3 months after completing it (Please circle your responses to the questions below).

1. How useful was the programme for you?		Very useful	Useful	Fair		Not very useful	Not at all useful
2. Since finishing SPARX: The Rainbow Version, have you used any of the skills you learnt?		Yes		No			
3. Which SPARX skills have you used?	Do it	Relax	Sort it	Solve it	Spot it	Swap it	Ask for help
4. Which of the SPARX skills do you think have been most useful for you?	Do it	Relax	Sort it	Solve it	Spot it	Swap it	Ask for help
5. Have you got any comments/suggestions on how to improve SPARX: The Rainbow Version?							

Appendix O – Overview of the RCT

The RCT utilised the CONSORT statement to ensure quality reporting of this study (Moher et al., 2010) and the results of the RCT will be published in due course (e.g. in Merry et al., 2011).

Ethics

Ethical approval for the RCT was given by the Multi Region Ethics Committee (Ref: MEC/09/12/159). Participants were given an information sheet about the study and provided written consent (those under the age of 16 also had to have signed parental co-consent). Consent was obtained before any study-specific procedures were conducted.

Participant selection

Adolescents with depressive symptoms were identified by health professionals or school guidance counsellors at 23 selected sites throughout New Zealand. Recruitment occurred in school health and guidance clinics (n=14), primary healthcare organisations (n=5) and 'youth one stop shops' (community based health clinics specially designed for young people) (n=4). Most of the sites were in the Greater Auckland region (n=16), with two sites in the Bay of Plenty and Whangarei, with one site in Rotorua, one in Christchurch and one on the Kapiti Coast. Of the original 23 sites, 20 remained involved in the study until the trial's completion. The sites that prematurely withdrew did so because they were either short-staffed, their service closed or they could not find any potential participants despite attempting to do so.

Local Investigators (LIs) at each site helped to identify suitable participants who were seeking professional help for depressive symptoms and were classified as a low suicide risk. The study was then explained to each potential participant and they were provided with an information sheet and consent form. Research Assistants (RAs) ensured that potential participants understood the participant information sheet and the RAs obtained informed consent from each participant (and when applicable from a parent/guardian also) before conducting the pre-intervention assessment.

Adolescents were eligible for inclusion in the trial if they:

- Were experiencing mild to moderate depressive symptoms (as determined by the local investigator or one of their colleagues);
- Were 12 to 19 years old on the date of consent[43];
- Were able to provide written consent and had parental co-consent if under the age of 16;
- Had reasonable English language ability (i.e. minimum of one year of schooling in English); and
- Had access to a computer for the use of SPARX.

Adolescents were ineligible for inclusion if they;

- Were found to have severe depressive symptoms (i.e. CDRS-R raw score ≥76);
- Were at elevated risk of suicide (e.g. 7 on item 12 or 5 and higher on item 13 on the CDRS-R);

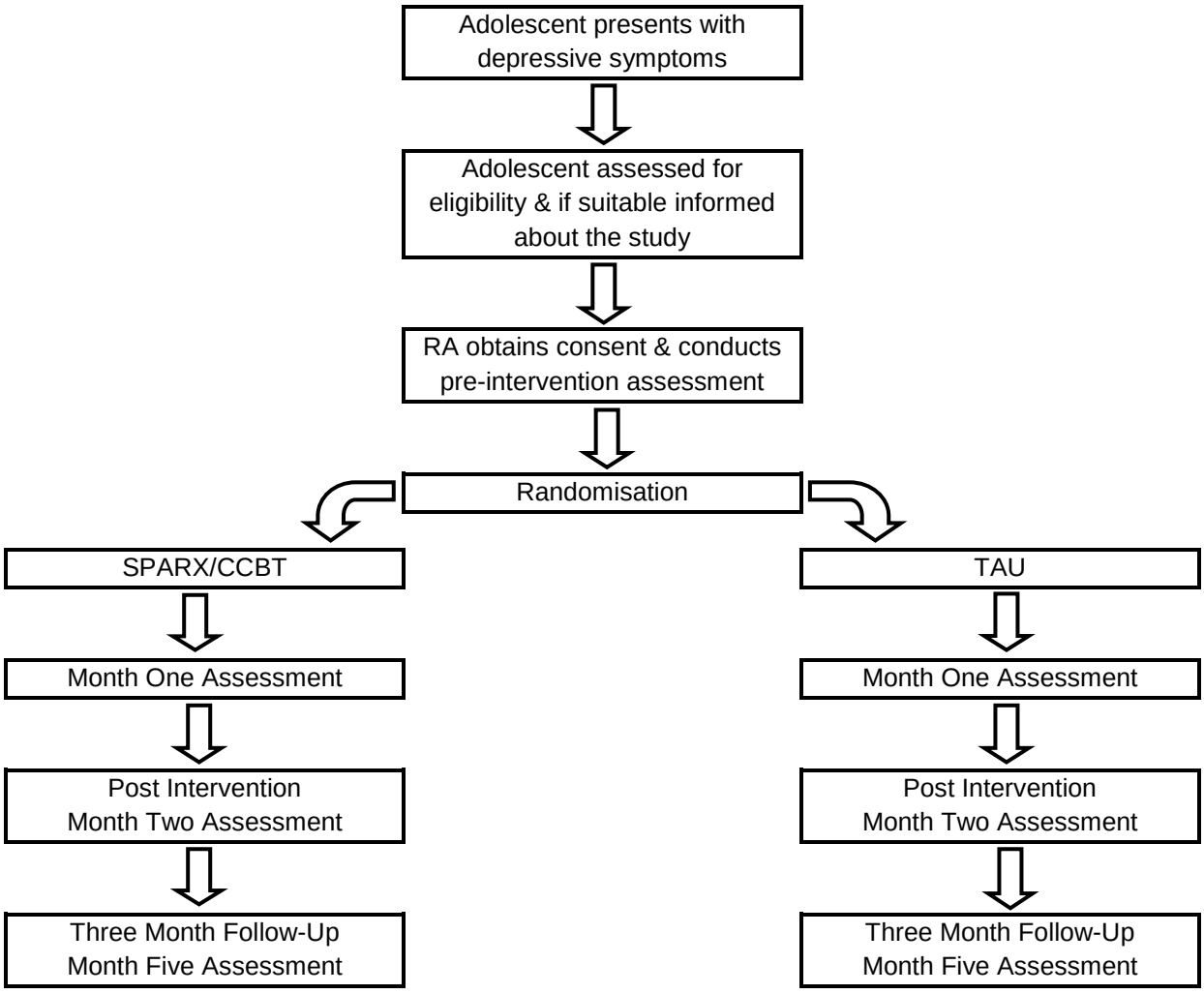
[43] In rare cases adolescents up to the age of 21 were included if this was deemed suitable by clinicians and the research team.

- Had no or minimal depressive symptoms (i.e. CDRS-R raw score ≤29);
- Had intellectual or physical limitations that would result in them not being able to use SPARX;
- Had a major mental health disorder where the primary focus was not depression; or
- Had received or were receiving cognitive behavioural therapy, interpersonal therapy or anti-depressant medication within the last three months.

Assessment sequence

An LI or one of their colleagues identified potential participants for the RCT. After which the RA obtained the participant's signed consent (and when applicable that of their parents/guardians). After consent was obtained, the RA conducted the pre-intervention assessment. The RA was blinded to treatment allocation as all the eligible participants were informed of their randomisation to either SPARX/CCBT or TAU by the LI. Once randomised, participants either completed SPARX or TAU and the LI conducted a telephone or face-to-face 'check in' approximately half way through treatment (i.e. the Month One Assessment). The RA then completed the post intervention (Month Two Assessment) and three month follow-up (Month Five Assessment) assessments. However to ensure that the RA remained blinded to treatment allocation throughout the study the LI facilitated the completion of the treatment satisfaction evaluations and documented (when applicable) what TAU was given (see Figure 10).

Figure 9. **Assessment sequence for the RCT**



Pre-intervention assessment

After participants completed the demographic questionnaire the RA completed the CDRS-R with the young person. All participants then also completed the following self-rated measures: the Reynolds Adolescent Depression Scale (RADS-2), the Mood and Feelings Questionnaire – Long Form (MFQ), the Paediatric Quality of Life and Satisfaction Questionnaire (PQ-LES-Q), the Kazdin Hopelessness Scale (Kazdin HPLS) and the Spence Children's Anxiety Scale (SCAS).

Safety and risk monitoring

Risk of severe depressive symptoms and suicidal ideation were assessed at the face-to-face appointments in the RCT. Safety was also assessed during the Month One check in. The same criteria were used for both the RCT and the open trial when determining AEs. Any AEs resulted in the participant's LI being informed and additional support arranged. All AEs were then reported to the RCT team at the University of Auckland. LIs ensured that for participants under the age of 16 their parent/s or guardians were contacted and informed about the AEs. Participants aged 16 years and older were encouraged to discuss the AE with their parents or guardians, so that they could receive further family/whanau support.

As with Rainbow SPARX, the Guide character in SPARX asked participants to complete a brief mood check. One of the items asked "Over the last week, I've had serious suicidal thoughts". If a participant responded "yes" then the computer programme shut down and prompted the participant to get more help from their LI.

Interventions

Treatment as usual

Participants randomised to TAU were to receive a range of interventions. As a large number of participants were recruited via school health and guidance clinics it was anticipated that the majority of participants would receive face-to-face counselling. Counselling for the purposes of this study was defined as individual counselling, psychotherapy, group counselling, family therapy and psycho-education or a combination of these four interventions. TAU also consisted of "support/watchful waiting" and being prescribed medication. The LI at each site recorded the number of TAU sessions each participant received and their average duration.

SPARX

Participants randomised to CCBT completed SPARX.

Month One Assessment

A telephone check-in was completed approximately half-way through treatment for RCT participants, as a safety check (and for SPARX participants to establish whether they needed any technical assistance to install SPARX or to obtain access to a computer that would play SPARX).

Month Two Assessment

Upon finishing treatment (approximately two months after the pre-intervention assessment), the RA completed the CDRS-R with the young person for RCT participants. All participants then again completed the Reynolds Adolescent Depression Scale (RADS-2), the Mood and Feelings Questionnaire – Long Form (MFQ), the

Paediatric Quality of Life and Satisfaction Questionnaire (PQ-LES-Q), the Kazdin Hopelessness Scale (Kazdin HPLS) and the Spence Children's Anxiety Scale (SCAS). Participants also completed a treatment satisfaction questionnaire. However this was done with the LI, so that the RA would not become un-blinded to treatment allocation.

Month Five Assessment

A follow-up assessment was completed three months after treatment was finished for RCT participants (approximately five months after the pre-intervention assessment). The RA completed the CDRS-R and the participants completed the five self-rated measures (i.e. the RADS-2, MFQ, PQ-LES-Q, Kazdin HPLS and SCAS). A brief treatment satisfaction questionnaire was also completed with the LI.

Appendix P – Semi-structured interview format (Study Four)

Post-SPARX Semi-Structured Interview

Introduction:

During the introduction I will cover the following points:

- My name, designation and purpose of interview. Highlighting that I'm particularly interested in how SPARX was useful or not so useful and how it could be improved. I'm also interested in participants experiences of being recruited into the study and what they think would work when recruiting young people that are same/both-sex attracted or questioning their sexuality into future studies like this one.
- The interview will be audio-taped.
- Those names of people and places mentioned will remain confidential.
- The audio-recordings will be erased after transcription.
- The information will be kept securely at the Department of Psychological Medicine, University of Auckland. All computer records of the audio-recording will be password protected. All future use of the information collected will be strictly controlled in accordance with the Privacy Act.
- Since the research is focused on same/both-sex attracted youth and young people questioning their sexuality, and because different people like to use different words to describe themselves, ask interviewee how they would describe their sexual orientation or attraction(s) [Probe: What do they think of labels like gay, lesbian, bisexual and queer? What label or labels would you prefer that I use for the rest of the interview?]
- Any questions before we begin?

Semi-structured interview questions:

- What did you think of SPARX?
  [*prompt if necessary*] What did you like about SPARX?
- What did you like about the design or look of SPARX?
- What did you like about the mini-games or puzzles in SPARX?
- What did you like about the characters and the messages they gave?
- Was there anything else you liked about SPARX?
  [*prompt if necessary*] What things didn't you like about SPARX?
- What didn't you like about the design or look of SPARX?
- What didn't you like about the mini-games or puzzles in SPARX?
- What didn't you like about the characters and the messages they gave?
- Was there anything else you didn't like about SPARX?

- What was it like using SPARX on a CD-Rom?
  [prompt if necessary]
- Were there difficulties, if so tell me more?
- How was it good using a CD-Rom?

- Do you think that SPARX helped you feel better/less depressed?
  [prompt if necessary]

- How do you know this?

- How could SPARX help other [insert interviewee's 'same/both-sex attracted/questioning youth' preferred term] young people feel better/less depressed?
  [prompt if necessary]
- What makes you think it would/wouldn't work for others?
- Do you think SPARX would be useful for other groups of people, like people much younger or older than you are?

- What did you think of the scrapbook/notebook that came with SPARX?
  [prompt if necessary]
- How was it useful?
- How wasn't it useful?

After each session/module the Guide in SPARX recommended that you complete a challenge/task before the next session.

- What did you think about completing these challenges/tasks?
  [prompt if necessary]
- How many challenges/tasks did you complete?
- How were they helpful/not helpful?
- If you didn't complete them, what would have helped you to complete them?

Can you describe how you were recruited into the study?
  [prompt if necessary]

- If someone encouraged you to enrol in the study/contact me, who was that person and what did they do/say that encouraged you to contact me?
- If you enrolled in the study because you saw the study's poster, flier or website, what was it about the poster/flier/website that encouraged you to contact me?

Was it hard to make the decision to contact me or enrol in the study?

- If so, why was it hard?

What tips or suggestions would you give to researchers about conducting studies with [insert preferred term]?
  [prompt if necessary]

- What would encourage _____ [insert term] to participate in research?
- What would discourage/put _____ [insert term] off participating in research?

Is there anything else that you would like to say/ask before we finish this interview?
Thank participants for their feedback about SPARX and the research I have been doing.

Appendix Q – Study Three & Four poster and pamphlet (male)

Appendix R – Study Three & Four poster and pamphlet (female)