Classroom intervention to change peers’ attitudes towards children who stutter: A pilot study six months post-intervention.

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Abstract

The Classroom Communication Resource (CCR) intervention was developed to improve peer attitudes towards children who stutter (CWS). This pilot study will inform the feasibility of a Randomised Control Trial (RCT) through the following aims:

1. To analyse selected procedural aspects including recruitment, participation and retention rates and questionnaire-questionnaire completion trends
2. To observe treatment and cluster effect of the CCR intervention at one and six months post-intervention

An experimental, quantitative cluster randomised trial design was used. Pre-intervention-post-intervention data was collected from control and intervention groups. The sample comprised 273 mixed-gender Grade 7 participants in the Western Cape (WC) Metro urban area in classrooms across quintiles. Data was collected and analysed at pre-intervention, one and six months post-intervention. The Stuttering Resource Outcomes Measure (SROM) was used to measure attitude changes. Descriptive and inferential statistics were used to describe the procedural aspects and treatment effect.

A positive school-recruitment rate (90, 91%) was observed while the participation (59.6%) and retention rates (44.8%) decreased over time. Participants were excluded due to poorly completed questionnaires, consent, assent, absenteeism and administrative errors. Questionnaire completion trends at six months post-intervention showed that errors were noted on all items. These procedural challenges could be reduced in future studies through rigorous planning. The positive treatment effect was minimal at one month post-intervention, while more evident in magnitude and direction of change in attitude scores on the SROM at six months post-intervention. A constant group effect was noted at pre-intervention, one and six months post-intervention. This study therefore concluded that a future RCT is feasible with several recommendations.
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## Glossary

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<td>RCT</td>
<td>Randomised Control Trial</td>
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<td>CWS</td>
<td>Children who stutter</td>
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<td>CCR</td>
<td>Classroom Communication Resource</td>
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<tr>
<td>SLT</td>
<td>Speech Language Therapist</td>
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<td>TAB</td>
<td>Teasing and Bullying: Unacceptable Behaviour</td>
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<tr>
<td>SA</td>
<td>South Africa</td>
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<tr>
<td>EBP</td>
<td>Evidence-based practice</td>
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<td>SROM</td>
<td>Stuttering Resource Outcomes Measure</td>
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<tr>
<td>WC</td>
<td>Western Cape</td>
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<tr>
<td>NNSSF</td>
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<tr>
<td>ICF</td>
<td>International Classification of Functioning, Disability and Health</td>
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<td>PSD</td>
<td>Positive Social Distance</td>
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Chapter 1 Introduction

1.1. Overview of the Chapter

Chapter 1 provides an introduction and orientation to this study. Thereafter, the aims and objectives, rationale for conducting the study and the study context are described. An overview of the subsequent chapters 2, 3, 4 and 5 is provided. The definitions of key terms and abbreviations used in this study are additionally noted.

1.2. Study Focus

Pilot study

This pilot study informs the feasibility of a future Randomised Control Trial (RCT) to determine the effectiveness of a classroom intervention. The Classroom Communication Resource (CCR) intervention, used in this study, was aimed at improving peer attitudes towards children who stutter (CWS). However, before a RCT is conducted, a pilot study is necessary to determine if an intervention is effective. This pilot study assisted with refining the procedural aspects of the research process while simultaneously assessing whether the CCR intervention showed potential treatment benefit.

In this pilot study, the aims were to explore procedural issues and assess the potential treatment effect of the CCR intervention. The procedural issues included the recruitment, participation and retention rates as well as questionnaire completion trends. The researcher selected particular aspects of the process to determine how feasible school recruitment was to recruit participants, how participants participated and were retained over time, and how participants responded to the questionnaire which was used as the outcome measure.

Treatment effect

The potential treatment effect was concerned with determining whether or not the CCR intervention had potential to change peers’ attitudes. The change in attitude was assessed by observing if participants’ attitudes shifted in a positive or negative direction. In addition to the direction of change, the magnitude (extent) of attitude change was also assessed over time: at one and six months post-intervention.
The CCR intervention was developed because CWS commonly report that they are teased and bullied by their peers. Prevalent negative peer attitudes place the young CWS in primary schooling at risk for being teased and bullied (Blood & Blood, 2004; Blood, Boyle, Blood & Nalesnik, 2010; Evans, Healy, Kawai & Rowland, 2008; Langevin, Kleitman, Packman & Onslow, 2009). A need for effective interventions to improve peer attitudes towards CWS has been highlighted in literature. This approach to intervention is considered to be part of holistic stuttering management aimed to improve the attitudes of peers towards CWS (Carney & Merrel, 2001; Langevin, 2009; Yaruss, 2007). Classroom-based intervention has been advocated as a strategy to improve peer attitudes (Merrell et al., 2008; Murphy et al., 2007; Langevin, 2009). However, there is a paucity of research, described further in the literature review, to determine the effectiveness of classroom-based interventions which target attitude changes. The only Speech-Language Therapy (SLT) evidence-based classroom intervention that facilitated a positive shift in attitudes towards CWS is the Teasing and Bullying: Unacceptable Behaviour (TAB) resource used in Canada (Langevin, 2000; Langevin & Prasad, 2012). This intervention was, however, not appropriate for the South African (SA) population due to its length and complexity.

The Classroom Communication Resource (CCR) intervention was therefore developed and refined at the University of Cape Town between 2009 and 2014. In order to assess the benefit of the CCR intervention, the Stuttering Resource Outcomes Measure (SROM) was also developed and validated. The CCR intervention was studied in smaller sample sizes as part of the development of the intervention (Badroodien, Bielovich, Lilienfeld, Naiker, Stevens & Weavind, 2011; Kathard et al., 2014; Walters, 2014).

This study follows a preliminary study which was aimed at assessing potential treatment effect following the CCR intervention at one-month post-intervention (Kathard et al., 2014). The Kathard et al. (2014) study reported a shift in peer attitudes in a positive direction. This study extends the preliminary study by examining selected procedural aspects and determining potential treatment effect at one and six months post-intervention. The outcomes of this study will inform the feasibility of a further large-scale RCT which is required to provide a definitive assessment of the treatment benefit.

**Cluster effect**

The schools that were sampled and received the CCR intervention, were considered the clusters, i.e. the CCR was administered at a cluster (school)
level. The cluster effect refers to the similarity or difference in the behaviour of clusters in this study. This study was therefore interested in how the clusters compared across the control and intervention and quintile groups. The cluster effect is important because cluster sampling and intervention are key factors in this study. The cluster effect is also able to potentially inform sample size in future studies.

1.3. Research Aims and Objectives

Aim 1
To analyse selected procedural aspects

Objectives

- To determine recruitment, participation and retention rates for participants
- To describe the participants' questionnaire completion trends

Aim 2
To observe the treatment effect and cluster effect of the CCR intervention at one and six months post-intervention

Objectives

- To determine treatment effect at one month post-intervention
- To determine treatment effect at six months post-intervention
- To analyse the treatment effect in the lower and higher quintiles
- To analyse the cluster effect by observing within and between cluster variation

1.4. Rationale for the Study

Evidence-based practice (EBP)

The main rationale for conducting this study was to add to the body of literature on evidence-based practice (EBP). EBP is defined as the use of clear, astute and meticulous evidence that governs clinical decisions (ASHA, 2005). EBP provides a framework which may be used to appraise the quality of the available evidence (ASHA, 2005). Current, relevant, available and valid evidence should be used when making clinical decisions using EBPs (Dawes, et al., 2005). The use of EBPs and approach to research improves the quality of SLT services through the support of well-founded findings (ASHA, 2005). SLTs are specifically encouraged to use EBPs in present-day clinical situations (McCurtin & Roddam, 2012). The ability to critically appraise and
draw on EBPs is considered a key skill for those in the medical profession (Dawes et al., 2005). The use of EBPs is said to symbolize a SLT's commitment to provide the best possible service through using previously generated evidence (McCurtin & Roddam, 2012).

There must however be on-going research to assist in answering questions regarding diagnostic categories that are considered controversial (ASHA, 2005). One such category includes classroom-based interventions aimed at improving peer attitudes towards CWS which is advocated as part of interventions. However, there is minimal evidence about the potential benefit across contexts. Systematic research contributes to the credibility of evidence of a study (ASHA, 2005). It is for this reason that this study aims to enrich EBP in the area of classroom-based interventions and attitudes towards CWS. The feasibility of a RCT was selected as the focus of this study because RCTs are generally well-founded study designs that greatly add to EBPs.

**Randomised Control Trials**

A RCT is a study design that randomises (randomly allocates) participants into control and intervention groups (Oakley, 2003). RCTs require a large number of participants to ensure that valid conclusions are drawn (Oakley, 2003). RCTs are typically considered to be the gold standard of research because they frequently have sufficient power to draw conclusions about the effectiveness of an intervention (Oakley, 2003). Little is currently known about the feasibility of conducting a RCT, which is the primary concern of this study. To date, no studies have been reported which explore the feasibility of a RCT using the CCR intervention in SA. In order to improve the validity and statistical power of such large-scale studies, several factors are to be studied. The study of the validity, statistical power and sample size is deemed necessary as these factors can flaw a RCT and, for this reason, this study aims to answer the pertinent questions which inform the feasibility of a RCT and make subsequent recommendations regarding these concerns. These questions may be best addressed through the use of a pilot study.

The use of a pilot study facilitates examination of the treatment effect trends and procedural aspects to collectively inform whether a RCT would be feasible. According to Oakley, Strange, Bonell, Allen and Stephenson (2006), the implementation process of an intervention is as important as the treatment effect benefit. Pilot studies are additionally able to determine the feasibility of a RCT while being central to evaluating the process of research and
implementation of an intervention (Evans, 2003; Leon, Davis & Kraemer, 2011; Shanyinde, Pickering & Weatherall, 2011).

Due to a lack of resources, finance and time constraints, it is important that the procedural aspects are assessed to determine if a larger study is viable. Process evaluations are specifically recommended in longitudinal studies, such as this one, where repeated measures occur (Oakley et al. 2006). As a result, this study examined the procedural challenges and how they may best be addressed (Akobeng, 2005). Aspects of the research process, critical in intervention studies of a longitudinal nature, are also highlighted as a result of this study. There is currently limited literature regarding these evaluations, particularly in the area of stuttering interventions.

Attitudes towards CWS

The study will contribute to research on attitude change toward peers of CWS. As stated previously, children with communication difficulties often experience teasing and bullying. Stuttering is one of the conditions where children get teased and bullied. Negative peer attitudes and interactions consequently place CWS at risk of teasing and bullying (Blood & Blood, 2004; Blood et al., 2010; Evans et al., 2008; Langevin et al., 2009). As a result, negative social consequences are experienced by CWS in the school-age grade 7 population. The grade 7 population was selected as peer rejection is high and they are vulnerable to teasing and bullying at this time (Olweus, 1991). CWS in the grade 7 population are also more susceptible to peer-negative interactions and social rejection (Evans et al., 2008). Grade 7 learners additionally experience rapid fluctuations of emotion due to stress and frequently exhibit impulsive behaviour (Evans, Healy, Kawai & Rowland, 2008). This study is, therefore, concerned with targeting attitude-change towards CWS, an area in which there is a dearth of research. It is vital to understand whether attitudes can be changed and how those changes may unfold over time.

Negative attitudes can be addressed through the use of different intervention strategies. A classroom intervention is one such opportunity that may be used to influence peers as group (Langevin, 2009). The education of peers of CWS is an effective method of intervention in an environment where negative attitudes and interactions, as well as teasing and bullying, are prevalent (Murphy, Yaruss & Quesal, 2007). Classroom-based interventions are administered to the whole class by the teacher or therapist as opposed to a one-to-one basis to peers of CWS. However, little research has been conducted to assess such interventions.
Additionally, little is known in the international and SA literature on how much intervention is required i.e. the type of dosage and the potential short- and long-term treatment benefits. In this study, the effects of a single-dose intervention is investigated at one and six months post-intervention with the understanding that further studies could investigate multiple intervention dosages over a longer time period. A single-dose intervention was selected because learners and teachers reported it was preferable given their busy school day and academic calendar. However, they also suggested that learning from the CCR intervention could be reinforced by the teacher and peers on a regular basis following the administration of the CCR intervention.

Teasing and bullying occurs largely within the school context and is therefore best addressed by the teacher. The on-going appeals for school-based intervention may facilitate the understanding of peer attitudes towards CWS (Langevin et al., 2009). This further highlights the need to measure the outcomes of these interventions and provides a further rationale of the importance of further study in this area. SLT experience with clinical interventions in schools in the urban area of the Western Cape indicated that teachers were requiring assistance to manage stuttering in classrooms. Stuttering-management is required because teasing and bullying is common (Mestry, Van der Merwe & Squelch, 2006), particularly amongst most children receiving therapy. However, while interventions may be described as positive, their benefit must be assessed through rigorous study.

The need for interventions is further highlighted as SLT therapy services, particularly in SA, are limited in the schooling context. It is not always feasible for SLTs to be available to offer classroom interventions. However, given that CWS are teased in almost every context studied, it is likely that the interventions are necessary, and that teachers can be valuable partners in administering and maintaining interventions, but the benefits of teacher-administered interventions in SA classrooms are unknown. This study will, therefore, begin to offer insight as to whether or not such interventions are beneficial.

1.5. Study Context

Education statistics

The overview of the Basic Education system in SA in 2012 showed that 93.2% of learners attended public schools, 3.9% attended independent schools, 2% attended early childhood development sites and 0.9% attended special schools (Department of Basic Education, 2014). The education statistics in SA
further reported that 12,804,722 learners are in the Basic Education systems while only 30,231 attend other education institutions and receive education from 446,008 teachers (Department of Basic Education, 2014). These statistics illustrate the large difference in the numbers of learners compared to learners reported to be receiving education in SA. It is further found that 0.04% of learners are found in the pre-grade R phase, the year before grade 1, 32.3% in the foundation phase (grades 1 to 3), 22.9% in the intermediate phase (grades 4 to 7), 24% in the senior phase (grades 8 to 12), 20.4% in the further education and training band, and 0.1% in ‘other’ (Department of Basic Education, 2014). The grade 7 population is found in the intermediate phase. Learners in this grade are usually 12- to 14-years old. These statistics clearly illustrate that the highest percentage (32.3%) of learners are found in the foundation phase. It also illustrated that the proportion of learners decreased as they moved up to another level, phase or grade (Department of Basic Education, 2014).

**Quintiles**

The SA government has aimed to promote democracy in an endeavour to provide all SA citizens with equal opportunities, including the transformation of the education system (Motala, 2006). The education system was targeted as it was considered a crucial factor in redressing past inequalities (Mestry & Ndhlovu, 2014; Motala, 2006). The Government passed the SA Schools Act (Department of Education, 1996) in order to strive towards equitable public provision of funding in the Government schools. This was done by implementing national policies (Mestry & Ndhlovu, 2014). The national policies aimed to use direct state funding to public schools (Mestry & Ndhlovu, 2014). In so doing, the national policies attempted to equalise funding across schools, provinces and socio-economic groups (Mestry & Ndhlovu, 2014). One such policy is the National Norms and Standards for School Funding (NNSSF) policy, which provides a constitutional school-funding structure and is described above as part of the quintile classification.

The NNSSF policy is used to classify SA Schools into quintile groups (Mestry & Ndhlovu, 2014). This is important as SA schools are unequally resourced. Resources (Motala, 2006) and poverty scores are used to calculate quintiles using a socio-economic framework (Sayed & Motala, 2012). According to Sayed and Motala (2012), community levels of education, unemployment and income are considered to be poverty indicators. In light of the resource distribution at a school and classroom level, a significant socio-economic
divide is evident (Smith, 2010). This divide ranges from schools that reflect a high-to-comparatively-lower standards of education, academic performance and resources, and is characterised by an unequal distribution of financial, human and material resources (Smith, 2010). Poverty indicators and resources dictate how schools are classified according to quintiles.

Schools are assigned numbers between one and five within quintiles. The quintiles reflect the resources available to the school (Department of Education, 2009). The lower quintiles one and two have limited resources and are non-fee paying schools (Sayed & Motala, 2012). Schools in quintile three reflect the ideal fee per learner required in order to attain sufficient education (Sayed & Motala, 2012). The higher quintiles four and five are better-resourced, fee-paying schools (Department of Education, 2009; Sayed & Motala, 2012). The study that classified schools into quintiles was done in the Western Cape, Cape Metro urban area. This is also the selected area to be explored in this study. Given the inequality between schools, an objective of this study was also to determine how schools across quintiles responded to the intervention.

**The Western Cape**

The Western Cape (WC) is the second province that has a high number of independent schools and low educator-to-school and high-learner ratio (Department of Basic Education, 2014). This illustrates that it is one of the better resourced provinces with lower levels of poverty compared to the other eight provinces in SA. Furthermore, 8.6% of learners in the WC are categorised as part of the poorest 20% of all learners in SA (Department of Education, 2013). This provides an explanation as to why just over 20% are non-fee paying schools (quintiles 1, 2 and 3). In the Cape Metro urban area 14.5% of schools are classified as quintile one and two, 23.1% as quintile three, and 62.3% as quintile four and five (Department of Education, 2006). The average for SA in the area of non-fee paying schools is usually 60% (Department of Education, 2013). This statistic again emphasises that the WC is better resourced when compared to other provinces in SA.

**Basic education in post-apartheid SA**

The education system was divided during the apartheid era in SA; however, all learners are now in a single school system unlike that previously experienced (Motala, 2006). The single system of education was put in place as part of the post-apartheid policies. The post-apartheid era has aimed to redress economic and social inequality (Mestry & Ndlovu, 2014; Motala, 2006).
SA is additionally a culturally and linguistically diverse country. In order to illustrate the multi-lingual diversity, one must note that SA has eleven official languages. The great diversity in the country is reflected in classrooms, and consequently, teachers are in classrooms with learners of various languages, backgrounds and cultures (Kathard & Pillay, 2007). The changes brought about by the modifications to educational institutions and systems due to apartheid resulted in a set of challenges for teachers including racial discrimination and divides. Class sizes vary and in lower quintile schools there are low-educator to high-learner ratios, overcrowded classrooms and limited parental involvement (Penn, Watermeyer & Schie, 2009). Over 60% of children struggle to achieve their expected language and literacy outcomes as reflected in the Annual National assessments (Department of Education, 2011). Other challenges include a limited number of allied health professionals to assist with disabilities, as well as inadequate training of teachers to cope with disabilities (Penn et al., 2009). These challenges remain apparent, particularly in the education system (Meier & Hartell, 2009). Although there is diversity in the home-language backgrounds of learners, English is the Language of Learning and Teaching (LoLT) for the majority of schools from grade 4. The intervention was therefore conducted in English.

Typically the lower-quintile schools come from a lower socio-economic status. The English LoLT in the lower quintile is not always the first language of the participant. Conversely, the higher-quintile schools often come from a more privileged economic status than the lower quintile. The English LoLT of individuals in the higher quintile is often their first language and is thus spoken more frequently than by those in the lower quintile.

In summary, the rationale of the study was to add to the evidence-based literature on classroom intervention aimed at changing peer attitudes to stuttering; the problem is a major one as CWS are known to be teased and bullied by their peers. This pilot study focuses on aspects of the research process and assesses potential treatment benefit of the CCR to inform the feasibility of the CCR. The study draws participants from the Cape Metro, an urban district in SA characterised by linguistic, cultural and economic diversity.

1.6. Overview of Chapters

This thesis includes five chapters. The chapters following on from chapter 1 are as follows:
Chapter 2: Literature Review

The literature review addresses the current research, introduces theoretical concepts and previous studies. The lack of literature is additionally highlighted in order to emphasise the importance of this study. The literature review further emphasises how this study aims to contribute to the field. Particular focus is placed on the feasibility of future, large-scale studies using pilot studies. The literature and concepts relevant to procedural aspects are: recruitment; participation and retention rates; and, questionnaire completion trends are presented. Thereafter, the available literature in the area of communication, stuttering and attitudes towards CWS is highlighted and available intervention strategies are further critically evaluated.

Chapter 3: Methodology

The chapter introduces the primary and secondary aims and objectives. Thereafter the research design is discussed, as well as the participant sample size. The method of recruitment as well as the validity and reliability of the research-outcome measure are described; the data collection procedure is supported by visual representation reflecting the pre-preparatory, pre-intervention, intervention and post-intervention phases. Data analysis procedures are explained, and finally, the ethical considerations of autonomy, beneficence, non-maleficence and distributive justice.

Chapter 4: Results

The results are presented in relation to the aims of the study. The procedural aspects are reported in terms of the recruitment, participation and retention rates, as well as questionnaire completion trends. The retention rates are noted at pre-intervention, one and six months post-intervention while the questionnaire completion trends focused on the six months' post-intervention interval. Thereafter, the treatment effect trends are presented as identified by comparing participant scores at pre-intervention, one- and six month post-intervention time intervals. The cluster effect is additionally reported.

Chapter 5: Discussion

Chapter 5 consists of the discussion and conclusion relating specifically to the aims of the study. The discussion of the results is integrated with issues emerging in the literature. This chapter is discussed using the identical subheadings included in chapter 4. The procedural aspects and treatment effect trends are presented. Thereafter, the conclusion, strengths and
limitations of this study are reported, and the clinical and future research implications of this study are provided.

1.7 Definition of Key Terms and Abbreviations used in the Study

All of the abbreviations used may be found in the glossary. However, the main key terms and abbreviations are highlighted as follows:

A Randomised Control Trial (RCT) is the study design method that is often considered ideal. This design method is often used in medical research or when an intervention is studied. A RCT is a rigorous, valid and reliable method of research.

A pilot study is a design method which allows the exploration of the implementation methods of an intervention as well as the effectiveness thereof: a pilot study is able to investigate the feasibility of a study.

Feasibility refers the degree of practicality of conducting a future study. The viability of future RCTs is achieved through conducting a pilot study.

Children who stutter are referred throughout this study as CWS. They exhibit dysfluent behaviours. These behaviours may range from any severity of stuttering pertaining to their core and secondary behaviours. Core behaviours include the type of dysfluency, including repetition (e.g. ‘g-g-glass’), prolongations (e.g. ‘ssswim’) and blocks (e.g. ‘…sunshine’). Secondary behaviours are observable, learnt reactions to their core behaviours. These secondary behaviours are often exhibited during a moment of stuttering (Guitar, 1998). Additionally, they may be exhibited before a moment of dysfluency in anticipation of stuttering, for example through avoidance and escape behaviours.

The Classroom Communication Resource (CCR) is the intervention used in this study to improve attitudes towards CWS. The intervention was developed as part of the University of Cape Town project stream as discussed in chapters 1 and 2.

The Stuttering Resource Outcomes Measure (SROM) is the outcomes-based measure used to evaluate the scores of peer attitudes towards CWS at each time interval.

The recruitment rate includes the number of approached and invited participants.

The participation rate includes the number of participants who partook from pre-intervention to six months post-intervention in the study.
The retention rate indicates the number of participants included at each time interval. Therefore, for this study, the retention rate was calculated from the recruited participants to pre-intervention, pre-intervention to one month post-intervention, one to six months post-intervention and, from the recruited pre-intervention participants to six months post-intervention.

Cluster effect refers to the study of participants in a cluster in order to determine if the cluster behaved similarly or differently.
Chapter 2 Theoretical Concepts and Literature Review

2.1. Overview of the Chapter

In this chapter, the importance of evaluating the feasibility of a RCT using a pilot study is discussed. RCT aims to determine the effect of the CCR intervention when applied to a large population which will be the following step in the final validation of this intervention. Therefore this pilot is focusing on the effectiveness of the research process for a RCT, i.e. to determine the feasibility. This is done by providing a rationale and theoretical aspects pertaining to this study design. The procedural concepts relating to recruitment, participation and retention rates, and questionnaire completion trends are discussed. Thereafter, the relevance of conducting this study in the area of stuttering is explained with particular focus on attitudes that peers often hold towards CWS in the grade 7 population. The available classroom interventions are discussed beginning with the TAB developed by Langevin (1998). Subsequently, the CCR intervention is discussed in depth, as this is the intervention studied. The lack of literature in the area of attitudes towards CWS at one and six months post-intervention is highlighted throughout to reinforce the rationale and to highlight the importance of this study.

2.2. Theoretical Concepts Underpinning the Study

The theoretical concepts underpinning this study have been structured in relation to the aims of this study. The definitions, theory and overview of the pilot study, and procedural aspects, are discussed first as a background to aim 1. The main concepts covered are the feasibility of a RCT using a pilot study and procedural aspects including the recruitment, participation and retention rates, as well as questionnaire completion trends. Thereafter, the literature on attitudes towards CWS and on interventions is presented as background to aim 2. The main concepts include attitudes towards CWS, behaviour change models, intervention studies and the SA specific intervention, the CCR intervention.

Pilot study: Informing the Feasibility of a RCT

There are several designs that may be used to assess an intervention such as the RCT. RCTs are, however, preferable due to the design method and principles. A RCT is considered the gold standard of research (Evans, 2003) because it is the most powerful and yet simplest research tool (Stolberg, Norman & Trop, 2004). The key features of a RCT that make this design desirable are the elements of blinding, the randomization of participants to
intervention groups, and its ability to determine a cause-and-effect relationship between treatment and outcomes (Sibbald & Roland, 1998). The randomization of a RCT ensures similar baseline characteristics that reduce the risk of an imbalance of sample characteristics which could affect the intervention (Stolberg et al., 2004). There are no other study designs that allow researchers to balance these factors as strictly as in a RCT (Stolberg et al., 2004). Although, RCTs are considered a powerful design method, there are limitations (Sibbald & Roland, 1998). These limitations include time and financial constraints (Sibbald & Roland, 1998). It is reported to be costly to complete RCTs and thus careful consideration is required before a RCT is conducted (Sibbald & Roland, 1998). The other main limitation to conducting a RCT is that financial costs first need to be justified using preliminary evidence. This study, therefore, aims to provide the preliminary evidence required. Despite the limitations, the rigour of the methodology used in RCTs is still viable as part of this pilot study due to its ability to stringently evaluate an intervention (Sibbald & Roland, 1998).

In summary, RCTs are highly regarded as a result of stringent study design and the ability to evaluate the effectiveness of an intervention (Oakley et al., 2006). Thus, this study is concerned with the feasibility of conducting a future RCT; however, several factors require consideration before a RCT may be conducted. Therefore, the feasibility, validity and statistical power of such a large-scale study should first be explored (Oakley et al., 2006). Improved qualities of RCTs are often preceded by a comprehensive pilot study (Jeray & Tanner, 2012; Lancaster, Dodd & Williamson, 2002, Jeray & Tanner, 2012; Leon et al., 2011; Oakley et al, 2006). Pilot studies are reported to be fundamental in evaluating the process of research and implementation of specific interventions (Evans, 2003; Jeray & Tanner, 2012; Leon et al., 2011; Shanyinde et al., 2011). Pilot studies may examine intervention procedures, validate tools and estimate the recruitment rate. They may also estimate the variance of the outcome variables to inform sample size. The use of pilot studies encourages the exploration and study of the following: recruitment feasibility; retention; sample randomisation; intervention implementation; and necessary modifications (Oakley et al, 2006). These aspects are studied in aim 1 of this study.

The use of, and comment on, statistical analysis is another important factor considered to be part of the rationale for selecting a pilot study. The statistical analysis is used for both the procedural aspects and the treatment effect. The treatment effect is discussed as part of attitudes towards CWS. Inferential
statistics and hypothesis testing is not commonly recommended as part of pilot studies (Leon et al., 2011) but has, however, been used in this study because literature supports the use of inferential statistics and hypothesis testing (Lancaster et al., 2002; Thabane, Ma, Chu, Cheng, Ismaila, Rios, Robson, Thabane, Giangregorios & Goldsmith, 2010). The literature states that inferential statistics and hypothesis testing is allowed as the data is viewed as preliminary data for future studies. For this reason the estimation of the treatment effect was included as part of this study (Lancaster et al., 2002; Thabane et al., 2010). In summary, the issues of statistical analysis were addressed in order to ensure that this study implements a sound, valid and reliable pilot study. The use of an internal versus an external pilot study was also researched.

Data from internal pilot studies is merged into the consequent main study. These internal pilot studies also predominantly calculate the sample size. As internal pilot studies neglect feasibility aspects, they were consequently not appropriate for this study. On the other hand, external pilot studies evaluate feasibility aspects and assist with sample size calculations (Jeray & Tanner, 2012). As an external pilot study allows the implementation of an intervention, while informing recommendations for a future large-scale study, it was chosen for this study (i.e. this is an external pilot study). Hence, in this pilot study, the implementation methods are as important as the effectiveness of the CCR intervention (Oakley et al. 2006). The reason for selecting an external pilot study was to explore the feasibility of a RCT through analysing the procedural aspects. Furthermore, a pilot study is considered to be a miniature RCT (Abbott, 2014).

The feasibility of a RCT is influenced by several factors, including procedural aspects and treatment effect. Therefore, the key rationale for selecting a pilot study for this study is twofold. Firstly, the pilot study aims to strengthen the procedural aspects of this study. This is discussed as part of the following section. Secondly, this pilot study aims to assist in estimating the treatment effect. This study will therefore inform the feasibility of an RCT by offering insight into issues like recruitment (for example, can participants be recruited at a school level or should they be recruited as classroom units?). Other questions to be addressed include the following: Will participants agree and provide consent and assent to participate? Will they be retained over six months’ intervention? How do they respond to the SROM? The feasibility of RCT is also informed by the observations on treatment effect (i.e. treatments
which have no effect, or a negative effect, cannot be subjected to further study on ethical grounds).

**Procedural aspects**

Procedural aspects considered in this study arise as part of the study methodology. These issues require modification in a future study (Bowen et al., 2009). The methodological issues are examined through process evaluations: pilot studies make process evaluations possible. These process evaluations may bring about changes and minimise flaws or bias (Currie, Seaton, & Wesley, 2009; Downs & Black, 1998; Lancaster et al., 2002; Oakley et al. 2006). Process evaluations include the identification and exploration of process research questions, procedures and methods. Outcome data may also be examined. The process evaluations collectively determine the extent of organisational change required for further study (Bowen et al., 2009; Kingston, 2004; Oakley et al., 2006; Thabane et al, 2010). The minimization of design flaws is pertinent as this study is concerned with the procedural aspects and treatment effect.

Constant review of process evaluations is required to reach recruitment, participation and retention goals (Keyzer et al., 2005). Subsequently, analysis of results is maximised and improved by means of incorporating outcome measures in addition to process evaluations (Evans, 2003; Oakley et al. 2006). The necessity of studying the recruitment and retention rates has been mentioned in the literature by Kazak et al, (2005). There are several aspects of the process evaluations which could have been reviewed as part of this study, but this project examined specific issues, such as retention rate, due to the longitudinal nature of the study.

Badroodien et al (2011) observed a dropout of participants in a UCT project-stream in the area of stuttering. A high dropout-rate can negatively affect the validity of this study and it is therefore as important as the study of participant numbers throughout the process. The validity of the study would be compromised due to the poor power-analysis of a small sample. For this reason, it is critical to focus on factors such as recruitment, participation and retention rates, cluster effects, and questionnaire completion-trends. These areas were identified as research questions and outlining methods necessary to study process evaluations (Oakley et al., 2006).
As previously highlighted, there is minimal literature in the SLT field that evaluates interventions while simultaneously exploring process evaluations. A study not relevant to the SLT field, however, provided great insight into procedural concerns related to classroom-based interventions. The study was conducted by Bere, Veierrodi, Bjelland and Klepp (2006) and aimed at increasing the daily intake of fruits and vegetables in a grade 6 population (n=369) using a programme that was completed over several intervals. While this study has no application to the area of stuttering, it is important to consider as it suggests that there are practical and behavioural barriers that can be experienced when evaluating interventions, e.g. the ability to change attitudes that are precursors to behavioural changes. Furthermore, this study indicated that process evaluations and attrition are important to consider. The study also reported that environmental interventions are not as effective in changing behaviour as they are not as direct as behaviour and attitude interventions which are specifically designed for participants.

**Recruitment, participation and retention**

Jeray and Tanner (2012) recommend taking participant numbers into account in order to facilitate future planning of large-scale studies: participant numbers are essential as it affects the statistical power of a study. The statistical power may be reduced by a non-representative nature of the sample. Poor recruitment and retention rates may result in a population no longer being representative of the intended group studied (Toerien et al., 2009). Through improving the optimal number of participants, the statistical power is increased (Lancaster et al., 2002).

It is not adequate to report solely on poor recruitment, participation and retention rates (Lundberg, Thakker, Hallstrom & Forsell, 2005) and it is therefore recommended that determinants of non-participation be reported on. The determinants of non-participation are as important as the dropout of participants. This study is therefore also concerned with the determinants of non-participation which form part of the process evaluation and therefore provide further insight into the study of participant numbers (Lundberg et al., 2005). One of the determinants of non-participation is poorly completed questionnaires (Lundberg et al., 2005) and is explored as part of this study. Non-participation in studies can be reported as relating to any cause of not partaking in a study such as a lack of consent or poorly completed questionnaires.
The loss of participants is probable and could result in incomplete or missing data (Fitzmaurice, 2003). It is likely that retention rates are often less than 100%, particularly in longitudinal studies (Keyzer et al., 2005; Morton et al., 2005). For this reason recruitment and retention rates are also concerned with the participation rate, attrition and dropout of participants (Jeray & Tanner, 2012; Kazak et al., 2005) and participant numbers are thus accounted for in this pilot study as part of the recruitment, participation and retention rates. The exploration of these rates also allows for analysis of the dropout of participant numbers.

The recruitment, participation and retention rates, and questionnaire completion trends, were therefore selected as part of the procedural aspects. The recruitment, participation and retention rates were clearly defined prior to conducting this study. These concepts were defined as follows:

- The recruitment rate refers to the number of participants approached and invited to partake in this study (Keyzer et al. 2005).

- The participation rate is the number of participants who took part in the study from pre-intervention to six months post-intervention.

- The retention rate differed from the participation rate. The retention rate referred to the number of participants who completed each stage of data collection. The retention rate was therefore reported at pre-intervention, and at one and six months post-intervention. The retention rate aimed to ensure that sufficient participants were recruited to meet the power analysis and sample size requirements (Patel, Doku & Tennakoon, 2003).
In summary, the gap in the available literature in the area of SLT classroom-based interventions informing future RCTs is highlighted. This further provides a rationale as to why procedural aspects are vital in evaluating the feasibility of a RCT. This is the first study in the SLT field and in SA to examine aspects of feasibility for a RCT to strengthen research on classroom interventions. Furthermore, the effects of non-participation should be explored which is often a gap in studies (Lundberg et al., 2005). It is also the first study exploring group interventions in the WC Metro urban area over time. The process evaluations will be particularly useful when studying the potential observed treatment higher quintileeffect trends in peer attitudes towards CWS. There is no such study or intervention in the area of stuttering research. The reviewed literature included Badroodien et al (2011), Kathard et al (2014), Langevin (2000), Langevin and Prasad (2012) and Walters (2014) and are discussed further as part of the SA-specific intervention. Exploration of these process evaluation characteristics is therefore recommended before a RCT is conducted (Oakley et al. 2006).
Questionnaire completion trends

Questionnaires allow for valuable information to be obtained. There are several advantages and disadvantages of using a questionnaire and studying the completion trends. The completion trends directly affect the participation and retention rates as well as the treatment effect trends; any errors in completion of questionnaires can result in the dropout of participants.

In intervention studies, an outcome measure is mandatory. In this study, a questionnaire was used as the outcome measure. The main advantage of using a questionnaire in this study was that information was quickly obtained. The SROM, which is critical in this study, is easily administered and time-efficient. It was the only available measure which was validated for the Grade 7 population in the Western Cape, SA. The SROM allows comment on the sensitive topics of attitudes where participants may not have been comfortable with face-to-face discussions. Despite the benefits of the SROM, it is essential that it is evaluated as it is the only measure of treatment effect. Therefore, it is critical to identify any limitations in using this questionnaire as an outcome measure. The completion trends offer insights into how the questionnaires were completed, and what challenges might be experienced. These observations will in turn inform the feasibility of an RCT. For example, if the questionnaire completion trends indicated it to be an unsuitable measure, then the feasibility of an RCT is in question.

The treatment effect was assessed via repeated administration of the self-reported outcomes measure – the SROM in this study. In other words, participants completed the same questionnaire at pre-intervention, and at one and six months post-intervention. The reasons for analysis are twofold: (1) the issue of using the same outcomes-measure repeatedly warrants study of questionnaire completion trends; and, (2) an important issue is that the participants completed the SROM individually and independently. It is therefore vital that the questionnaire completion trends are analysed (Lancaster et al., 2002) to assess if modifications may be necessary in a further study.

The analysis of questionnaire completion trends is also important when several or different assessors are used (e.g. the primary researcher or research assistants). The implication of using different assessors was to ensure that an assessor had no bearing on how questionnaires were completed and to ensure simultaneous data collection at several schools on a given day. It was also important to analyse the questionnaire completion
trends as a diverse sample was studied and it was not known how they would complete the SROMs.

It was important to observe how the questionnaire was completed by the participants and if there was a need for revision or improvement of the questionnaire. The questionnaire completion trends may highlight the appropriateness and comprehensiveness of the questionnaire. Questionnaire completion analysis is recommended in order to ensure that items are presented consistently, are adequately understood and well-defined (Lancaster et al., 2002). Questionnaire completion trends may also determine the amount of organisational change and refinement required to implement the intervention in a RCT (Kingston, 2004).

Previous UCT studies used the SROM (Badroodien et al., 2011; De Grass, Gessesse, Harrison, Naidoo, Sewpersad & Vaggie 2010; De Freitas, Geben, Parusnath, Relleen & Van den Berg 2012; Walters, 2014; Kathard et al., 2014). These studies explored the cultural appropriateness of the questionnaire for the WC Metro population and established its validity; however, a detailed analysis of questionnaire completion trends is necessary for the following reasons. There is variation in linguistic and literacy competencies among learners which should be analysed before a further study is undertaken. Furthermore, given the longitudinal nature of the study - and that the questionnaire is used at three points of the data collection process - it is useful to analyse how participants respond at each point. Questionnaire completion may also influence the participation and retention rates. The focus of the questionnaire completion trends were as follows:

- Number of completed questionnaires at six months post-intervention
- The total number of excluded questionnaires from pre-intervention to six months post-intervention
- Reasons for exclusion that contributed to the participation and retention rates such as consent, assent and absenteeism, and poorly completed questionnaires
- Reasons for incomplete questionnaires, i.e. if items were omitted or duplicated. ‘Omitted’ items referred to items not answered. ‘Duplicated’ referred to items where two answers were provided per question.
- Completion trends comparing the number of poorly completed questionnaires in the control and intervention groups
• Completion trends comparing the number of poorly completed questionnaires in the lower and higher quintiles

• Completion trends the number of poorly completed questionnaires in each construct of the SROM

**Intervention in classrooms: focus on changing attitudes**

The integration and acceptance of children into social groups at school is significantly influenced by their communication (Davis, Howell & Cooke, 2002). Several children at school present with speech-and-language difficulties including stuttering (Thatcher, Fletcher & Decker, 2008). During primary school years, stuttering appears to affect the CWS in several ways, including how they are perceived by their non-stuttering peers as ‘different’ or even ‘disabled’. A CWS’s social acceptance and integration are consequently negatively affected (Blood & Blood, 2004; Blood et al., 2010; Carter & Spencer, 2006; Langevin et al., 2009). This is apparent in how a CWS interacts in social groups. A CWS’s participation and self-confidence in school and classroom-based social groups is often adversely affected, particularly in verbal activities. Other areas that are negatively affected include; self-image, academic participation and performance due to consistent negative attitudes and interactions from peers. (Davis et al., 2002).

**Attitudes towards CWS**

It is imperative that attitudes are studied, particularly when they are the focus of intervention. It is especially important as negative attitudes lead to teasing and bullying. This study was therefore concerned with exploring the treatment effect of the intervention in the area of improving of peer attitudes towards CWS.

Attitude is defined as an individual’s evaluation of issues, objects and other individuals. The evaluation of another person or object can be positive or negative (Petty, Wegener & Tormala, 2003). According to Foster (2006), attitude is defined as the neural and mental state of readiness which is organised through experience. The definition goes on to state that the attitude influences how an individual views objects and situations. This statement is supported by Petty et al., (2003). Furthermore, attitudes cannot be seen and are instead inferred based on what an individual does and says, i.e. their behaviour. Another important factor for this study is that attitude is learnt and can therefore be changed (Foster, 2006). It has been further reported that the formation of attitudes is a continuous process which changes over time (Krahe
This notion reinforces two important ideas, namely; the concept that attitude can be changed and that it changes over time. Perceptions towards individuals with communication difficulties have also been reported. Attitudes and perceptions relate to one another and consequently overlap as they are referred to interchangeably in the literature, including the study by Foster (2006): therefore, the literature in both areas of attitudes and perceptions has been considered.

According to Franck, Jackson, Pimentel and Greenwood (2003) several studies have been conducted to explore perceptions towards communication disorders. Franck et al (2003) reported that individuals often held negative perceptions towards individuals with communication disorders and described studies completed in various populations for example, kindergarten (Blood & Hymen, 1977); adult (Lass et al., 1991); and SLTs (Yairi & Williams, 1970; Woods & Williams, 1971).

Franck et al (2003) conducted a study in the school-aged population. He found that grade 4 and 5 learners held negative perceptions towards CWS. These studies were not solely focused on stuttering or exclusively on attitudes; instead perceptions and stereotypes were explored. The study further highlighted that limited literature was available on the young, school-aged population, and emphasised that there was value in school-aged research. Franck reported that SLTs and teachers could assist with the education of peers of CWS. This further illustrates the need for including teachers and learners in interventions to reduce negative peer perceptions towards CWS.

Social problems such as teasing and bullying are best addressed through changing attitudes (Foster, 2006). This is, however, not a simple task as there are several processes involved in attitude change (Foster, 2006) and, for this reason, behaviour change was explored. According to Hughes (2014) it is important to note that there are repercussions from negative attitudes towards those who stutter and their peers. The repercussions include the foretelling nature of attitudes: in other words, attitudes are considered a precursor to behaviour. The translation of attitudes into behaviour change is challenging to explore, measure or quantify (Hardeman, Johnston, Johnston, Bonetti, Wareham & Kinmonth 2002) as there is no one way of quantifying behaviour. Furthermore, there is little agreement about which behaviour change model to use (Hughes, 2014).

The reason that attitudes were selected as the intervention target was because CWS often experience negative attitudes from their non-stuttering
peers. Negative attitudes towards CWS result in poor social acceptance and peer-interaction challenges (Blood & Blood, 2004; Blood et al., 2010; Carter & Spencer, 2006; Langevin et al., 2009). Negative peer attitudes and interactions may also lead to social rejection (Dijkstra, Lindenberg & Veenstra 2008; Murphy et al., 2007). Thus CWS are placed at a higher risk for becoming victims of negative interactions (Dijkstra et al., 2008; Murphy et al., 2007; Swearer, Espelage, Vaillancourt & Hymel, 2010). These negative interactions include teasing and bullying (Dijkstra et al., 2008; Murphy et al., 2007; Swearer et al., 2010). Teasing and bullying is described as a subtype of aggression and occurs with the intention to harm (Salmivalli & Peets, 2009). Long-term, negative psychological, social and physical health implications are reported as a result of such negative interactions (Blood & Blood, 2004; Langevin, et al., 2009; van Kuik Fast & Langevin, 2010). Negative consequences include social anxiety, loneliness, low self-esteem, depression and a negative, social self-perception (Ferguson, Miguel, Kilburn & Sanchez, 2007; Hawker & Boulton, 2000). The negative consequences have been linked to bullying (Ferguson et al., 2007; Hawker & Boulton, 2000) and therefore there is a need to target the negative attitudes and interactions using interventions.

**Behaviour change models**

Behaviour change has been widely researched and explained through the use of a number of proposed models. The behaviour-change models are introduced here as they reflect the importance of attitude change in influencing behaviour. While not all models clearly stipulate that attitude precludes behaviour, several models are discussed here that collectively illustrate that there may be a role of attitude change when exploring behaviour change. A variety of motivational, behavioural enaction, and multi-stage models of health behaviour are available in the literature. Models of behaviour-change that explore the determinants of intention are useful in understanding, exploring and accounting for any learner-perceived changes that may have been affected by attitude. Attitude is the precursor to behaviour change (Hardeman et al., 2002; Sniehotta, Scholz & Schwarzer 2005; Webb & Sheeran, 2006). The Health Belief Model and Social Cognitive Theory are examples of two of the behaviour-change models presented here, as they each include attitudes as a critical dimension of change.

The Health Belief Model comprises six determinants of behaviour. They include perceptions of susceptibility, severity, benefits and barriers, in addition
to health motivation and cues to action (Armitage & Conner, 2002). While these cognitively based determinants of behaviour may be useful to explore perceived behaviour change, an emotional component of behaviour is not considered (Champion & Skinner, 2008). Despite this limitation, the model emphasises that attitudes precede behaviour, which is the basis of the current study. This model has relevance for this study as it targets the cognitive-based determinants linked to attitude change.

The Social Cognitive Theory (SCT), proposed by Bandura in 1977, also encompasses persuasive communication. Two determinants of behaviour have been discussed by Fishbein and Yzer (2003): (1) The first determinant of behaviour includes positive outcomes or benefits outweighing the negative outcomes or costs; and, (2) The second determinant of behaviour is the possession of strong, self-efficacy despite potential barriers. The SCT model relies heavily on self-efficacy. Self-efficacy includes experience related to enacting on, observing and success of desired behaviour (Hardeman et al., 2002). While the role of the environment is important in shaping behaviour, the SCT model also focuses on an individual’s potential to alter the environment to tailor behaviour change (McAlister, Perry, & Parcel, 2008). Four crucial methods in developing self-efficacy are identified by the SCT as improving physical and emotional states, social modelling, mastery experience, and verbal persuasion (McAlister et al., 2008). The SCT poses an interesting view on behaviour change by being able to show the link between verbal persuasion and attitude change. The SCT also suggests that attitude does not occur in an isolated environment; instead, the social environment – in this study the school and classroom environment – also plays a role in attitude change.

There is no one model of behaviour change that explains behaviour change as it is a complex phenomenon (Prochaska, Redding & Evers 2008). It is often more appropriate for a combination of models to be used in order to provide a more comprehensive understanding of behaviour change (Prochaska et al., 2008). Another critical assumption is that behaviour change is a process that will often occur over an extended time-frame beyond six months post-intervention. Of importance to this study is that these models collectively underline the idea that attitude change is a part of behaviour change.

Attitude is also a good predictive factor for behaviour change, particularly in groups (Hardeman et al., 2002). Therefore, the improved attitude over time indicates that the intention of behaviour change is improving (Hardeman et al.,
In this study the focus is on the attitude of peers and not on their behaviour. The changing nature of attitudes supports the examination of changes over time. The immediate and long-term attitudinal changes are therefore described at one and six months post-intervention for this study.

Interventions managing teasing and bullying are considered as a component of an individual's holistic, stuttering-therapy plan (Murphy et al., 2007). While individual therapy focusing solely on the stutter is essential, it is not considered sufficient. An individual who stutters is affected at multiple levels. These levels are described by the International Classification of Functioning, Disability and Health (ICF), and include the impairment of body functions and structures. Also included are activity limitations and participation restrictions (Murphy et al., 2007). As part of holistic SLT management, as specified by the ICF framework, it is essential that the attitudes of those in their environment are modified (Carney & Merrel, 2001; Franck et al, 2003; Langevin, 2009; Yaruss, 2007). It is essential that negative feelings, attitudes and communication barriers are addressed, for by addressing the attitudes and barriers, the optimal daily activity and participation is ensured (Guitar, 2006).

It is therefore vital that the SLT advocates for CWS in the school setting because of the potentially negative peer attitudes and reported classroom interactions (Blood & Blood, 2004). Hence, the call for classroom-based interventions is emphasised to improve the attitudes of peers towards CWS. There is a specific need for an efficient, group approach that collectively changes peer and classroom attitudes (Merrell, Gueldner, Ross & Isava, 2008). In targeting individuals and classrooms as part of one context, the intervention may aim to target a community of positive-thinking children as an important intervention goal.

Education of peers of CWS is an effective method of intervention in an environment where negative attitudes and interactions, and teasing and bullying, are prevalent (Murphy et al., 2007). Education initiatives include broad-based and school-based classroom education interventions (Langevin, 2009). Langevin (2009) also reported that educational classroom interventions improve positive attitudes towards CWS. These findings were based on studies by Langevin (2000) and Langevin and Prasad (2012) which showed a positive attitudinal shift. The education of peers is best completed by teachers as they are constantly in the environment of the peers. Teachers, however, require resources and assistance in order to drive the direction of the education. Teacher-administered resources may therefore equip teachers with
an intervention, such as the CCR. Teachers may also be provided with strategies to manage stuttering in the classroom and consequent negative interactions and attitudes, which may consequently reduce the risk of teasing and bullying.

**Intervention studies**

There is limited literature internationally and in SA with regard to the following: effective classroom-based interventions, long-term efficacy of single-dose interventions over longitudinal periods, and the feasibility of a RCT in the area of stuttering. To date, the only SLT evidence-based classroom intervention, anti-bullying school-based intervention programme is the TAB programme. The TAB, a stuttering-specific intervention, was developed by Langevin (2000) in Canada and addresses the need for a teasing and bullying intervention (Merrell et al., 2008). It was developed for learners from grades 3 to 6.

The TAB targeted the following aspects: raising awareness of teasing, bullying, its negative impact on learners, and, improving peer interactions in the school-aged population. This meant that the behavioural, cognitive and affective aspects were targeted (Langevin & Prasad, 2012) The TAB included classroom-based activities and strategies such as videos and discussions. Other educational learning approaches and activities administered by teachers were also included (Langevin, 2009).

The TAB was found to improve positive attitudes towards CWS using the educational classroom intervention (Langevin, 2000; Langevin, 2009; Langevin & Prasad, 2012). Langevin and Prasad (2009) studied the feasibility of the TAB in intervention groups only. A pre-intervention, post-intervention study was used. The study consisted of three- to four-week temporal periods in grades 3 to 6 learners. The Peer Attitudes Towards Children (PATCS) scale was used to measure the attitudes. A positive shift in attitudes was additionally noted at three- to four-weeks post-intervention (Langevin & Prasad, 2009). The study provides literature in support of using classroom-based interventions to positively change attitudes. The long-term treatment effect is, however, unknown.

The TAB was not considered suitable for application in SA due to its length and complexity. The TAB required an extended time period to be administered and completed. This was not possible in SA schools where teachers face many serious educational challenges. Teachers felt that they could not commit the length of time (8 hours) required for the intervention using the TAB. An additional barrier experienced in the SA context includes the limited numbers
of SLT’s to administer programmes such as the TAB. The intervention was
also not culturally and linguistically appropriate for learners in the SA
population. Subsequently the need for a SA specific intervention and
outcomes measure was further highlighted.

**SA intervention: CCR**

The CCR intervention was developed in response to the limited availability of
a SA classroom-based stuttering-specific intervention (see appendix B). The
CCR intervention consists of a social story, role-play and a semi-structured
discussion. It consists of two components: (1) information relevant to the
teacher, such as the definition of stuttering, aim of the CCR intervention, and
guidelines to manage stuttering in the classroom; and (2) administration
guidelines including strategies for the teacher to use to reinforce positive
attitudes towards stuttering.

The SROM was developed and validated due to the need for a SA-specific
outcomes-based measure to evaluate the effectiveness of the CCR
intervention. It has been reported that the best way to measure attitudes is to
ask individuals to rate their level of agreement (or disagreement) towards a
statement using a Likert-scale (Foster, 2006). This statement supports the use
of the SROM as the outcomes-measure for this study. Positive Social
Distance (PSD), Social Pressure (SP), and Verbal Interaction (VI) are the
three psychometrically-approved constructs evaluated by the SROM that
represent attitudes (Langevin et al., 2009); they are defined as follows:

- **PSD** represents the overall ease, acceptance of and comfort a child
  feels when around CWS (Langevin, 2009). An example of an item is ‘I
  would let a child who stutters hang out with us’.

- **SP** evaluates general thoughts regarding CWS through examining
  social pressure and subjective norms (Langevin, 2009). An example
  is ‘I would be ashamed to be seen with a child who stutters’.

- **VI** evaluates peer’s negative thoughts, emotions and feelings, e.g.
  frustration experienced towards a CWS (Langevin et al., 2009). An
  example is ‘listening to a child who stutters would annoy me’.

To date the following has been achieved in developing the CCR and the
outcomes measure (SROM):

- Developed and refined the CCR intervention (Filies, Hartley, Kaplan &
  Pettit, 2009)
Kathard et al. (2014) and Walters (2014) showed marginal changes in attitude at one month post-intervention. The study explored the treatment effect in the lower and higher quintile in the WC Metro urban area taking gender and exposure to stuttering into account. This small change may be due to the fact that attitudes take an extended time-frame to truly and accurately reflect as a change. While these studies have been invaluable, this study adds to the literature by exploring procedural aspects while commenting on treatment effects over a longitudinal period; therefore, a larger change is anticipated because there has been a longer time to internalise learning.

There are currently no studies in the literature that explore peer attitude changes to CWS over time. This study therefore acknowledges the importance of examining the treatment effect at one and six months post-intervention. The exploration of the treatment effect may enrich and contribute to further research and provide important information regarding potential clinical significance. Therefore, this study will be exploring the observed trends in the treatment at one- and six-month post-intervention intervals.

Magnitude and direction of change has also been considered as part of the UCT project stream. The magnitude and direction are important when considering treatment effect because they allow comment on the degree of change. The degree of change refers to how big or significant the change by the treatment effect (i.e. size and how positive or negative). This is of particular importance because while the CCR intervention is intended to shift attitudes in a positive direction, it could also potentially and unintentionally result in a negative effect; thus comment on the magnitude and direction could
be vital in determining if the CCR intervention has resulted in the intended, positive shift. Furthermore, statistical significance is observed in this study to comment on the magnitude of the treatment effect. Definitive conclusions are, however, not made solely using statistical significance.

In addition to the treatment effect, cluster effect is important in this study because the intervention is administered and targeted at a cluster or group-level. Cluster-intervention simultaneously and collectively targeted all participants in a school as opposed to individualised intervention (Osrin et al., 2008). A group intervention was important because the intervention was intended to influence the attitudes of children as a group. School settings offer this communal space for intervention. The clusters were made up of one or more classrooms per school. Cluster effect was also important to determine as it influences the feasibility of an RCT. For this type of RCT to be successful, it must be established if school-based clusters can be recruited. Furthermore, the performance of the various clusters will influence the sample size calculation for a future RCT.

In conclusion, this study further aimed to provide and enrich the available international and SA literature including classroom-based stuttering intervention. Given that this study is part of a pilot study, a conclusive statement about the significance of the treatment effect will not be made. The trends will, however, be commented on and, due to a lack of research on cluster effects, this study will also provide information regarding how schools and classrooms behave as clusters, and will make recommendations for future research.
Chapter 3 Methodology

3.1 Aims and Objectives

Aim 1
To analyse selected procedural aspects

Objectives:
- To determine recruitment, participation and retention rates for participants
- To describe the participants’ questionnaire completion-trends

Aim 2
To observe treatment and cluster effect of the CCR intervention at one and six months post-intervention

Objectives:
- To determine treatment effect at 1 month post-intervention
- To determine treatment effect at six months post-intervention
- To analyse the treatment effect in the lower and higher quintiles
- To analyse the cluster effect by observing within and between cluster variation

3.2. Research Design

A cluster-randomised control design was used in this study. Cluster-randomised control design methods are considered to be the most reliable design to explore the effectiveness of interventions (Akobeng, 2005; Kendall, 2003). This design aids the identification of cause-and-effect relationships within a controlled setting using control and intervention groups (Leedy & Ormrod, 2005). Cluster trials further aim to achieve group equivalence before interventions are implemented (Lindegger, 2006). Stratified sampling also allowed for group equivalence to be achieved. Control and intervention groups were used to facilitate group equivalence and to control confounding variables and internal validity threats (Abokeng, 2005; Durrheim & Painter, 2006). For example, if there was a change in rating of attitudes in the control group only, a confounding variable could be noted (Babbie & Mouton, 2001). One such confounding variable could be teasing and bullying programmes completed as part of Life Orientation in schools.
While the design elements of this study were aligned with a RCT, it was considered to be a pilot study aimed at exploring procedural aspects and potential benefit of the CCR intervention. Furthermore, the cluster effect was unknown from previous studies and the sample size could, therefore, not be calculated. This stage of the project aimed to explore the cluster effect to inform the sample size calculation of a RCT. The sample size was increased for this study relative to prior studies; however, it is not known at this stage whether the increased sample size offered sufficient power to definitively draw conclusions about the statistical significance of the treatment. Conclusive statements are, therefore, not offered regarding the significance of treatment effects; instead, this study commented on the observed potential treatment effect.

The CCR intervention was administered to the intervention groups only. The control group was, however, provided with a copy of the CCR intervention once the six-month post-intervention data was collected. The validated outcomes measure, the SROM, was used to obtain numerical data from control and intervention groups at pre-intervention, one and six months post-intervention.

3.3. Participants

The participants were required to meet the following inclusion criteria:

- Grade 7 participants in mixed-gender, English LoLT classes within the Cape Metro urban area. Grade 7 participants were selected as teasing and bullying frequently occurs at this age and they are most susceptible to peer pressure (Evans et al., 2008). Mixed-gender classes were selected to explore and provide a holistic view of the grade 7 population without limiting the study to a specific gender. Participants from English LoLT classes were selected as the resources used in this study were in English.

- Participants in public schools across lower quintiles two and three and higher quintiles four and five according to the National Poverty Distribution Scale were included (Department of Education, 2008). The National Poverty Distribution Scale represents the socio-economic strata. This was done in order to obtain comparative data in this study. Participants were thus drawn from across the economic spectrum and this allowed for a representative WC Metro urban area population to be studied.
Basic English literacy skills were required to complete the questionnaire as the resources were in English.

Participants who provided parental consent and assent to participate

The exclusion criteria for the participants were as follows:

- Any learners from classes in schools that participated in related studies in 2009, 2010, 2011 and 2012.
- Learners from schools with an on-site SLT. These schools were excluded in order to eliminate any confounding variables. Any classroom interventions or teacher training could be considered a confounding variable as they may have affected the reliability of scores obtained (Babbie & Mouton, 2001).

3.4. Sample size

A sample size of 384 was estimated (see table 1) based on previous studies in this project stream. The cluster effect was not calculated in previous studies and therefore could not be used in estimating the sample size. The sample size was, however, estimated using observations of treatment effects and mean differences between the control and experimental groups in previous studies. Previous project streams that developed the CCR intervention included a total of 192 participants with 96 in the control group and 96 in the intervention group.

Table 3.1.

Estimate of sample size in the control, intervention and quintile groups.

<table>
<thead>
<tr>
<th>Sample size estimate</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>96</td>
</tr>
<tr>
<td>Lower quintile</td>
<td>48</td>
</tr>
<tr>
<td>Higher quintile</td>
<td>48</td>
</tr>
<tr>
<td>Intervention</td>
<td>96</td>
</tr>
<tr>
<td>Lower quintile</td>
<td>48</td>
</tr>
<tr>
<td>Higher quintile</td>
<td>48</td>
</tr>
</tbody>
</table>
The intention of this study was to increase the sample size relative to the previous studies to enable more robust observations of treatment effects. Based on this rationale, the EpiCalc calculation was conducted.

Appropriate sample sizes are evaluated, specifically in this cluster intervention, using a sample-size calculator. Sample-size calculators such as EpiCalc were originally developed to address concerns regarding the ability to make reliable comparisons between two groups. The sample-size calculator does, however, rely on the assumption that randomization has occurred and that the cluster sizes within the study are roughly equal (Campbell, Thomson, Ramsay, MacLennan & Grimshaw, 2004).

The programme called ‘EpiCalc 2000’, an electronic, statistical calculator, was used to determine the power analysis of the sample size in this study using pre-tabulated data. According to Chongsuvivatwong (2013) Epicalc consists of four functions commonly used to calculate sample size, one of which is commonly used for RCT, as in this study. This programme aims to determine the power analysis based on the detection of the size difference. The EpiCalc calculation determined that 192 participants were to be included within the control and intervention groups.

3.5. Method of Recruitment

A list of schools in the WC Metro urban area was obtained from the Western Cape Education Department (WCED). Schools were the unit of cluster used in this cluster randomised design and therefore the focus was placed on school recruitment.

Schools that were within the lower (two and three) and higher quintiles (four and five) with mixed-gender English LoLT classes were considered as part of the sampling cluster. Stratified, random cluster-sampling was used to recruit participants across the lower and higher quintile schools. Three clusters (schools) consisting of seven classrooms were included in the lower quintile while seven clusters (schools) with nine classes were included in the higher quintile. The average cluster size varied because in all the clusters (schools) barring one, more than one classroom was included. The classrooms making up the clusters in the lower quintile schools consisted of 40-50 learners per classroom and 20-30 in the higher-quintile classrooms.
Stratified sampling guaranteed that participant baseline characteristics were as balanced as feasibly possible within control and intervention groups (Moher et al., 2012). The use of randomisation further eliminated selection bias (Akobeng, 2005; Kendall, 2003; O’Brien, Wright, & Mandall, 2003) and ensured that each school within the selected quintiles was provided with an equal opportunity to be included. This drew on the principles of random sampling (Teddlie & Yu, 2007). The control of extraneous variables was also achieved through randomisation (Babbie & Mouton, 2001). Extraneous variables could include co-varying events such as the Life Orientation curriculum.

Following the cluster randomised sampling of five schools; the grade 7 classrooms within the schools were then drawn. Classrooms that met the inclusion criteria were invited to participate in this study. Refer to Appendix E for a description of how participants were recruited (Teddlie & Yu, 2007). The schools were also randomly assigned to control and intervention groups. Cluster sampling was again applicable because the CCR intervention was administered to pre-existing classes. These pre-existing classrooms formed clusters of participants. Clusters additionally ensured no between-group contamination (Rotondi & Donner, 2012) as the control and intervention group clusters were drawn from separate schools.

*Figure 3.1 Visual representation of sampling methods used*
3.6. Research Instruments

CCR intervention

This resource consisted of two parts. The first part consisted of information and guidelines regarding the nature of stuttering, the CCR intervention, and how to manage stuttering in the classroom. The second part consisted of a social story, role-play, and a semi-structured discussion. The researcher and research assistants trained teachers on CCR intervention administration procedures using a protocol to ensure uniform teacher-training and administration of the CCR intervention. Thereafter, the CCR intervention was administered by teachers in the intervention groups using only a standard protocol. See Appendix A for the CCR intervention.
3.7. Outcomes Measure

**Stuttering Resource Outcomes Measure (SROM)**

The SROM was used as a SA-appropriate repeated outcomes-measure. It measured the scores on the SROM of peer attitudes towards CWS at pre-intervention, and at one and six months post-intervention. The SROM evaluated the three constructs of Positive Social Distance (PSD), Social Pressure (SP), and Verbal Interaction (VI), using a 5-point Likert scale. The questionnaire included 20 items and four unrelated practice items. See Appendix B for a copy of the SROM.

3.8. Validity and Reliability

As described above, the outcome measure used in this study was the SROM which was developed as a modification of the PATCS. The PATCS was found to be a reliable and valid outcomes-measure in studies in Canada (Langevin & Hagler, 2004; Langevin et al., 2009). A correlation coefficient of 0.97 and intervention-retest reliability of 0.88 was reported. This meets the suggested criterion reliability. The principal component analysis of construct validity therefore contributes to the validity and reliability (Langevin et al., 2009; Nunnally & Bernstein, 1994).

The PATCS was, however, found to be long and complex and was therefore not applicable to the general SA schooling population. The SROM was consequently developed. A series of studies (Badroodien et al., 2011; De Grass et al., 2010) subsequently modified the SROM, and Walters (2014) has since validated the SROM and confirmed its reliability as an outcome measure.

3.9. Data collection procedure

The data collection procedure consisted of four phases: the preparatory, pre-intervention, intervention and post-intervention phases. These phases each required specific tasks, for example, teacher training occurred during the pre-intervention phase. The phases are visually represented in figure 3.2. Specific tasks, and the series of steps followed as part of the procedure, were defined prior to commencing the study. It should be noted that, at this time, several research assistants were used. Additionally, it should be taken into account that data collection was affected by timing as specified by the scholastic calendar.
Preparatory Phase

Obtain all permission, informed consent and assent

Control Group
Pre-Intervention Phase
Research assistants show video clip of a CWS, define stuttering and administer SROM

Intervention Group
Pre-Intervention Phase
Research assistants show video clip of a CWS, define stuttering and administer SROM

Intervention Phase
Teachers trained to administer the CCR intervention

Post-Intervention Phase
Teachers administer CCR intervention

Assent re-obtained at 6 months post-intervention

Research assistants administer SROM to participants at 1 month

Assent re-obtained and SROM re-administered at 6 months. Provide CCR intervention resource and basic training post data collection

Figure 3.2 Visual representation of the data collection procedure

Preparatory phase

The study commenced upon ethical approval from the Faculty of Health Sciences Human Research Ethics Committee (HREC). Permission from the
WCED was also required before the study could commence (See Appendix G, H and I). Schools were contacted and invited to participate in the study telephonically and in person. Thereafter, permission from the school board, principals and teachers was obtained; and subsequently, informed consent was collected from parents and assent from learners for the study. All permission, consent and assent forms were collected in a written and signed format. Learner assent was re-obtained at each interval to ensure voluntary participation and to uphold autonomy (see Appendices J and K). This was done as participants were requested to participate at pre-intervention, and at one and six months post-intervention. It is important to note that the precise time of data collection was influenced by the school activity calendar. As a result, data collection occurred at time periods closest to the desired one and six month post-intervention.

Blinding was essential as it may avoid bias (Akobeng, 2005; Kendall, 2003; O’Brien et al., 2003; Rothwell, 2005). This was achieved through the use of research assistants who were divided into two groups: one group collected data while the other captured and scored the data. The research assistants could therefore not distinguish between the control and intervention groups, providing an element of blinding.

**Pre-Intervention Data collection Phase**

Data collection took place at each school and included all participants from the control and intervention groups. Only recruited participants who provided consent and assent were included in this phase of the study: learners who did not obtain consent were not included. Thereafter, all participants viewed a video clip of a CWS. Stuttering was also defined to all participants using a consistent definition. In this way, all participants displayed a basic understanding of stuttering – and the focus of the study – prior to administering the SROM.

The SROM was then uniformly administered to all participants to obtain pre-intervention data. The research assistants answered the four practice items with participants before administering the stuttering-specific questions. The practice items were unrelated to stuttering. This was done in order to familiarise the learners with the Likert-scale. The researcher read each practice and questionnaire item aloud. Participants were also provided with adequate time to answer each question before moving on to the next. The extra time assisted participants with literacy difficulties. Particular words in the SROM were clarified using pre-determined definitions. Participants were given
the opportunity to re-read each question before selecting an answer best describing their level of agreement. Participants were assured that there were no correct or incorrect answers. They were further informed that their answers should describe their attitudes as closely as possible and were told to answer questions independently.

**Intervention administration**

The researcher arranged a meeting with teachers in the intervention groups only. At this meeting, teachers were provided with the CCR intervention and training commenced. The training session took place over a period of 30 minutes. Training occurred at a basic level as this resource is aimed to be self-sufficient and user-friendly. The purpose and aims of the CCR intervention was first explained and then the administration guidelines were provided. Teachers were encouraged to ask questions and clarify any confusion. The resource guidelines used (see Appendix A) were designed to require minimal input from SLTs. Teachers were given a two-week period to review and familiarise themselves with the CCR intervention following the training session. Prior to the administration of the CCR intervention, a brief follow-up training session was done to ensure that all queries and concerns were addressed. It was essential that the researcher ensured that teachers were able to adequately and uniformly administer the CCR intervention. The teachers were encouraged to reinforce the learning and discussion on an ongoing basis as part of classroom discussions. The researcher then observed teachers administering the CCR intervention to ensure that the CCR intervention was administered uniformly. The control groups did not receive the CCR intervention during this phase. Teachers within the intervention groups were reminded of the previously discussed strategies based on the SROM and were asked to reinforce the discussion to promote positive attitudes towards CWS between the one and six month post-intervention intervals. A protocol was additionally used to ensure quality control. The protocol consisted of operation manuals for the teacher, the researcher and research assistants. The operation manual included clear guidelines for teacher-training, administration of the SROM as well as capturing and scoring the data. Research assistants were used to facilitate data collection.

**Post-Intervention Phase**

The SROM was administered to all participants at one and six months post-intervention. The limitation of using the SROM repeatedly over several sequential periods is acknowledged. However, in the absence of an equivalent
validated-measure, the SROM was used. The re-intervention bias may have been reduced by the time-lapse between the administrations of the SROM. The use of the protocol at this phase also ensured that consistent, reliable and standardized, uniform procedures were adhered to. It further aimed to prevent missing or inaccurate data procedures and collection (Kendall, 2003) to reduce the exclusion of participants. The loss of participants would lead to reduced power analysis due to an inadequate sample size. This was an important consideration as several research assistants were used. Research assistants were also used to facilitate simultaneous data collection, which ensured that data collection occurred at a time and date best suited to the schools.

Teachers from the control groups received the CCR intervention once data collection was complete at six months post-intervention. Teachers were offered basic training regarding the use and administration of the CCR intervention. In doing so, participants in the control groups were provided with the opportunity of benefitting from the CCR intervention. It was essential that the CCR intervention was not offered to the control groups prior to the six-month post-intervention interval to ensure that data was not contaminated.

3.10. Data Analysis

Data capture and management.

The first step was to ensure that only correctly completed questionnaires were included. Questionnaires that were incorrectly completed or incomplete were excluded. The raw data was captured on a Microsoft Excel Spread sheet. The lower and higher quintiles were captured on two separate Microsoft Excel Spread sheets. The control and intervention groups within each quintile were also captured separately on other sheets within these documents.

Procedural aspects

The participants were initially discussed in the areas of allocation, enrolment, follow-up and analysis, as specified by the CONSORT statement 2010. These areas are thereafter discussed according to the procedural aspects.

The procedural aspects were captured and scored on a separate Microsoft Excel Spread sheet. The spread sheet captured the following:

- Recruitment rate: The number of schools approached and invited to participate, and those recruited for the pre-intervention interval. The total number of participants was also captured and rechecked by the research assistants.
Participation rate: The participation rate as such could not be captured at this point. At this stage the number of participants at each interval was captured to allow the scoring and analysis of the participation rate.

Retention rate: The retention rate required the number of participants at each interval to be captured. This ensured that scoring could occur once the data was double-checked and verified as correct.

Reasons for the loss-of-retention rate were captured, e.g. consent and assent, absenteeism, incomplete questionnaires and administrative errors at pre-intervention, and one- and six-months post-intervention. These reasons were captured on the Microsoft Excel Spread sheet.

Questionnaire completion trends included reasons for the exclusion of participants such as duplicated (two answers per item) and omitted questionnaire items. Questionnaire completion trends were studied at six months post-intervention.

Treatment effect
The treatment effect data was captured on two Microsoft Excel Spread sheets, which included the allocated, coded number for each participant, and the questionnaire items numbered 1-20. Participants were each allocated a code to ensure autonomy and blinding. The statistics were captured and stored on Excel Spread sheets corresponding to participant codes; the same codes were used at pre-intervention, one and six months post-intervention. This was done to analyse the treatment effect trends over time. Each item of the questionnaire was allocated a number between one and five (Strongly disagree = 1, disagree=2, not sure= 3, agree= 4 and strongly agree =5). The negative items were reversed scored (e.g. strongly disagree was 5). The mean scores on the SROM of total scores and scores within the constructs of PSD, SP and VI were compiled as described in Appendix B. Once all the data was captured, it was cross-checked between the researcher and research assistants. The data was rechecked independently by another researcher in an attempt to minimize errors. Discrepancies in the data capturing was reviewed and rechecked. Corrections were made where applicable.

Descriptive analysis
Numerical, descriptive statistics were used when analysing the obtained data (Leedy & Ormrod, 2005; McNabb, 2007). The researcher and research assistants completed the preliminary analyses. Thereafter, the statistician
checked the preliminary data and conducted further in-depth analysis. The data was analysed separately according the respective aims.

**Procedural aspects**

The procedural aspects were analysed using a descriptive approach to analysis. Numerical values, ratios and percentage values were used. The procedural aspects included; the number of recruited participants, number and percentage value of participation rate, and the retention rates at pre-intervention, one and six months post-intervention (Galea & Tracy, 2007; Herber, Schnepp, & Rieger, 2009). The following was completed:

- **Recruitment rate:** This was described by reporting on the number of schools and classrooms recruited. This included schools initially recruited and also consisted of the overall number of participants recruited for the pre-intervention interval. A ratio was obtained using the obtained values. A percentage value of the recruited schools was also reported on. The percentage was calculated by comparing the schools that accepted the invitation to participate to the recruited number of schools. This value was then multiplied by 100 to obtain a percentage value.

- **Participation rate:** The participation rate referred to the number of participants who took part in this study from pre-intervention to six months post-intervention. This was calculated by dividing the remaining number of participants at six months post-intervention by the total number of recruited participants for the pre-intervention phase. This was multiplied by 100 to obtain a percentage value (Hartge, 2006).

- **Retention rate:** The retention rate was calculated at each interval. A retention rate was therefore reported on a pre-intervention, one and six months post-intervention. It was calculated by dividing the number of participants at each phase by the recruited participants for the pre-intervention phase (Hartge, 2006). This was multiplied by 100 to obtain a percentage value. Analysis of factors accounting for the reasons for the loss of participants was also analysed as part of the retention rate at each interval. These characteristics were compared to the recruited participants for the pre-intervention interval to one and six months post-intervention.
The reasons for the loss of participants included obtaining numerical and percentage values to account for the reasons for a loss of participants at pre-intervention, one and six months post-intervention. The percentage values illustrated the number of participants who were excluded due to poorly completed questionnaires, consent, assent, absenteeism and administrative errors.

Questionnaire completion trends: Incomplete and incorrectly completed SROMs were excluded from this study. They were excluded as the treatment effect analysis used only complete-case analysis. The treatment effect analysis additionally focussed on primary analysis only and not ancillary analysis as recommended by Fitzmaurice (2003). The questionnaires were considered incomplete based on the following criteria:

- Answers were duplicated per item
- Not all items were completed
- Questionnaires were incorrectly coded

These incomplete questionnaires, however, formed part of the questionnaire completion trend analysis. Numerical values of participant numbers and percentage values were calculated.

**Treatment effect**

A descriptive and inferential statistics approach was used when analysing the treatment effect. This approach was used because this was a quantitative experimental design (Durheim, 2006). Descriptive statistics were used when analysing the total scores on the SROM at pre-intervention, one and six months post-intervention. The mean, range and standard deviation was analysed. Mean scores, i.e. the average total scores on the SROM, were compared at the various time intervals to explore if any change was observed between control and intervention groups and within and across quintiles. The median and standard deviation was also described. The median refers to the middle value found in the distribution of scores while the standard deviation refers to the variation of data.

The effect of the CCR intervention was analysed through the use of inferential statistics. The treatment effect at pre-intervention, one and six months post-intervention was determined by comparing the results of the experimental and control groups. The Friedman’s analysis of variance (ANOVA), a non-parametric measure, was used to determine if there had been a significant
change in the scores on the SROM of attitudes between control and intervention groups over time. Parametric assumptions were met and thus ANOVA was applied. In this instance the homogeneity of variance, normality and independence of observations were met (Cardinal & Aiken, 2006).

The statistical significance was reported on using probability (p) values and confidence intervals (Akobeng, 2005). The p-value of 0.05 was selected. If the p-value was less than 0.05, it was considered statistically significant. An adjusted p-value was also used as the combination of data was able to skew the data. For this reason, the adjusted p-value accounted for any possibilities of skewed data and thus the adjusted p-value is more reliable and accurate. A confidence interval (CI) of 95% was additionally used to provide more precise information regarding the treatment effect. If the CI did not include 0, a statistically significant difference had been proven (Akobeng, 2005). Size, significance and direction of the treatment effect were noted using the CI of 95% (Shakespeare, Gebski, Veness, & Simes, 2001; Kalinowski & Fidler, 2010). While the clinical significance would have been valuable, it was not included as part of the data analysis as there were no current guidelines. Clinical significance will require further exploration in further studies before it can be commented on.

Secondary analysis was not conducted as sensitivity analysis was not possible due to administrative errors. Sensitivity analysis refers the vast assessment of factors that could facilitate the identification of parameters of the results (Taylor, 2009); in other words, sensitivity analysis considers various scenarios that improve the researcher's confidence in the findings (Taylor, 2009). The fact that sensitivity analysis was not done is acknowledged as a limitation in this study. These errors could not be rectified prior to data analysis. It is important to note that this study was not intended to draw conclusions on the significance of the treatment effect; this could not be done given the limitations of the sample size. As a result only the treatment effect trends are commented on.

Cluster effect was calculated which included the analysis of within- and between-cluster variations of the sample in order to comment on how clusters behaved, i.e. if they behaved similarly or differently at pre-intervention, one and six months post-intervention. Cluster analysis was analysed using the mean scores and the Kruskal-Wallis test. A Kruskal-Wallis Test was used for cluster analysis as this analysis did not meet the assumptions that were met to
conduct Friedman’s ANOVA. It did not meet these assumptions because of how the data was grouped to adequately comment on the cluster analysis.

While the above-mentioned calculations for the treatment effect were done, they were not intended to draw conclusions on the significance thereof, given the limitations of the sample size. Treatment effect and sample-size calculations should therefore continue to be interpreted with caution (Jeray & Tanner, 2012; Lancaster et al., 2002; Thabane et al., 2010).

3.11. Ethical Considerations

Ethical considerations were adhered to throughout this study. This ensured that the research participants of this study were safeguarded. The ethical considerations were in accordance to the Declaration of Helsinki (World Medical Association Declaration of Helsinki, 2013) and included autonomy, confidentiality, beneficence, non-maleficence and justice (Williams, 2008). It was of utmost importance that the ethical considerations were upheld as the protection of children’s health is a scientific, social and emotional priority due to their vulnerability related to their age (Merlo, Khudsen, Matusiewicz, Niebrog, & Vakakongas 2007).

**Autonomy**

Autonomy represents the respect for an individual (Medical Research Council, 2000). Individuals have the right to make independent decisions free of influence. These decisions are to be respected by the researcher (Terre Blanche, Durrheim, & Painter, 2006). Autonomy was adhered to by respecting participants’ continued voluntary participation. Their voluntary participation was ensured through education of the purpose of the study using simple, clear and concise terms. Assent was also re-obtained at each interval to ensure autonomy (Campbell, Gillet, & Jones, 2006). Information in the assent forms once again included participation risks and benefits and participants were informed of their right to withdraw without consequence (Campbell et al., 2006; Du Mont & Stermac, 1996). The participants who refused assent were not included.

**Confidentiality**

Confidentiality was upheld by not using the schools’, teachers’ or participants’ names. All raw data including permission, consent and assent forms and SROMS were coded. The raw data was stored securely and was accessed solely by the researcher. Passwords were also used to access electronic
documents. Information divulged, such as the names of the schools, were confined within the circle of the researchers and supervisor.

**Beneficence**

Beneficence is the responsibility to maximise potential benefits and minimise any harm that may be experienced. In doing so, participants' well-being is ensured at all times (Merlo et al., 2007; World Health Organisation, 2009). Where a CWS in the classroom was present, they were monitored, counselled and referred for speech-language therapy, if necessary. The benefit of the CCR intervention at six months post-intervention was not known prior to data analysis. However, earlier studies indicated slight positive changes in attitudes.

**Non-Maleficence**

Non-maleficence is the participation in a study in the absence of harm (Medical Research Council, 2000). If a CWS was identified in this study and required therapy, they were referred to a SLT. The risks to CWS were managed by obtaining consent and assent from the CWS. It was further important to obtain consent from the CWS in order to discuss the topic of stuttering in the classroom. The teacher was provided with guidelines and techniques to effectively manage this in the classroom to ensure that the individual was not emotionally harmed as a consequence of the CCR intervention.

At the time of data collection, the researcher asked teachers if they observed any potential harmful effects with CWS. The researcher and teacher also checked if CWS had specific concerns. No concerns were, however, reported in this study and previous studies. The researcher provided immediate guidelines to the CWS with regards to how to cope should their peers display negative interactions. This was monitored closely. However, there was no indication that the CWS required further assistance and thus a referral to a SLT was not deemed necessary. No harms were noted. The Helsinki Protocol states that research should only be conducted if the benefits outweigh potential harm (Fontes, 2004). There were no other risks in partaking in this study.

**Justice**

Distributive justice is the fair and equal distribution of research benefits and risks (Merlo et al, 2007; The Medical Research Council, 2000). The principles of justice were upheld as all participants received the CCR intervention. All the
teachers were additionally educated with regard to stuttering and managing communication difficulties in the classroom. Distributive justice was also upheld as participants from different economic sectors were included (i.e. participants from the lower and higher quintiles).
Chapter 4 Results

4.1. Overview of the Chapter

In this chapter the results of the study are presented in relation to the aims and objectives. The method of presentation, to first discuss procedural issues and then treatment effect, has been kept consistent throughout this study and in the following chapter (the discussion) to systematically address these areas. For aim 1 the results for recruitment, participation and retention rate and questionnaire analysis trends are presented. The retention rate is the only procedural issue discussed across pre-intervention, one and six month’s post-intervention periods. The participation rate is only presented as an overall result because it describes participation from pre-intervention to six months post-intervention. Thereafter the results of the treatment and cluster effect are presented according the time intervals of pre-intervention, one and six months post-intervention, and include a discussion of findings for the control versus intervention groups and for lower and higher quintiles.

4.2. Description of Participants

The participant flow diagram, as specified by the CONSORT statement 2010, details the number of participants included at pre-intervention, one and six months post-intervention. The participation flow diagram presented the allocation, enrolment, follow-up, and analysis of participants. These results are also described further, where relevant, as part of the recruitment, participation and retention rates.

Allocation

The allocation of participants is discussed as the recruitment rate in this study.

Enrolment in intervention

Enrolment refers to the intervention phase in which the CCR intervention was administered to the intervention group only and not in the control group. A total of 131 participants were allocated to the higher quintile intervention group while only 113 participants within the higher quintile received the CCR intervention. The participant numbers decreased from 131 to 113 due to difficulties related to assent, consent and absenteeism. The higher quintile control group consisted of 175 participants. Similarly this procedure was also followed in the lower quintile group. The lower quintile intervention group was allocated 159 participants which decreased to 112 due to 47 participants not providing assent and consent or being absent. The follow up data collection
notes a loss of participants in the control and intervention groups within quintiles at one and six months post-intervention.

Assessed for eligibility (n= 640)

Excluded (n= 30)
- Not meeting inclusion criteria (n= 0)
- Declined to participate (n= 30)
- Other reasons (n= 0)

Randomized (n= 610)

Enrolment
- Higher quintile allocated to intervention (n= 131)
- Received allocated intervention (n=113)
- Did not receive allocated intervention due to assent, consent and absenteeism (n= 18)
- Control group (n=175)

- Lower quintile allocated to intervention (n= 159)
- Received allocated intervention (n= 112)
- Did not receive allocated intervention due to assent, consent and absenteeism (n= 47)
- Control group (n= 145)

Allocation

Follow-Up
- Lost to follow-up at 1 month from pre-intervention due to assent, consent, absenteeism and poorly completed questionnaires (n= 16)
  Discontinued intervention (intervention was administer once only at the pre-intervention interval) (n= 0)
- Lost to follow-up at 1 month from pre-intervention due to assent, consent, absenteeism and poorly completed questionnaires (n= 10)
  Discontinued intervention (intervention was administer once only at the pre-intervention interval) (n= 0)
- Lost to follow-up at 6 months from 1 month due to assent, consent, absenteeism, poorly completed questionnaires and administrative errors (n= 48)
  Discontinued intervention (intervention was administered once only at the pre-intervention interval) (n= 0)
- Lost to follow-up at 6 month due to assent, consent, absenteeism, poorly completed questionnaires and administrative errors (n= 56)
  Discontinued intervention (intervention was administered once only at the pre-intervention interval) (n= 0)

Analysis

Analysed control group (n=95)
Analysed intervention group (n=54)
Excluded from analysis due to assent, consent, absenteeism, poorly completed questionnaires and administrative errors (n= 157)

Analysed control group (n=84)
Analysed intervention group (n=40)
Excluded from analysis due to assent, consent, absenteeism, poorly completed questionnaires and administrative errors (n= 180)

Figure 4.1. Participant flow diagram as specified by the CONSORT statement 2010
Follow up

For the higher- and lower quintiles, ten and sixteen participants were lost to follow-up at one month post-intervention respectively. This was as a result of assent, consent, absenteeism and poorly completed questionnaires. The intervention was administered only once to the intervention group during the intervention phase. The loss of participants from one to six months post-intervention included forty-eight in the higher quintile group and fifty-six in the lower quintile group.

Analysis

For the higher quintile, a total of 95 control group participants were analysed while 54 were included in the intervention group. Subsequently, there were 157 participants who were excluded from the analysis from recruitment to six months post-intervention in the higher quintile. For the lower quintile, 84 participants were included for the control group and 40 for the intervention group. A total of 180 participants were excluded from recruitment to six months post-intervention in the lower quintile. For both quintiles, participants were lost to follow-up in both control and intervention groups due to assent, consent, absenteeism, poorly completed questionnaires, and administrative errors. The retained participants are discussed as part of the retention rate.

4.3. Aim 1 Procedural Aspects

Recruitment rate for schools

The recruitment of participants occurred at a school level. The recruitment rate for the pre-intervention phase was 91%. This means that 10 out of the 11 recruited schools across quintiles responded and accepted the invitation to participate in this study.

The schools within the lower quintile consisted of approximately 40-50 participants per classroom while the higher quintile schools consisted of approximately 20-30 participants per classroom. The pre-intervention data of the recruited participants included schools within both the lower and higher quintiles. The higher quintiles appeared to respond more favourably to the call to participate than the lower quintile. Three schools within the lower quintile group were recruited consisting of seven classrooms and 304 participants. Seven schools were recruited from the higher quintile group consisting of nine classes with 336 participants. Thus an estimate of 640 participants was initially recruited. However, one school with one classroom declined to participate due
to logistical difficulties. As a result, 610 participants were recruited to take part in the pre-intervention phase of this study.

**Participation rate**

The participation rate refers to the participants who remained in this study from pre-intervention to six months post-intervention. The participation rate was important to observe as those who participated and were retained at six months post-intervention were analysed as part of the treatment and cluster effect in aim 2. An overall participation rate of 59.6% (n=273) was observed. The participation rate within the control group was 76.82% (n=179) while the participation rate for the intervention group was 41.78% (n=94). The overall participation rate was therefore higher in the control groups when compared to the intervention group. See Table 4.1.

Table 4.1

Total participation rate in the Control, Intervention, and Lower and Higher quintile groups from pre-test to six months post-intervention

<table>
<thead>
<tr>
<th>Participation rate</th>
<th>Percentage value</th>
<th>Number of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>76.82%</td>
<td>n = 179</td>
</tr>
<tr>
<td>Lower quintile</td>
<td>68.85%</td>
<td>n = 84</td>
</tr>
<tr>
<td>Higher quintile</td>
<td>85.59%</td>
<td>n = 95</td>
</tr>
<tr>
<td>Intervention</td>
<td>41.78%</td>
<td>n = 94</td>
</tr>
<tr>
<td>Lower quintile</td>
<td>35.71%</td>
<td>n = 40</td>
</tr>
<tr>
<td>Higher quintile</td>
<td>48.67%</td>
<td>n = 54</td>
</tr>
</tbody>
</table>

The lower and higher quintile was analysed by initially not taking into account the control and intervention groups. The participation rate in lower quintile was 52.99% (n=124) compared to the higher quintile which was 66.52% (n=149) without taking the control and intervention groups into account.

As seen in Table 4.1, the participation rate in the lower quintile control group was 68.55% (n=84) while the participation rate in the higher quintile control
group was 85.59% (n=95). The intervention group observed a participation rate of 35.71% (n=40) in the lower quintile intervention group and 48.67% (n=54) in the higher quintile intervention group.

Comparisons between intervention and control groups showed an unequal distribution between participant numbers within the control and intervention group. The comparison between quintiles indicated a higher participation rate in the higher quintile when compared to the lower quintile. It was also noted that the participation rate for both quintiles were higher in the control group compared to the intervention group. It was also found that the lower quintile yielded a lower participation rate within the control and intervention group compared to the higher quintile. Furthermore, the highest participation rate was observed in the higher quintile control group. Conversely, the lowest participation rate was noted in the lower quintile intervention group.

**Retention rate**

The retention rate refers to the number of participants retained at pre-intervention, one and six months post-intervention.

**Table 4.2**

*Retention rate in the Control, Intervention, and Lower and Higher quintile groups at pre-test, one and six months post-intervention*

<table>
<thead>
<tr>
<th></th>
<th>Retention rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-intervention</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td></td>
</tr>
<tr>
<td>Lower quintile</td>
<td>84.14% (n=122)</td>
</tr>
<tr>
<td>Higher quintile</td>
<td>63.43% (n=111)</td>
</tr>
<tr>
<td><strong>Intervention</strong></td>
<td></td>
</tr>
<tr>
<td>Lower quintile</td>
<td>70.44% (n=112)</td>
</tr>
<tr>
<td>Higher quintile</td>
<td>86.26% (n=113)</td>
</tr>
</tbody>
</table>

From the recruited 610 participants, 458 took part in the pre-intervention phase, 419 at one month and 273 at six months. A retention rate of 75.08%
(n=458) was observed at the pre-intervention phase when compared to the recruited participants. The retention rate at one month post-intervention from the pre-intervention phase was 91.5% (n=419). The retention rate from one to six months post-intervention was 65.2% (n=273). An overall retention rate from the recruited participants at the pre-intervention phase to the six month post-intervention was 44.8% (n=273). As seen in Table 4.2, comparisons of the retention rate in control, intervention and quintile groups are reported at pre-intervention, one and six months post-intervention, which indicate that the observed participation and retention rates clearly decreased in participant numbers over time.

![Figure 4.2](image-url)  
*Figure 4.2. Total retention rate in the total sample and in the Control and Intervention groups*

**Pre-intervention**

The retention rate was 75.08% (n=458) at pre-intervention with 72.8% (n=223) in the control group and 77.5% (n=225) in the intervention group. In the lower quintile, a retention rate of 76.97% (n=234) was reported, while the higher quintile yielded a rate of 73.2% (n=209) in the absence of considering the control and intervention groups. In the control group, the lower quintile was 84.14% (n=122) while the higher quintile control group was 63.43% (n=111). In the intervention group, the lower quintile intervention yielded a retention rate of 70.44% (n=112) while it was 86.26% (n=113) in the higher quintile intervention group.

The retention rate at the pre-intervention phase was therefore higher in the intervention group than in the control group. It is important to note that it is the opposite of what was found in the participation rate because the pre-intervention retention rate was compared from the recruited participants to the
pre-intervention phase. This is significant as the retention rate was still high at the pre-intervention phase. When comparing the overall retention rate, a higher rate was noted in the lower quintile group compared to the higher quintile group. The lower quintile showed a higher retention rate in the control group while the higher quintile showed a higher retention rate in the intervention group.

**One month post-intervention**

The retention rate from pre-intervention to one month post-intervention was 91.5% (n=419). The retention rate in the control group was 94.42% (n=220) while it was 88.44% (n=199) in the intervention group. The lower quintile group yielded a retention rate of 89.74% (n=210) and the higher quintile 93.3% (n=209) in the absence of considering the control and intervention groups. In the control group, the lower quintile group showed a retention rate of 93.44% (n=114) while the higher quintile showed a retention rate of 95.5% (n=106). The intervention group yielded the following retention rates; 85.71% (n=96) in the lower quintile and 91.15% (n=103) in the higher quintile.

The reported retention rate at one month post-intervention shifted in comparison to the retention rate at pre-intervention within control and intervention groups. This is evident as the control group retention rate was higher than the intervention group at one month post-intervention, unlike that at pre-intervention. A shift of retention rate in quintiles was also observed. Contrasting pre-intervention, the retention rate was higher in the higher quintile compared to the lower quintile, and it was noted that the higher quintile yielded a higher retention rate in both the control and intervention groups.

**Six months post-intervention**

The retention rate from one month to the six months post-intervention was 65.15% (n=273). For the control and intervention groups, the retention rate from one to six months post-intervention was 83.36% (n=179) and 47.23% (n=94) respectively. The control group retention rate was markedly lower than the intervention group. The lower and higher quintiles showed retention rates of 59.04% (124) and 71.29% (n=149) respectively. For control groups, the retention rate for the lower quintile was 73.69% (n=84) compared to 89.62% (n=95) in the higher quintile. When considering the intervention groups, the retention rate in the lower quintile was 41.66% (n=40) while it was 53.4% (n=55) in the higher quintile. There was a higher retention rate in the higher quintile when compared to the lower quintile.
The retention rate, from the recruited pre-intervention participants to six months post-intervention, showed decreased retention rates. A low retention rate of 44.8% (n=273) was observed at six months post-intervention. For the control group, a rate of 55.93% (n=179) was noted compared to the intervention group which showed a rate of 32.41% (n=94). The lower quintile had a retention rate of 40.78% (n=124) while the higher quintile reported a rate of 48.69% (n=149). For each quintile, when considering the control group, the lower quintile retention rate was 57.93% (n=84) and that of the higher quintile 54.29% (n=95). For the intervention groups, the retention rate in the lower quintile was 25.15% (n=40) while it was 41.9% (n=55) in the higher quintile. The participant numbers illustrate clearly that the loss of several participants throughout this study negatively influenced the retention of participant numbers. See Figure 4.2.

Figure 4.3. Total retention rate in the total sample and in the Lower and Higher quintile groups

Figure 4.2. and 4.3. visually represents Table 4.2. There is a decline in participants over time. Generally the control group retained more participants than the intervention group. Similarly, the retention rate was generally higher in the higher quintile when compared to the lower quintile. It is important to note that higher percentage values were noted at one month post-intervention when compared to the pre-intervention because of the loss of participants between pre-intervention and one month post-intervention was small, which therefore yielded a higher percentage value. Findings also showed that the retention rate decreased significantly by six months post-intervention. As a
result, descriptive analysis was done to account for the reasons for the loss of participants.

**Analysis of factors contributing to the loss of participants**

Analysis of factors accounting for the reasons for the loss of participants was further conducted at pre-intervention, one and six months post-intervention to further explore factors contributing to the decrease in retention rate.

![Diagram showing percentage values of factors contributing to the loss of participants at different time intervals](image)

*Figure 4.4. Factors contributing to the loss of participants at pre-intervention, one and six months post-intervention*

A total of 11.57% (n=28) participants were excluded due to poorly completed questionnaires. A further 7.85% (n=21) participants were excluded due to assent, consent and absenteeism. This therefore means that at pre-intervention, a higher number of participants were excluded due to poorly completed questionnaires than due to assent, consent and absenteeism. These factors are related to both the retention and participation rate as both these rates were affected by the loss of participants.

At one month post-intervention, several more participants were excluded due to consent, assent and absenteeism when compared to the pre-intervention. A total of 20.25% (n=49) were excluded due to assent, consent and absenteeism. Fewer participants, 4.54% (n=11) were excluded as a result of poorly completed questionnaires.

At the six months post-intervention, 21.07% (n=51) of participants were excluded for administrative errors. The administrative errors included questionnaires that were incorrectly coded. A total of 20.25% (n=49) were
excluded because of absenteeism. As a result of incorrectly completed questionnaires 9.09% (n=22) of participants were excluded at six month post-intervention.

Overall, from pre-intervention to six months post-intervention, 48.35% (n=119) participants were excluded due to consent, assent and absenteeism. A further 25.2% (n=61) were excluded due to poorly completed questionnaires. A total of 5.37% (n=13) were excluded with no reason or time provided due to administrative errors. The administrative errors (misplaced codes) were labelled as ‘other’ on Figure 4.4.

**Questionnaire completion trends**

As illustrated in Figure 4.4, participants were excluded due to a number of reasons such as consent, assent, absenteeism and administrative errors. A total of 25.2% (n=61) participants were specifically excluded due to poorly completed questionnaires. It is for this reason that questionnaire completion trends were also analysed at six months post-intervention. The analysis explored differences between control and intervention groups, and quintiles. This provided valuable insight into the appropriateness of the SROM in light of linguistic and literacy diversity in Cape Metro urban area.

![Figure 4.5. Questionnaire completion trends illustrating duplicates and omitted items](image)

Poor questionnaire completion trends were classified as ‘omitted’ and ‘duplicated’. ‘Omitted’ items referred to items not answered. ‘Duplicated’ referred to items where two answers were provided per question. Analysis
showed that items from all constructs (PSD, VI and SP) were answered incorrectly. The number of questionnaires excluded in the control group (n=78) was less than those excluded in the intervention group (n=164). There were more questionnaires that were excluded in the lower quintile (n=146) than in the higher quintile (n=96). There were no marked differences in the questionnaire completion analysis in terms of how the questionnaire was completed between the control and intervention groups within a quintile. The questionnaire completion trends, however, differed between quintile groups. See Figure 4.5.

In the lower quintile group, several questions were duplicated and omitted. A larger number of items were duplicated when compared to those omitted (all twenty items were duplicated while participants omitted 14 out of the 20 items). Omitted items were observed within the lower quintile in all three constructs. The majority of the duplicated items were from the PSD construct which included SROM items 7, 5, 14 and 18. For the SP construct, item number 3 was also duplicated most often. The most frequently omitted item (i.e. item left blank) was number 6 within the SP construct. Thereafter, VI items numbered 11 and 17 were omitted. Number 7, a PSD item was additionally omitted. The incidences of poorly completed questionnaires in the lower quintile clearly showed that this contributed to the poorer retention rate when compared to the higher quintile.

In the higher quintile, no items were omitted. Questions number 2, 3 and 6 within the SP construct were, however, duplicated. Questions 7 and 10 within the PSD construct were additionally duplicated. The SP items (numbers 3, 2 and 6) were more frequently answered incorrectly than PSD items (numbers 7 and 10) within this quintile. It was observed that while these items were most frequently duplicated, the incidences of duplication were low as two or three participants completing each question incorrectly.

4.4. Aim 2 Treatment Effect

Primary analysis was conducted using the scores on the SROM for the 273 participants retained at six months post-intervention. The scores of the SROM were tracked from pre-intervention to six months post-intervention. The analysis of control and intervention groups and lower and higher quintiles are presented. The treatment effects are presented according to pre-intervention and one and six months post-intervention.
**Pre-intervention**

For the control group, the mean score was 71.48 and the median was 71 with a standard deviation of 12.94. For the intervention group, the mean score was 73.02, the median was 73.5 and the standard deviation was 12.03. This showed a higher mean score in the intervention group when compared to the control group. This is important to note as the intervention group began, therefore, with more positive attitudes than the control group, even before the CCR intervention was administered. The lower quintile (control and intervention group) yielded a mean score of 67.59 and a standard deviation of 12.99.

Table 4.3.

*Sample size, mean and median scores on the SROM in the control and intervention and lower and higher quintile groups at pre-intervention*

<table>
<thead>
<tr>
<th>Profile of pre-intervention scores on the SROM</th>
<th>N</th>
<th>Mean</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>233</td>
<td>71.48</td>
<td>71</td>
</tr>
<tr>
<td>Lower quintile</td>
<td>122</td>
<td>68</td>
<td>65</td>
</tr>
<tr>
<td>Higher quintile</td>
<td>111</td>
<td>75</td>
<td>71</td>
</tr>
<tr>
<td>Intervention</td>
<td>225</td>
<td>73.02</td>
<td>73.5</td>
</tr>
<tr>
<td>Lower quintile</td>
<td>112</td>
<td>68</td>
<td>68</td>
</tr>
<tr>
<td>Higher quintile</td>
<td>113</td>
<td>77</td>
<td>77</td>
</tr>
</tbody>
</table>

In the higher quintile (control and intervention group), a mean score of 75.71 and standard deviation of 11.06 was noted. Furthermore the lower quintile control group showed a mean score of 68 and median 65 while the higher quintile control group showed a mean score of 75 and median of 71. A mean score of 68 and median of 68 was observed in the lower quintile intervention group, while the higher quintile mean score was 77 and median was 77. This illustrated that the higher quintile began more positively than the lower quintile, even before the CCR intervention was administered.

**1 month post-intervention**

For the control group, the mean score, median and standard deviation at one month post-intervention was 72.49, 72.5 and 13.31 respectively. For the intervention group, the mean score was 75; median was 75.5, while the standard deviation was 11.79. The lower quintile showed a mean score of
69.98 and a standard deviation of 13.46. The higher quintile observed a mean score and standard deviation of 76.20 and 11.58.

The mean scores were also compared from pre-intervention to one month post-intervention. This showed that the control group difference in mean remained small when compared with the pre-intervention phase (M=71.48) to one month post-intervention (M=72.49). The increase in mean score was higher in the intervention group where the mean score changed from 73.02 (S.D. 12.03) at the pre-intervention phase to 75 (S.D. 11.79) at one month post-intervention. The lower quintile mean score increased from 67.59 (S.D. 12.99) at pre-intervention to 69.98 (S.D. 13.46). The higher quintile mean score also increased slightly from 75.71 (S.D. 11.06) to 76.20 (S.D. 11.58) at one month post-intervention. When considering the lower quintile, the mean score was 69 and the median was 70 for the control group, and 75 (mean score) and 70 (median) for the intervention group. In the higher quintile, a mean score of 75 and median of 77 was noted in the control group and 77 (mean score) and 79 (median) in the intervention group.

**Six month post-intervention**

For the control group, the mean score observed was 72.66 and median 75 with a standard deviation of 12.96. The intervention group reported a mean score, median and standard deviation of 77.91, 80 and 11.19 respectively. The mean score and standard deviation in the lower quintile was 70.80 and 13.01 while a mean score of 77.59 and a standard deviation of 11.39 was yielded in the higher quintile without considering the control and intervention groups. The mean score and median in the control group was 70 and 70 in the
lower quintile and 75 and 77 respectively in the higher quintile. The intervention group showed a mean score of 73 and median of 78 in the lower quintile and 82 (mean score) and 85 (median) in the higher quintile.

Table 4.5.

*Sample size, mean and median scores on the SROM in the control and intervention and lower- and higher quintile groups at six months post-intervention*

<table>
<thead>
<tr>
<th>Profile of 6 months post-intervention scores on the SROM</th>
<th>N</th>
<th>Mean</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>179</td>
<td>72.66</td>
<td>75</td>
</tr>
<tr>
<td>Lower quintile</td>
<td>84</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>Higher quintile</td>
<td>95</td>
<td>75</td>
<td>77</td>
</tr>
<tr>
<td>Intervention</td>
<td>94</td>
<td>77.91</td>
<td>80</td>
</tr>
<tr>
<td>Lower quintile</td>
<td>40</td>
<td>73</td>
<td>78</td>
</tr>
<tr>
<td>Higher quintile</td>
<td>55</td>
<td>82</td>
<td>85</td>
</tr>
</tbody>
</table>

The mean scores of the treatment effect (i.e. scores on the SROM of peer attitudes towards CWS) increased gradually in both the control and intervention groups at pre-intervention, one and six months post-intervention. The mean scores at six months post-intervention showed that the treatment effect was larger in the intervention group when compared to the control group, i.e. the mean difference was larger in the intervention group when comparing pre-intervention to post-intervention scores on the SROM. No difference was noted in the control group as the mean difference of 1.18 (S.D. =13.17) was not significant from pre-intervention to six months post-intervention. The mean score in the intervention group changed from 73.02 (S.D. 12.03) at pre-intervention phase to 77.91 (S.D. 11.19) at six months post-intervention. An overall difference in mean score of 4.89 (S.D. =8.77) noted within the intervention group from pre-intervention phase to six months post-intervention. It can therefore be inferred that this difference in the intervention group only is due to the treatment effect. See Table 4.5 and Figure 4.6.

When considering the control group, for the lower quintile, the mean score changed from 68 to 70 while it stayed at 75 for the higher quintile. The mean difference between pre-intervention and six months post-intervention in the lower quintile control group was therefore 2. For the intervention group, for the lower quintile the mean score changed from 68 to 73 yielding a mean difference of 5. This was compared to the higher quintile with a mean score
changing from 77 at pre-intervention to 82 at six months post-intervention and a mean difference of 4. When considering quintiles, the mean difference was larger in the intervention group as a result of the treatment effect while a minimal shift of 2 and 0 were noted in the lower and higher quintile control groups respectively.

These findings were subjected to further analysis using T-interventions and ANOVA as indicators of significance. Six months post-intervention in the intervention groups only. See Figure 4.6.

![Graph](image)

*Figure 4.6. Mean total scores on the SROM in Control, Intervention, and Lower and Higher quintile groups at pre-intervention, one and six months post-intervention.*

For the control group, the adjusted p-value of 0.071 (p> 0.05) was noted compared to 0.0024 in the intervention group. This means that a statistically important result was observed in the intervention group compared to the control group. The p-value in the control group did not yield noteworthy results. This result suggests that the treatment effect noted a more positive shift of scores on the SROM towards attitudes and a greater magnitude of change in the intervention group only. Furthermore, the higher quintile showed a greater change in the area of magnitude and direction of treatment compared to the lower quintile. Figures 4.6 and 4.7 are both visual representations which illustrate the change in treatment effect at pre-intervention, one and six months post-intervention.
The adjusted p-values were analysed according to control and intervention groups within quintiles. The adjusted p-value was 1 for both the lower and higher quintiles. Based on the p-values, no important results were noted when analysing the quintiles within the control group. This is valuable to this study as it can be inferred that any change in the treatment effect in the intervention group is due to the CCR intervention. For the intervention group, the adjusted p-value in the lower quintile was 0.13 while the higher quintile was 0.0016. An important result was therefore noted in the higher quintile intervention group only when considering p-values. A positive direction and larger magnitude of change was thus observed in the intervention group and more specifically in the higher quintile intervention group. See Table 4.5 and Figure 4.6.

4.5. Ancillary Analyses: Subgroup Analysis and Cluster Effect

Schools, the unit of randomized clusters, were used as the unit of analysis. The number of classrooms within schools is discussed as part of the recruitment rate. The Kruskal-Wallis Test was also conducted to further explore cluster effects and cluster mean scores.
Pre-intervention

The lower quintile mean scores on the SROM were lower compared to the higher quintile group at pre-intervention. This appears to be a general trend as the lower quintile schools had lower scores on the SROM when compared to the higher quintile. Therefore, participants in the higher quintile had more positive scores on the SROM than those in the lower quintile. Of the two schools in the lower quintile, one was a control group school and the other an intervention school. The mean score in School One, control one was 67, 61 while it was 67.58 in School Two’s intervention. Thus the lower quintile group behaved similarly in the pre-intervention phase. This meant that the schools within the quintiles performed similarly while they were slightly different across quintiles.

Similarly, the higher quintile group scores on the SROM were as follows; 76.11 in School One control, 76.34 in School One intervention, 72.16 in School Two control, 80 in School Two intervention, 76.67 in School Three control and 77.70 in School Three intervention. The Kruskal-Wallis intervention further showed that the p-values and adjusted p-values within the intervention and control group schools were identical with each other with a p-value of 0.01 and an adjusted p-value of 0.07. See Figures 4.8 and 4.9.
School cluster analysis using mean scores on the SROM in control, intervention in the higher quintile at pre-intervention, one and six months post-intervention

**One month post-intervention**

At one month post-intervention the lower quintile intervention (M=71.05) and control group (69.46) schools behaved similarly. There was, however, a greater increase noted in the mean score for the intervention group than the control group.

In contrast to the findings for the lower quintile, the higher quintile mean scores differed from one another. The mean scores for the intervention School One (M=80.34) and Three (M=83.35) were higher than the other schools. At one month post-intervention, School Three in the higher quintile intervention group had not increased as much as the other higher quintile intervention schools. This showed that this cluster did not behave identically to the other schools. School Three in the higher quintile intervention group observed a mean score of 70.50. The control group schools one and two within the higher quintile behaved similarly with mean scores of 74.43 and 73.00 respectively. School Three’s control, however, yielded a mean score of 79.21. This therefore showed a slight difference in the behaviour of this school as a cluster when compared to the other schools within the higher quintile.

The p-value in the intervention group was 0.05 (p>0.05) while it was 0.03 in the control group. Both adjusted p-values changed to 0.11. Again, this demonstrated that the schools behaved similarly as they yielded the same adjusted p-value.
**Six months post-intervention**

The lower quintile mean scores on the SROMs in the control (69.88) and intervention (72.70) groups differed. In the lower quintile, when considering the mean scores on the SROMs, it is clear that the intervention group (72.70) scored higher than the control group (69.88). This is to be expected, especially post-CCR intervention.

The control group schools within the higher quintile, however, behaved largely similarly. The higher quintile control group schools yielded the following mean scores; School One with 74.73, School Two with 73.74 and School Three with 78.88. The higher quintile School One, within the intervention group, obtained a mean score of 80.34, School Two with 84.50 and School Three with 83.35. While these mean scores proved, therefore, that the groups behaved as clusters, further analysis will be required in future studies to calculate the clusters using the Intra-cluster co-efficient and the generalized estimating equations.

**Summary of cluster effect analysis**

The Kruskal-Wallis Test further showed no significant differences between clusters between schools and within intervention and control groups, i.e. clusters behaved similarly, control groups behaved similarly to each other, and the intervention groups behaved similarly to each other. To reiterate, however, the control and intervention groups differed as a result of the CCR intervention which illustrated that, while more than one class was occasionally used within a cluster (school), the cluster (school) behaved as a whole cluster. The higher quintile clusters consistently showed better performance than lower quintile clusters. Furthermore, no significant differences were noted between classes within the clusters in the control or intervention groups where quintile was accounted for, thus highlighting that clusters (schools) behaved similarly. This preliminary analysis is valuable but requires further detailed analysis.

In summary, the study found that school (i.e. cluster) recruitment is feasible and favourable with a recruitment rate of 90.91%. The participation rate was 59.6%. The retention rate at pre-intervention was 75.08%, at one month post-intervention was 91.5% and at six months post-intervention was 44.8%. This illustrated that the participant dropout negatively affected the participation and retention rate of this study. The treatment effect showed that the pre-intervention mean scores were relatively positive to begin with, in both the control and intervention groups. Minimal changes in treatment effect in the area of magnitude and direction was noted at one month post-test while a
greater more positive change was noted at six months post-intervention in the intervention group only. The higher quintile also showed a greater shift in the treatment effect compared to the lower quintile. The cluster effect further showed that the clusters (i.e. schools) behaved similarly.
Chapter 5 Discussion of Findings

5.1. Overview of chapter

This chapter includes the discussion and conclusion. The findings are first discussed in relation to the aims of this study. The discussion will highlight the lessons learned, as well as implications and recommendations to strengthen a future RCT. The findings, implications and recommendations collectively inform the feasibility of an RCT. This view is supported by Bowen (2009), who states that using a pilot study is essential in evaluating ideas and findings. Thereafter, a conclusion is drawn followed by strengths and limitations of the study, and clinical and future research implications.

5.2. Aim 1 Procedural Aspects

Recruitment Rate

The strategy of school recruitment was found to be feasible given the positive results yielded in this study. The positive school recruitment rate (90, 91%) was encouraging as ten out of the eleven schools approached agreed to participate in the study. The reasons for the positive recruitment rate could be attributed to the school authorities being interested in the study. The issues of teasing and bullying are a challenge in schools and raising awareness of these issues were seen as positive input. The consequences of teasing and bullying can be devastating, especially socially (Swearer et al., 2010), and as a result it is most beneficial for teasing and bullying to be addressed by teachers. It is for this reason that schools were possibly interested in gaining experience and resources with regard to how to address teasing and bullying. While the willingness of schools contributed to the retention rate, the strength of using cluster-recruitment lead to cluster-sampling, a requirement of this pilot study.

Furthermore, the recruitment rate was high as school authorities valued the direct potential benefit of the CCR intervention to the learners and teachers. It is also possible that the recruitment rate was high because schools were able to easily commit to participating in this study. This may have been attributed to the fact that schools were informed that the SROM questionnaires were time-efficient and easily administered. This meant that the schools could concurrently participate in, and benefit from, this study. Schools accepted the invitation to participate in this study without feeling the burden of time constraints because schools were informed that the SROM was quickly administered.
There were however predetermined procedures that were to be followed before the SROM could be administered. The procedures included contacting the WCED and school principals. The relevant authorities (WCED, schools, principals and teachers) provided a channel for the recruitment of several participants at one time. This was possible as individual participants could not be recruited before the relevant permission, consent and assent procedures were followed. This factor further supported the use of school recruitment as opposed to recruiting individual participants. Once the relevant authorities indicated an interest in participating in this study, the school recruitment could formally commence.

It was observed that, although recruitment at cluster school level was feasible, the recruitment rate of learners within the lower and higher quintiles varied. It also revealed interesting findings that the number of learners per school differed greatly across quintiles. Higher quintile schools typically had lower number of learners per classroom (roughly 20-30 learners) compared to lower quintiles (roughly 40-50 learners). The implication for further study is that more schools may need to be recruited from higher quintiles than lower quintiles to meet the required sample.

This study relied on classroom-administered intervention. Cluster-sampling was therefore used (Osirin et al., 2008). The use of school recruitment supported this cluster sampling strategy. It was found that once the school was recruited, access to classrooms which made up the school cluster was facilitated. School recruitment was found to be successful and complemented the use of cluster sampling This approach (i.e. recruiting schools) also strengthened the study design because the control and intervention groups were physically separated. The physical separation of the control and intervention groups was important to primarily reduce the risk of contamination (Lundberg et al., 2005).

It was noted that school recruitment was viable in both the lower and higher quintiles and was completed in order to obtain a representative sample of the Cape Metro urban area. The slightly higher number of recruited participants in the higher quintile however may be accounted for by the selection of schools. Three schools consisting of seven classrooms were recruited in the lower quintile while seven schools within the higher quintile were recruited which included nine classes. This meant that 304 participants were recruited within the lower quintile while 336 were recruited in the higher quintile. It was noted that several of the lower quintile schools consisted of more learners than those
in the higher quintile (i.e. 40-50 in the lower quintile compared to 20-30 in the higher quintile). Noting the size and classroom composition ensured that an adequate sample size was recruited. Due to the nature of the classroom set-up in each quintile, it is recommended that an increased number of higher quintile schools are recruited in the future. Another important factor to take into account was that more than one classroom per school was recruited, which meant that all but one cluster (school) consisted of more than one classroom. It is therefore recommended that only one classroom per cluster (school) is used in future. The reason for the recommendation is that the CCR intervention is administered per classroom and thus the one classroom per school could be the cluster studied in future. This issue requires further investigation and expert advice before a further study is attempted.

In conclusion, the recruitment rate findings suggest that school recruitment rate may be replicated for a future RCT. The use of school recruitment appears to rely heavily on the time-efficient nature of data collection and the schools’ willingness to participate. It is important to note that following the relevant pathway of permission and consent is a facilitating factor for recruitment. It allows for large numbers of participants to be included. This also adheres to the cluster sampling method and ensures that an adequate sample size is obtained. The lesson from the recruitment rate is however that more schools within the higher quintile will need to be recruited than the lower quintile.

There are further recommendations that could ensure a school positive-recruitment rate. Face-to-face recruitment is advocated. While a positive recruitment rate was noted through the use of telephonic contact in this study, face-to-face recruitment may facilitate the challenges experienced in the participation and retention rates. Face-to-face contact may facilitate building a relationship with the schools, which is important during the early stages of the research process (Galea & Tracy, 2007; Hartge, 2006). It is essential that the researcher already builds a rapport with the school at the recruitment stage as this has implications for the future data-collection intervals (Galea & Tracy, 2007; Hartge, 2006). It is also recommended that classroom and participant numbers be obtained at the recruitment phase. The classroom numbers are important as they influence the sample size. As part of the recruitment strategy, it is also essential to negotiate data-collection dates at the initial meeting. The negotiations around data-collection dates may set realistic expectations for the schools as well as the researcher. At this time it is important to emphasise that data will be collected over a period of seven
months and at three different intervals. With the recommendations in place, school recruitment should remain favourable and feasible for future RCTs.

**Participation Rate**

The participation rate indicated that just over half of the participants took part in this study from pre-intervention to six months post-intervention (59.6%). The participation rate appeared to differ significantly between the control and intervention groups, while no marked differences were noted across quintiles without taking the control and intervention groups into account. The participation rate in the control group (76.82%) was almost double that of the intervention group (41.78%). A marked difference was observed across quintiles when comparing the lower- and higher quintiles within the control and intervention groups. The participation in the lower (68.85%) and higher quintile (85.59%) control groups was high while the participation rate was poor in the lower (35.71%) and higher quintile (48.67%) intervention groups. This meant that the participation rate in the lower and higher quintile control groups was almost double when compared to the quintiles in the intervention group. The higher quintile participation rate was also higher in the control and intervention groups compared to the lower quintile. This showed an unequal distribution of the number of participants in each group. The difference in participation between the control versus the intervention group was as a result of pure chance showing the benefit of randomisation principles. Factors such as absenteeism within the control and intervention group which resulted in a poor participation rate could not be controlled. This study acknowledges the benefit of the principles of randomisation to preclude bias in the study.

The difference in participation rates between and across quintiles could be attributed to the poor organisation and planning observed in the lower quintile compared to the higher quintile. These findings show that several participants were lost to follow up. The findings consequently affected this study and are evident when discussing the participation and retention rate because of participant dropout.

Poor participation has increasingly become a challenge in studies such as this and it is commonly threatening studies of this nature (Hartge, 2006). The big issue is that the poor participation rate can negatively affect the sample size and validity of this study. Consequently, the statistical power of this study is reduced. This is particularly concerning when considering a future RCT (Toerien et al., 2009).
As a result of large dropout rates in studies, it is recommended by Keyzer, et al. (2005) that data collection occurs at one time-interval only. However, this was not possible as this study was concerned with the process evaluations and evaluation of peer attitudes over time. The main reason attributed to poor participation in this study is its longitudinal nature. The longitudinal nature refers to data being collected over several time intervals including pre-intervention, one and six months post-intervention. The loss of participation in longitudinal studies is reportedly common (Galea & Tracy, 2007). In addition to the loss of participants, the process of data collection also contributed to the poor participation rate.

Additionally, the administrative challenges experienced in data collection affected the participation and retention rate. The process included factors such as organization, planning and scheduling, relationships, consistency of researchers, and motivation for participation of the schools and participants. These factors collectively affected the participation and retention rates but have been discussed separately below. The organization, early planning and scheduling relate to the participation rate. The relationships, consistency of researchers and the motivation for participation are discussed as part of the retention rate.

**Organisation**

Organisation, as discussed here, refers to the organisation of schools to facilitate data collection. The organisation is discussed overall and compared between the lower and higher quintiles. As mentioned, several challenges were experienced, which may have negatively affected the participation rate. One of the main challenges that arose was logistical difficulty; the core logistical challenge experienced throughout the research process was finding a suitable time for data collection. There were two reasons that committing to a time was complex: namely accommodating data collection in an already busy academic calendar and the fact that schools, later in the process, viewed repeated data collection as time-consuming.

The management within school systems refers to how a school would manage their participation in a study, e.g. how they would agree on the logistics and what the protocol to follow to arrange the logistics for data collection to occur. Differences in the organization and management systems were noted between lower and higher quintile clusters (schools), which may have influenced their participation rates. In the higher quintile schools it was evident that they were better resourced and had a predetermined schedule which
facilitated scheduling of data collection. By contrast, the lower quintile schools appeared to experience greater challenges in setting dates and times for data collection. This meant that there was no system in place to decide what the criterion for data collection would be while the higher quintile schools, being better organised and resourced, had stricter criteria in place. The criteria included firstly completing end-of-term examinations and tests before data collection could occur. The criteria also specified times and dates that data collection could occur according to the schools. The availability of the school and their predetermined academic schedule was therefore determined by the organisation and planning which was, in turn, dictated by the management systems in place. Mestry and Ndhlovu (2014) reported that the higher quintile schools have more physical and material resources than the lower quintile schools. This is true despite funding to the lower quintile being increased through government initiatives. The increased resources that are available through fund-raising and school fees have contributed to better-organised management systems and planning in the higher quintile.

The management systems also referred to the administration procedures on the day of the data collection. The lower quintiles appeared to experience more challenges, and researchers noted that the classrooms were often not ready for data collection. They also frequently forgot that data collection was going to occur on the agreed upon date and time. Added challenges were the large classrooms and large classes. It was more challenging to collect data from the lower quintile due to the overcrowding of classrooms and low-teacher-to-high-learner ratios (Chisholm, 2004; Penn et al., 2009). In some instances, it was noted that the teacher was absent with the result that researchers struggled to maintain the discipline of the class during the data collection process. Furthermore, it was noted that participants were expected to complete the SROM after strenuous learning activities that could have resulted in fatigue and may have contributed to the incorrectly completed questionnaires.

In addition to the organisation of data collection, the administration of the questionnaires ran smoother in the higher quintile because the higher quintile schools consisted of participants in smaller classrooms which were easier to manage. It was also easier to ensure that the participants in the higher quintile were quiet and well-behaved during data collection. Again, this refers back to the lack of overcrowding noted in higher quintile classrooms in comparison with the lower quintile (Chisholm, 2004; Penn et al., 2009).
To facilitate the anticipated challenges of overcrowding in classrooms and organization challenges, research assistants were used. The use of research assistants facilitated simultaneous data collection and, more importantly, more than one individual could be in the classroom collecting data. In this way, the researcher was able to adhere to the dates and times provided by the school. This was especially beneficial to this study as the dates and times of data collection at other schools often overlapped. Another advantage of using research assistants was that data collection could occur quickly. This is an important consideration for the feasibility of a RCT and because data collection could be done simultaneously at schools in future studies. However, two researchers were found to be insufficient in the lower quintile classrooms, especially in the absence of a teacher. As a result of these findings, it was ascertained that in future more than two researchers and assistants should be present during data collection.

Planning and scheduling

Organisational challenges lead the discussion into the area of early planning and scheduling. The early planning and scheduling of data collection proved challenging as it became increasingly difficult to arrange for follow-up data collection dates, especially at six months post-intervention compared to pre-intervention and one month post-intervention.

As mentioned, the process of scheduling and planning for data collection was influenced by the management systems and the academic calendar. Data could not be collected in the last term of the academic year, as stipulated by the Department of Education, which was acknowledged as a challenge. The academic calendar was compiled prior to recruiting schools to participate in this study and, for this reason, data collection occurred closer to the end of the school term. The schools reported that this was most suitable for them as it would not interfere with their academic programme. The advantage of data collection at the end of the term was that the schools were flexible with regard to time. The disadvantage, however, was that absentee rates would be high as several students do not attend the last few days of the school term. They are often absent because no academic work is completed over the last few days of the school term.

It is important to note that this situation was unchangeable. It is, however, recommended that in light of these findings, the researcher assumes responsibility through facilitating the process of data collection. The use of multimodal reminders, discussed as part of ‘relationships’ would be one way of
facilitating data collection. In addition, schools should additionally be contacted when they compile their academic calendar and as soon as ethical approval is obtained from the FHS HREC. By so doing, data collection may be scheduled into the academic calendar and data collection may occur at a time and date that is most suitable to the school as well as the researcher. It is hoped that this may reduce the incidence of absenteeism and that the schools may be accommodated to suit their needs.

Retention Rate

It was noted that the retention rate decreased steadily throughout this study, as mentioned in chapter 4 (see Table 4.2). The lowest retention rate was observed at the six months post-intervention in the control (55.93%), intervention (32.41%) and quintile groups. A poorer retention rate was noted in the intervention group compared to the control group. Similarly, in control and intervention retention rates at six months post-intervention, it was poorer in the lower quintile intervention group (25.15%) compared to the higher quintile intervention group (41.9%). For this reason, relationships, consistency of researcher, and the motivation for participation is discussed to account for the decrease in the retention rate.

Relationships

Schools were contacted by telephone throughout this study as it was the most convenient and cost-effective method. The schools were contacted telephonically when recruited and when arranging for data collection at pre-intervention, one and six months post-intervention. Telephonic contact may, however, have been viewed as impersonal, and face-to-face contact was therefore relevant in light of the time constraints experienced.

Galea and Tracy (2007) strongly recommend the use of direct interaction and face-to-face contact as it may improve data collection through facilitating building a relationship with the school, principals, teachers and participants. Building a rapport may have improved the willingness to continue to participate.

It may have been useful to meet with the school before one and six months post-intervention. The benefits of doing so would be as follows: the participants could be reminded of data collection, and the concerns and challenges of participating could also be explored. This way, participants would not forget data collection dates and times.

In addition to face-to-face contact, the use of multimodal reminders of the
upcoming data collection intervals is recommended. This should be completed before obtaining and confirming the specific times and dates, and should occur in addition to face-to-face contact. A timetable for data collection should also be used as part of the multimodal reminders to ensure schools are not surprised when requested to complete later stages of data collection.

It should also be taken into consideration that data collection is an added responsibility taken on by the school. The researcher should therefore be sensitive towards this and plan accordingly. This may facilitate a higher retention rate necessary in a RCT. This is supported by Keyzer et al. (2005) who reported that this is one method of minimising participant dropouts. It is therefore recommended that in future such a meeting is held with both the teachers and principals where possible, and that several reminders should be provided using a variety of the schools preferred communication (e.g. emails, letters, and phone calls).

**Consistency of researcher**

While the importance of direct interaction and face-to-face contact has previously been discussed, consistency of the researcher is further recommended. As this was a group project, the responsibility for data collection was shared between researchers and research assistants. As a result, different researchers attended schools across time intervals. However, all researchers participating in the study were of the view that a single researcher/assistant should consistently communicate with schools and make face-to-face arrangements for all data collection visits. Future studies should use one or two consistent researchers per school. The use of more than two researchers per school could be beneficial to ensure smooth data collection. It is also important to note that the use of several researchers and assistants is also supported by the need for multiple researchers in a future RCT because it is not a simple one-sided study.

**Motivation**

A higher retention rate was observed at pre-intervention and one month post-intervention. This could be accounted for by the fact that data was collected within a short time-frame. The schools were still motivated to participate at pre-intervention and one month post-intervention. A longer time-frame lapsed between one and six months post-intervention. This time lapse has negatively affected the retention rate.
School motivation

As reported, schools often delayed committing to a suitable time for data collection at the six month data collection interval, even though this information was conveyed to them at the start of this study. Schools became increasingly wary at six months post-intervention when compared to one month post-intervention. The wariness stemmed from no longer viewing their participation as beneficial; in other words, the schools no longer viewed the importance of the research or that it had little direct benefit to them. It appeared that this study was viewed to have little direct benefit based on the hesitancy to participate at each interval and the lack of motivation to agree to data collection dates. Schools felt that they had already provided this study with a substantial amount of time. The inability to understand the personal value of the study is reportedly a common determinant of non-participation (Galea & Tracy, 2007; Lundberg et al., 2005). The personal value and self-perceived contribution in studies by participants is especially affected in longitudinal studies (Galea & Tracy, 2007). It is reported that the more participants take part in a study, during several time intervals, the less they view their contribution as valuable. Consequently, less effort is used when completing questionnaires. This may have contributed to the poor participation and retention rate as well as the frequency of incorrectly completed questionnaires. As this element threatens the feasibility of future studies it is imperative that changes are considered.

The second reason that data collection times were difficult to commit to, was the opinion the schools held towards the data collection process itself. Several schools stated that they viewed the research as time-consuming. They reported that it was particularly time consuming at six months post-intervention, which may be due to the fact that data collection occurred close to the schools' exam time. As a result, schools were reluctant to commit to data collection times.

Participant motivation

A limitation to this study was that there was no means of quantifying whether participants viewed their contribution as useful. It may therefore be beneficial to study personal value in future studies. The personal value should be explored from the teachers and participants. The study of the personal value of participating has the potential to account for means of facilitating an improved retention rate.
The motivation of the participants was, however, not explored, which could have been vital in informing the participation and retention rates. The SROM required participants to self-complete the questionnaire. This study therefore relied heavily on the willingness to participate and on the readiness to volunteer and take part in this study. To account for this, participants were required to re-sign an assent form at pre-intervention, one and six months post-intervention. The assent form informed participants that they had the right to refuse to take part. No participants openly refused but the effects thereof (of the lack of motivation) may have presented in incorrectly completed questionnaires. This is not uncommon as non-participation often occurs when sensitive topics or questions are explored as in this study (Lundberg et al., 2005). This is of particular importance in this population as the participants in Grade 7 are still developing emotionally and may not yet be comfortable answering questions of such a sensitive nature.

The analysis of reasons for the loss of participants also accounted for the poor participation and retention rates. The analysis showed that poorly completed questionnaires, absenteeism, consent and assent were factors responsible for the dropout of participants.

At pre-intervention, a larger number of participants were excluded due to poorly completed questionnaires (11.57%) compared to consent, assent and absenteeism (7.85%). This could be attributed to the participants being unfamiliar with the questionnaire and how to complete a questionnaire. Participants may have found the Likert-scale challenging to complete. On the other hand, participants may also have been more motivated at pre-intervention.

Higher incidences of assent, consent and absenteeism problems were observed when compared to poorly completed questionnaires at one and six months post-intervention (See Figure 4.4). This could be due to data being collected at the end of the term. It is therefore emphasized that there should be visual and multimodal reminders for the parents as well as the schools. Furthermore, participants were more familiar with how to complete the SROM at one and six months post-intervention and, therefore, questionnaires were completed more accurately.

Poorly completed questionnaires and administrative errors were also explored. These two factors negatively contributed to the retention rate. The loss of questionnaires by research assistants meant a loss of data. The loss of data consequently resulted in the exclusion of participants. The loss of the
participants in turn affected the participation and retention rate.

More preventative measures should, therefore, be put into place in future studies. While there were specific instructions to complete, administer and score the SROM, the instructions can be detailed further. Increased, preventative measures may reduce any errors or loss of data. The specific preventative measures used should also be consistently documented throughout the study. All SROMs should be scanned, copied and scored electronically immediately which may reduce the loss of data. One researcher or research assistant should be assigned as the research co-ordinator. The co-ordinator could ensure that tasks are entirely completed at pre-intervention, one and six months post-intervention before being cross-checked. This may improve the accuracy of data-collection and scoring.

**Participants’ Questionnaire completion Trends**

The frequency of poorly completed questionnaires was higher at pre-intervention (11.57%) compared to one (4.54%) and six months (9.09%) post-intervention (see Figure 4.4). The unfamiliarity of the SROM and the use of a Likert-scale may have influenced the incidence of poorly completed questionnaires, particularly at pre-intervention. The analysis of the SROM completion and trends was essential due to the self-completed nature of the questionnaire (Lancaster et al, 2002). The analysis of the questionnaire completion trends allowed for the evaluation of coherence, understanding, presentation, definition and appropriateness of items (Lancaster et al, 2002). The findings of this study indicate that specific items require further analysis, for example the negatively worded items. The findings regarding questionnaire completion trends contributed to informing the process evaluations for a future RCT as noted in the recommendations of this study.

Questionnaire completion trends showed incorrectly answered items in each construct and thus errors were not entirely construct-specific. The SROM questionnaires were more frequently incorrectly answered in the lower quintile group compared to the higher quintile group (See Figure 4.5). SROM items were more frequently duplicated than omitted in the lower quintile. The comprehension of negatively worded items and how to use a Likert-scale were improved in the higher quintile.

The participants all came from classrooms with varied backgrounds, cultures and most importantly, languages. SA classrooms, therefore, present with poor and varied literacy and linguistic competencies (Kathard & Pillay, 2007; Navsaria, 2010; Navsaria, Pascoe & Kathard, 2011). Literacy difficulties are a
common problem in the Cape Metro urban area. It is particularly a concern in the lower quintile. Incorrectly completed questionnaires could be attributed to difficulties with literacy, particularly in the lower quintile compared to the higher quintile. The higher quintile completed the SROM in their more proficient language. Several participants in the higher quintile are first-language English-speaking, which is also their LoLT, while other participants in this quintile do not speak English as their first language but have better English literacy proficiency than those in the lower quintile. Participants in the lower quintile were typically not completing the questionnaire in their first language. Studies have indicated that schools in the lower quintile typically learn English as an additional language. It is also known that the majority of learners in the lower quintile schools struggle with literacy proficiency in English (Engelbrecht, Oswald & Forlin, 2006; Kathard & Pillay, 2007; Navsaria, 2010; Navsaria, Pascoe & Kathard, 2011). This factor could influence their understanding of questionnaire and result in completion difficulties, even though the questionnaire was simplified in earlier studies to address these concerns. Literacy and linguistic difficulties could include difficulty with more abstract SROM items.

The extent of which one agrees or disagrees with a statement is also more of an abstract concept which may be challenging for any grade 7 learner. It may be particularly challenging for those who are experiencing linguistic and literacy challenges and would be of particular importance for those in the lower quintile completed the questionnaire in English. While English is the LoLT, it was not the first, or even second language, of participants from the lower quintile group (Engelbrecht, Oswald & Forlin, 2006; Kathard & Pillay, 2007; Navsaria, 2010; Navsaria, Pascoe & Kathard, 2011).

These problems occurred even in the light of the researcher taking the literacy challenges into consideration before commencing this study. It was taken into account by the researcher reading each question aloud and explaining the content to the learners. In addition, there were practice items on how to complete the Likert scale. The participants were provided with sufficient time to complete each item before moving on to the next. Participants were also encouraged to check their answers before handing the questionnaire in. It was, however, observed that few to none of the participants rechecked their questionnaires.

While the aforementioned precautions were already taken in this study, the following recommendations are made for further studies. These include:
• Tangible or concrete practice items being added to the SROM. The tangible or more substantial items should be added in addition to the four existing practice items. The concrete or tangible items refer to less abstract items and items that are obvious, e.g. the sky is blue. The use of tangible practice items may allow for a more reliable way of evaluating and coordinating the understanding of how to complete items. This may especially reduce the frequency of incorrectly completed questionnaires at the pre-intervention interval.

• Abstract questionnaire items should also be re-examined, as they may appear ambiguous to participants. This is evident in the question ‘children who stutter are like normal children’. This item is particularly confusing as selecting ‘disagree’ or ‘strongly disagree’ indicates a negative attitude. However, CWS are different as their communication abilities differ from their non-stuttering peers.

Furthermore a lack of stationery was noted within the lower quintile schools. The lack of stationery could also account for the number of duplicated or omitted items. Several participants had only pens and could therefore not erase the duplicated answer. Other participants quickly borrowed a pen from a peer while they were both completing the questionnaire. Upon noting this, the researcher attempted to provide the participants with stationery.

Recommendations consequently arise from this study's findings: questionnaire completion ‘rules’ should also be stated in greater depth in future. Rules should include; completing all items by circling items only; providing only one answer per item; not omitting items; specifying stationery to be used; rechecking answers; and, not reading ahead to complete the items independently. This is of particular importance as the participants were informed that there is no right or wrong answer but it was not explicitly stated that items should not be omitted or duplicated. It is also recommended that the researcher provides sufficient stationery. This may guarantee a smoother process of questionnaire completion within the lower quintile group. Questionnaires should be checked on collection to confirm that all are correctly answered before scoring.

5.3. Aim 2 Treatment Effect

Pre-intervention

A relatively positive pre-intervention attitude score on the SROM was noted as reflected in the mean score (see Table 4.3). The control group (71.48) was slightly less positive than the intervention group (73.02). Similarly, the lower
quintile in the control (68) and intervention (68) groups was less positive than the higher quintile control (75) and intervention (77) groups. This was observed when the researcher and participants interacted. The relatively positive pre-intervention attitudes could be attributed to the school curriculum. The school curriculum may have briefly discussed teasing and bullying as part of the Life Orientation syllabus. As mentioned in the literature review, diversity and tolerance may have been targeted as part of the classroom curriculum due to the divided past. Teasing and bullying could also have been discussed as part of another school initiative, as schools now also identify the need for teasing and bullying intervention (Murphy et al., 2007). In light of the potential teasing and bullying education done at schools as part of their syllabus, it is seen as a strength that this study randomised the sample. Randomisation may have reduced the selection bias and ensured a balanced sample regarding other, unknown, teasing and bullying intervention done at schools, formally or informally (Lindegger, 2006).

**One month post-intervention**

A higher mean score was noted in the intervention group (75) when compared to the control group (72.49). A higher mean score was also noted in the higher quintile when compared to the lower quintile, within the control and intervention groups (See Table 4.4). Despite the intervention group (73.02) presenting with a higher mean score than the control group (71.48) at pre-intervention, the mean difference (i.e. the increase in the mean score) in the intervention group (75) was still larger than the difference in the control group (72.49) at one month post-intervention. Additionally, the mean difference was higher in the intervention group than in the control group, which mean score demonstrated a more positive change in direction and magnitude of the treatment effect. It can be inferred that this was as a result of the CCR intervention. The control group mean score increased marginally. The magnitude and direction of the treatment effect was therefore minimal in the control group and small in the intervention group. This result indicated a positive shift in attitudes, i.e. the attitudes were more positive at one month post-intervention which could be attributed to the CCR intervention. The standard deviation of the intervention group was smaller at one month post-intervention indicating less variation in attitudes, i.e. attitudes did not differ as much at one month post-intervention when compared to pre-test. The standard deviation in the control group remained larger in the control than the intervention group. It was furthermore larger at one month post-intervention (13.31) than at pre-test (12.94).
Although a positive shift in direction of scores i.e. the scores at one month post-intervention were more positive than at pre-intervention, the magnitude of change was minimal. This minimal change may have been affected by the short time-lapse between pre-intervention and one month post-intervention. Langevin and Prasad (2012) observed a statistically significant change in attitudes over a three to four week period. However, the significant shift in attitudes noted in their study could be attributed to the more intensive exposure to the TAB intervention. The TAB was administered over a period of six intervals. The TAB intervention was, therefore, more intensive than the CCR intervention used in this study as the CCR intervention is a single-dose intervention.

According to the National Disability Authority (2006), one month post-intervention is too short to observe a statistically significant change in attitude. Attitudes, therefore, require an extended time to change. However, the result at one month post-intervention illustrates clearly that a change in attitude had begun in the intervention group. The direction of the shift in treatment effect was thus in a more positive direction while the magnitude was minimal.

**Six months post-intervention**

Similarly to the one month post-intervention interval, a greater positive shift of mean scores on the SROM was noted in the intervention group (77.91) when compared to the control (72.66). See Table 4.5. Therefore, the mean scores at six months post-intervention were higher in the intervention group than in the control group. The six-month post-intervention scores compared to pre-intervention showed markedly different mean scores between the control and intervention groups. This means that a higher mean change was observed from pre-intervention to six months post-intervention in the intervention group but not in the control group. This result allows this study to infer that, based on these observations, the treatment effect improved only in the intervention group and not in the control group.

The mean scores from one month to six months post-intervention showed a gradual increase in mean scores in the intervention and control group (see Table 4.4 and Table 4.5). The higher mean change in the intervention group at six months post-intervention showed positive results in the scores of peer attitudes following the administration of the CCR intervention. While the direction and magnitude of the mean scores did not improve in the control group, it was observed that mean scores worsened more frequently in the control group in both quintiles when compared to the intervention group. The
change in the intervention group mean scores is because of the CCR intervention and thus attitudes towards CWS appear improved. The change in the mean scores in the intervention group is not as a result of the practice effect. If the change was attributed to the practice effect of completing the SROM, then the control group would have also improved, which they did not.

For the lower and higher quintiles, the intervention groups obtained higher scores at one and six months post-intervention compared to the control group. However, the following differences were noted between and across quintiles. The lower quintile was again less positive in the control and intervention groups. As mentioned, this could be attributed to this quintile starting with lower attitudes at pre-intervention. The lower and higher quintile in the intervention group showed a positive shift in the treatment effect, unlike the participants in the lower and higher quintile control groups. These results also suggest that the change in the magnitude and direction of scores could be attributed to the CCR intervention.

To reiterate, the change in scores were markedly different between control and intervention groups (see Figure 4.6). The mean difference between control and intervention groups showed a significantly larger change in treatment effect in the intervention group. A higher mean change in the intervention group showed positive results regarding treatment effect. As a result it was noted that the magnitude and shift in attitudes was largest in the intervention group only. The higher quintile also showed a larger mean score in comparison to the lower quintile in the intervention group. This means that the magnitude and shift in treatment effect was more positive and larger in the higher quintile intervention group than in the lower quintile intervention group. A positive shift was however also observed in the lower quintile intervention group. This is similar to the one month post-intervention finding; however, the six month post-intervention shift in treatment effect was more positive and bigger at six months post-intervention.

T-tests and ANOVA showed that the scores in peer attitudes shifted in the intervention groups only and not within the control group. This means that a statistically important result was observed in the intervention group when compared to the control group. The p-value in the control group did not yield noteworthy results. This result suggests that the treatment effect noted a more positive shift and magnitude of change in the intervention group only. Based on the p-values, no important results were noted when analysing the quintiles as a whole.
In summary, the results point to the CCR intervention improving the treatment effect. This was determined using mean scores, standard deviation, t-tests and ANOVA. These results showed that the treatment effect was approaching significance in the intervention groups only. Statistical significance was, however, not claimed due to the small sample size. The interpretation must be cautious due to the challenges reported in the participation and retention rates, especially because the analysis is based on a smaller sample. Therefore, these findings are encouraging but do not make conclusive statements about the treatment benefit. Despite the small sample size, the results suggest potential treatment benefit because of the design elements used in this study. These elements include the use of randomisation of cluster sampling. This meant that the sampling attempted to achieve group equivalence. The use of a control versus an intervention group also suggests potential treatment benefit. The use of control versus intervention groups clearly illustrates that the change in the intervention group, but not in the control group, is attributed to the CCR intervention.

Even though there were concerns that the lower quintile consistently obtained lower scores than the higher quintile, the comparison with the control group was important because the intervention and control groups could be compared. It was found that the lower quintile did show an improvement in the mean scores in the intervention group but not in the control group. The lower quintile did, however, show a smaller magnitude and shift in treatment effect in the intervention group than the higher quintile. The lower quintile was at the same disadvantage with language and literacy despite the intervention group scores being more positive than the control group.

A greater magnitude and shift in treatment effect at six months post-intervention could be attributed to attitude being a dimension of change. It is reported that attitude is not a once-off occurrence. Instead, is an on-going process that requires time (Krahe & Altwasser, 2006). The change in attitude may have occurred more at six months post-intervention as participants may have had more time to internalise their learning.

While the translation of the improved attitudes into behaviour change is challenging to explore, measure, or quantify, it is known that behaviour depends on attitude (Hardeman et al., 2002). Therefore the improved attitude over time, allows for the improved study of factors facilitating the attitude, the intention, being the precursor to behaviour change (Hardeman et al., 2002). The longer-term benefits of CCR intervention should therefore be further
explored in future studies.

The CCR intervention thus contributes to the evidence base for a SA classroom resource due to a positive shift in the scores of attitudes. The CCR intervention further facilitates holistic management of a CWS as specified by the ICF framework. This is targeted through addressing negative peer attitudes in the child’s school environment (Yaruss, 2007). Peer attitudes are expressly central in the school-aged population where peers perceive CWS as ‘different’ and can influence peer attitudes (Blood & Blood, 2004; Blood et al., 2010; Carter & Spencer, 2006; Langevin et al., 2009).

In summary, the trends in treatment effect suggest that there is potential treatment benefit and this study therefore points to the feasibility of the RCT. The change in attitudes at one and six months post-intervention could be positively attributed to the CCR intervention. This supports the use of classroom-based interventions in improving attitudes in order to reduce internationally reported teasing and bullying (Carney & Merrel, 2001; Langevin, 2009). Education of peers of CWS was seen to be an effective method of intervention in an environment where negative attitudes and interactions, and teasing and bullying, are prevalent which is supported by Murphy et al. (2007).

5.4. Ancillary Analyses: Subgroup Analysis and Cluster Effect

School clusters were analysed. The schools consisted of classes and were considered as the components making up the clusters in this study. Cluster intervention occurred at a group level. In doing so, all children in a classroom were collectively targeted. This meant that all participants received the intervention at the same time instead of individualised intervention. This aimed to determine mass effectiveness (Osrin et al., 2008), however, it is important to note that a larger sample size was anticipated to account for the cluster effect and to estimate the required sample size for a cluster RCT.

Pre-intervention

The Kruskal-Wallis Test p-values and average mean scores of schools within each quintile showed that the clusters behaved similarly (see Figure 4.8 and Figure 4.9). The lower quintile scores were, however, lower, that is, more negative, than the higher quintile schools. The lower and higher quintile schools presented with similar baseline scores in the control and intervention groups. This was achieved through attempting group equivalence through cluster sampling.
**One month post-intervention**

The mean scores in the lower quintile increased gradually while the intervention group showed a higher mean change attributed to the use of the CCR intervention. The clusters behaved slightly differently in the higher quintile group as Intervention School 3 behaved similarly while School 2 had not shown as much improvement. Similar results were noted in the higher quintile Schools 1 and 2, which behaved similarly while School 3 had improved slightly despite not receiving intervention. The higher quintile differences were, however, minimal and thus, despite slight changes, the schools still behaved overall as clusters. In summary, this shows that the clusters behaved similarly but differences with the quintiles did not prove to be statistically different. The cluster effect between quintiles should, however, not be dismissed simply because it was not statistically significant, as more research can be done to explore the minimal differences. Further study in the area may additionally assist in informing the required sample size. It may be useful to stratify the sample into quintiles in future studies because of the minimal differences noted. Limited conclusions can be drawn regarding quintile clusters. Again, these findings prove that the cluster intervention and analysis is feasible at one month post-intervention.

**Six months post-intervention**

At six months post-intervention, the lower quintile clusters behaved differently to one another as one cluster was the control group and the other was the intervention group. The intervention group, therefore, only received the CCR intervention and not the control group. The control groups and intervention groups within the higher quintile cluster behaved similarly to one another. No further significant differences were noted between these schools, which suggests that the clusters behaved similarly within the higher quintile group only. The use of cluster intervention is therefore feasible. The reasons are twofold: firstly, it allows for several participant attitudes to be targeted at one time; and, secondly, it shows that clusters behave similarly. As a result it is possible to target the entire cluster using the same CCR intervention in a uniform way.

In summary, the cluster effect analyses at pre-intervention, one and six months post-intervention showed no significant interactions between the intervention and control groups as indicated by the Kruskal-Wallis Test (See Figure 4.8 and Figure 4.9). In the lower and higher quintiles, significant interactions were not observed, which means that no marked differences in
the behaviour of higher quintile control clusters in comparison with lower quintile control clusters and within the intervention groups across quintiles were noted. This indicated that the group effect was constant and that clusters did not behave significantly differently when comparing control clusters. The implications are thus that cluster analysis is necessary in a RCT as further analysis is required. However, it is important to note that control versus intervention group clusters did behave differently as a result of the CCR intervention being administered to the intervention clusters only. While it was consistently seen that the clusters behaved similarly in quintiles at pre-intervention, one and six months post-intervention - despite participant dropout - this study cannot adequately estimate the required sample size from these findings. All that can be said at this point is that clusters behaved similarly.

Power analysis and sample size may further facilitate the feasibility of RCTs. The cluster effect will require further exploration in a future study as an inadequate sample size may hinder the validity of a RCT. The cluster analysis and calculation of the sample should consider whether a larger sample size is required or if the sample can draw conclusions that are valid and reliable. Further study is therefore stressed and needed to determine an exact desired sample size. These are recommended as part of immediate studies only, due to the attrition of participants over time.

Harms

No intended or unintended harms were observed throughout this study. While worsened attitudes were observed, the frequency remained low as it did not reflect on a cluster (school) level. The implication was that no group showed negative attitudes even though a few individual participants showed negative attitudes. The individual, participant analysis was, however, not done as the CCR intervention was administered and studied at a cluster level. The teachers from both the control and intervention groups were provided with strategies to adequately address questions that may arise and to reinforce positive attitudes. Furthermore, the control group was provided with the CCR intervention once data collection was completed so that the control group participants could also benefit from the CCR intervention. This was done in order to uphold the ethics principles of distributive justice and beneficence.

5.5. Conclusion

This study showed that the recruitment of participants at a cluster level at school is feasible. It was observed that the time-efficient nature of the SROM, pathway of recruitment, and the willingness to participate, were factors which
positively contributed to the recruitment rate. It was seen that the role and use of school recruitment strengthened the design of this study. When considering recruitment between quintiles, the classroom numbers were taken into account as the number of learners per school differed according to quintile.

This study also observed a decrease in participant numbers over time. The participation rate showed that less than half of the participants took part in this study from pre-intervention to six months post-intervention. Interestingly, the participation rate in the control group was almost double that of the intervention group. No differences were noted between quintiles.

The factors affecting the participation and retention rate included the following: organization, planning and scheduling, relationships, consistency of researchers and the motivation for participation. Organization, early planning and scheduling were most suitable when discussing the participation rate. The SA classroom context additionally affected the participation rate. This was apparent when comparing the lower to higher quintile.

The consistency of researchers and the motivation for participation were explored as part of the retention rate. The retention rate showed that the number of participants decreased steadily. The lowest retention rate was noted at six months post-intervention. The retention rate was poorer in the intervention group than in the in the control group. A poorer retention rate was also observed in the lower quintile when compared to the higher quintile. Poorly completed questionnaires, absenteeism, consent and assent were shown to contribute to the poor participation and retention rate.

Questionnaire completion trends showed that there were incorrectly answered questions in each construct. There appeared to be more incorrectly completed questionnaires in the lower quintile than in the higher quintile. It is for this reason that the SA linguistically diverse classroom profile was taken into account.

Observation of the treatment effect at pre-intervention showed relatively positive attitudes. The treatment effect trends at one month post-intervention showed small changes in the magnitude and direction of attitude in the intervention group only. It was felt that the participants had only been given a short time to internalize their learning. Further analysis at six months post-intervention showed a more significant change in the magnitude and direction of the treatment effect in the intervention group only. The higher quintile showed a higher mean score at pre-intervention, and at one and six months post-intervention when compared to the lower quintile. It was felt that a greater
shift in treatment effect at six months post-intervention was noted, as participants had time to begin to internalize their learning. This is important as attitude is a dimension of change which requires time. The use of the CCR intervention therefore facilitated an improvement in the observed shifts in the rating of peer attitudes towards CWS in the intervention groups. The CCR intervention was, therefore, found to improve attitudes at one and six months post-intervention. This study shows that grade 7s across gender and the economic spectrum in the WC Metro urban area may benefit from this intervention.

Furthermore, the cluster analysis showed that the schools behaved as clusters. These clusters behaved similarly at pre-intervention, one and six months post-intervention, except when comparing the control and intervention groups because of the CCR intervention. The schools behaved similarly when compared to other schools within the same quintile.

In conclusion, the findings of this study have collectively suggested that a RCT is feasible. It is found that even with a smaller sample size, due to participant dropout affecting the participation and retention rates, a future RCT is feasible as the CCR intervention has resulted in a potential positive magnitude and direction of treatment effect. The implications and recommendations are vital in informing the requirements needed to ensure a stringent and valid future RCT.

5.6. Strengths and Limitations

Strengths of this study include that the findings are valuable. The findings have achieved the aims as this study is able to comment descriptively on the feasibility of a RCT. The methodological design is further considered to be a strength as the relevant stipulated design factors have been explored and included. This study is robust and representative of the WC Metro urban area; this was possible because a diverse sample was included from the low and high quintiles to best reflect the diverse population present in this environment.

Several limitations were, however, noted in response to the challenges faced in this study. The limitations have been highlighted in order to make recommendations that may further explore the feasibility of a RCT. A limitation of this study includes barriers, such as poor consent and assent rates, as well as absenteeism. While these barriers were identified, the support required to overcome them requires further examination. An additional limitation of this study is that the teacher variable was not studied. It is unclear if the teachers will accept and use the intervention in future if provided with the CCR. The
study is not clear whether or not teachers view the CCR intervention as valuable, nor does it consider when teachers will use the CCR intervention. This is of particular concern as time constraints were highlighted as a challenge faced by teachers. Additionally, there is limited information which comments on participant views on the CCR intervention, and this may further allow insight into the participation rate.

Methodological limitations include the administrative errors, which was not anticipated, that negatively contributed to the poor participation and retention rate. This should be improved in future studies and research assistants should receive in-depth training to ensure that these errors are avoided. Furthermore, the sensitivity analysis is an additional methodological limitation and should also be included in future studies.

5.7. Implications for Further Research

This study further highlights the limitations and challenges faced when collecting data over several time intervals. It is strongly recommended that precautions are taken to improve the process evaluations, including participation and retention rates, in order to study the observed treatment effects in a larger sample size.

The implication of the recruitment, participation and retention rate showed that several factors should be taken into account in order to improve facilitate the feasibility of a future RCT. The researcher should put strategies in place in future studies to reduce the dropout rate. Particular difficulty was experienced during the arrangement of follow-up data collection at the one month - and more so at the six months - post-intervention which is commonly reported in longitudinal studies. The process evaluation findings and implications were invaluable. Other regions in SA should also be explored.

Adaptations are, however, required before a large-scale study can be conducted. Questionnaire completion trends showed that several questions were more often duplicated and omitted in the lower quintile group than in the higher quintile group. This could further illustrate a poor understanding of how to correctly complete the questionnaire, despite instructions from the researcher during administration; thus showing that incorrectly completed questionnaires contributed largely to a poorer retention rate. Necessary changes to the SROM would include more practice items as well more stringent questionnaire completion guidelines.

The clinical implications show positive results as the study of attitudes over
time post CCR intervention support the use of education and classroom-based interventions. The clinical implications suggest that the use of the CCR intervention may facilitate a positive shift in the magnitude and direction of scores of attitudes towards CWS. This may further facilitate the holistic management of stuttering by SLTs. Interventions with attitude are important and the change in attitudes may be effectively improved by teachers. The teachers may, therefore, form part of the holistic SLT management. It may also provide an aspect of therapy that a CWS requires, but cannot always receive due to limited numbers of SLTs and finances. The clinical implications also strongly show that peers of CWS are an important target group and may benefit greatly from the CCR intervention.

5.8. Recommendations

Recommendations have been made throughout this study as several challenges were experienced. These challenges may be facilitated through the implementation of recommendations. The recommendations here are most vital and are emphasised to improve the validity and reliability of conducting future RCTs in this area. A RCT is therefore recommended with further development of the process. The following should be done:

- A consistent researcher should build a rapport with each school.
- More schools within the higher quintile group should be recruited to supplement for the smaller classroom numbers.
- The refusal rate and success or failure rate, as well as the compliance rate and the eligibility criteria, as stated by Thabane et al. (2010) should be explored.
- Teacher-perceived organization challenges and their recommendations with regard to the implementation or the utilisation of the CCR intervention should be studied. This could go as far as to include the acceptance, view, use and adaptations of the CCR intervention in light of the time constraints and economic barriers teachers are faced with. Economic barriers could include challenges such as photocopying the role-play for several students, particularly in the lower quintile group.
- The study of the participants’ views on both the SROM and CCR intervention could additionally be explored and viewed in conjunction with the teachers’ views.
• Furthermore, resources or adaptations of the SROM should be considered. It may also be useful to explore the understanding of the questionnaire by second-language English speakers whose LoLT is English.

• Clinical significance should further be discussed and explored in future as this is a relevant issue in the feasibility of RCTs and the use of classroom-based interventions. It may be useful as a future study on its own.

• A social psychology perspective may also be useful once a RCT has been conducted in order to comment and take into account the effectiveness of classroom interventions regarding other speech problems and factors such as multi-culturalism and multi-lingualism.

In light of these recommendations, it is clear that there is vast room for future research. It is felt that with future research and the implementation of the recommendations, a RCT is feasible.
References


Unpublished Undergraduate Thesis. South Africa: University of Cape Town


Appendices

Appendix A: The Classroom Communication Resource (CCR) intervention

What causes stuttering?

Stuttering can be influenced by genetics and often run in families. Stuttering is the result of interaction between physical composition and the environment. A child will not begin to stutter by copying someone that stutters.

It usually begins in the time that children develop most of their language (age 2 – 5 years). In most cases more boys are affected than girls. Stuttering can often become more severe if the child is excited or nervous.

What does stuttering sound like?

Stuttering can present in different ways. Not all of these behaviours need to be present for a child to be diagnoses with stuttering.

- Repeating whole words: “The the the”
- Repeating parts of words: “mo- mo- mommy”
- Prolonging sounds: “nnnnno”
- Silent blocks: getting stuck on a word or not getting the word out

What can I do as a teacher?

As a teacher there are guidelines you can follow when interacting with the child. Some of the following behaviours are often observed.

- Avoid reacting to the child’s stuttering in a negative way, e.g. “Stop stuttering” or “Try and say that properly”.
- Try not to give advice about how not to stutter, e.g. “First think about what you want to say before you speak.” Or “Take a breath before you start again.”
- Limit any negative body language when the child stutters, e.g. frowning or looking away.
- Try not to ignore the child’s difficulty, e.g. pretending that it is not happening when he expressed difficulty.

Suggestions:

- Listen to the child and give them enough time to communicate their ideas.
- Be patient and reflect an attitude of acceptance for their difficulties.
- Try not to draw attention to how the child speaks as we want them to feel that it is easy to speak.
- Children become more anxious if they pick up on negative body language. Try to patiently look at leaner as they are communicating with you.
- If the child expresses concern about their difficulty it’s best to communicate acceptance

Guidelines to Teacher on how to use the CCR intervention

Please do not do any other activities once we have left the room to educate the learners about stuttering, diversity or difference because we won’t know if it was our resource or your other activity which changed the children’s attitudes.

If the learners ask questions once we are gone, it would be best if you give as brief an answer as possible and get them to write the question down. When we come back next week we can follow that question through with the learners.

Three years ago a Classroom Communication Resource (or the CCR intervention) was developed by some UCT students for the South African context. It was designed to change attitudes of children towards other learners who stutter and to be more tolerant of communication diversity. We are currently doing a study to see how effective this Resource is in the hope that it will be widely distributed and beneficial to many teachers and learners.

We would like you to familiarize yourself with the resource before our next visit, just to read through it. Because this is a study we would appreciate it if you could administer the resource as it is and not make any changes. However, when you use it again in the future you are more than welcome to adapt it and change as you see fit.

There are three parts to the resource. The first is a social story. For this part, you must have the learners seated and read the story out loud to them. Allow children to do role play and others to watch.

The instructions for the last part, which is a brainstorming session and a discussion, are clearly outlined in the resource. It would be best for our results if you could stick as closely possible to these guidelines. If the discussion happens to go off track, you should try to bring it back to the outline.

Please only do the resource when we are here to observe. After that we will be doing the questionnaire again.
Social Story: The Band of Difference

“Attention School: a talent competition will be held next Friday,” announced Mrs Smart, the school principal. “Anybody is welcome to perform, so all interested learners please sign up soon.” This was the announcement that led to the success of the Band of Differents.

What is this Band of Differents, you ask? Well, let us meet the band: Thabo plays the tambourine, Lilly plays bass guitar. Rajesh plays the lead guitar. Little Thandi controls the drums and Marsha rocks the keyboard.

Thabo, also known as “Tubs”, leads the band. He founded the group a year or two ago while on a school outing. It was the yearly hike and two hours into the hike, this particular group of people found themselves in a bit of a pickle… They were lost on the mountain. Bored, concerned and hungry, music-making became their comfort and joy. That unexpected day on the mountain changed the course of their lives. From that day on, music was the force that drew them together. Ever since then, they meet at Thabo’s house for band practice every weekend.

Tubs is the out-going and charming band-leader, who loves to snack on junk food and show off his afro hairstyle. This does not help his chubby figure, but this certainly helps him jiggle along to the ting of the tambourine.

Lilly is the quiet, shy character that comes from a wealthy family. She is always dressed in the most fashionable clothes on ‘casual’ days at school. Lilly's passion is playing the guitar but her parents do not support her in this because they want her to focus only on her school work. When Lilly is with the band, she feels she can be herself.

On the outside, Little Thandi appears to be skinny, small and seems insignificant to others. But when given half the chance, her feisty, no-nonsense attitude shines through. This determination makes her the best player on the netball court.

Rajesh is the “genius” child with shaggy dark hair. He is a bit of a day-dreamer because school does not interest him. He prefers to spend his days playing chess and watching documentaries on ‘National Geographic’.

Marsha is the ‘mommy’ of the group. She is the mediator and has a knack for resolving arguments within the group. She loves singing, but she cannot keep a tune. She tends to break into song at any time during practise, disrupting the band’s flow. But no one else can play the keyboard like Marsha can. However, something is missing in the band.
After hearing the school announcement that afternoon, everybody rushed out of class talking about the upcoming event. Even though the band was very excited about the concert, they were in a bit of a dilemma. The band was still incomplete so they couldn’t enter the concert yet.

They had previously held auditions to fill this missing gap but nobody had that special something to add to their unique sound.

While walking home from school they heard a funky melody.

“Where is it coming from?” someone shouted. “It’s coming from the trees,” answered Rajesh.

“Look, it’s Peter, the one who talks funny.”

Peter was the quiet student in the class, who always got on with his work and got good marks. Most of the time he chose to keep to himself.

That afternoon, Peter decided to climb up his favourite tree, the one with the view of the sea in the distance. Peter would sit in this tree and daydream and sing all day long. It was a place where he could forget all his troubles.

“Wow, Peter, that’s an awesome sound you got there. Come down”, said Tubs.

He unwillingly climbed down from the tree and stood uncomfortably in front of the group.

“We didn’t know that you could sing so well…” said Lilly. “Why didn’t you try out for our band?”

“Well guys, it’s obvious - it’s because he talks llllikethththis – he is a stutterer,” said Thandi.

“Jjjjjusttt because I stutter doesn’t mean I have no other talents”, replied Peter while he began to walk away.

Then Marsha piped up: “Hold on guys, my brother also stutters but that hasn’t stopped him from being good at sport and having lots of friends – it’s not a big deal. He doesn’t allow his stutter to stop him from doing what he wants to do.”

“Yes, that’s true. He even helped me do a presentation on the new environmental society that I am starting up at school,” said Rajesh.

“We all have things we can and cannot do well. Like you, Thandi. You are a good netball player and Rajesh is good at chess. But you would not be any good at chess, and Rajesh would not be any good at playing netball,”
explained Marsha. “And Peter may be better at singing than he is at talking. I think Peter would be great for our band. How about we ask him to join?”

“I do not think so. I do not think he would be good enough to be in our band,” Thandi added.

“I think he would be perfect! And his voice is just what we need to complete our band,” said Lilly. “Then we can enter the talent concert!”

The group calls him to come back and they ask him to join their band. Peter was surprised that they would ask him to join. He has always struggled with his speech and this has stopped him from making friends and talking to people. He therefore keeps to himself and tries to avoid talking in class.

Peter was unsure about whether he wanted to join the band, but realised that this was a chance to make some friends and he could show people that just because he stutters, it does not mean that he cannot sing.

A week later, after long hours of practise, the band was ready to take part in the talent concert.

It was finally the night of the concert. As they walked on stage to set up, the band heard whispers coming from the crowd.

“Why is Peter up there?”

“He’s the boy who talks funny.”

Peter and the band can hear the comments in the background. But they continue to set up the stage. They wait for Thandi to give the drum count to start the first song, but there was no sound. Thandi sat there; not moving. She felt like her body had frozen; she feared the crowd of people before her waiting for her to perform under the blinding lights of the stage. The band did not know that she suffered from stage fright, as they had never performed on stage in front of an audience before. She could hear the band members shouting at her to start playing:

“Thandi! What are you doing? We are ready to start!”

“Thandi, hit the drums!”

“We cannot start without you!”

Just as she was about to run off the stage, Peter begins to sing. The first lines of the song begin to echo throughout the school hall. The people sat silently; amazed. The rest of the band blended in with their instruments and soon enough, Thandi was drumming along too.
The teachers and pupils who knew Peter could not believe that the boy who stuttered was the one who could sing so beautifully.

After the competition, the band huddled together in excitement backstage.

“Peter, if you had not started singing, we probably would not have played at all!” Tubs said while munching down on his chocolate bar.

Marsha noticed that Thandi was unusually quiet and withdrawn. Before Marsha had a chance to reassure her, Peter was already by her side.

“I do not know what happened tonight. I have never felt so scared before,” said Thandi.

“But Tttthandi, in the end, you managed to play and gave a great performance,” said Peter.

“We all have something that we are afraid of. For me; it'sssssss talking, and for you; it's being on stage in front of an audience,” Peter added.

“But Thandi, you are always so tough, and nothing ever seems to get you down,” Rajesh commented.

“But guys, just because someone seems tough, it does not mean that they cannot ever feel scared” Lilly added.

Peter continued: “You ttttook the first step to overcoming your fear by playing those drums ttttonight and not walking off the stage. For me, being part of your group was difficult because I am asstttutterer – I had to face my fear of speaking to other people.

By changing our own negative feelings and reactions toward other people, it opens our eyes to the fact that these differences are actually what make us unique. In the end, this is what gives us character.

“Ok guys, enough talk... I say we celebrate over a round of milkshakes. That performance really took it out of me... I'm starving” said Tubs.

“But hold on a minute! The new National Geographic documentary starts in the next ten minutes.” shouted Rajesh.

“RAJEEEESH!” they all shouted.

THE END
Role-play: The Band of Differents

Characters: Narrator 1 and Narrator 2, Mrs Smart, Tubs, Lilly, Rajesh, Peter, Thandi and Marsha.

Extras: 3 people in crowd at the talent concert.

Mrs. Smart: Attention School! A talent competition will be held next Friday. Anybody is welcome to perform so all interested learners please sign up soon.

Narrator 1: After hearing the school announcement that afternoon, everybody rushed out of the class talking about the upcoming event. Even though the band was very excited about the concert, they still had a bit of a problem…the band was still incomplete so they couldn’t enter the concert yet.

They had previously held auditions to fill this missing gap but nobody had that special something to add to their unique sound.

While walking home from school they heard a funky melody.

Band members (Rajesh, Tubs, Thandi, Lilly and Marsha): Where is it coming from?

Rajesh: It’s coming from the trees!

Thandi: Look, its Peter, the one who talks funny.

Narrator 2: Peter was the quite student in the class, who always got on with his work and got good marks. Most of the time he chose to keep to himself.

That afternoon, Peter decided to climb up his favourite tree, the one with the view of the sea in the distance. Peter would sit in this tree and daydream and sing all day long. It was a place where he could forget all his troubles.

Tubs: Wow Peter, that’s an awesome sound you got there. Come down!

Narrator 1: He slowly climbed down from the tree and stood uncomfortably in front of the group.

Lilly: We didn’t know that you could sing so well. Why didn’t you try out for our band?
Thandi: Well guys, it’s obvious…it’s because he talks llllikethththis – he’s a stutterer.

Peter: Jjjjjjust because I stutter it doesn’t mean that I don’t have other talents!

Narrator 1: Peter began to walk away.

Marsha: Hold on guys, my brother also stutters but that hasn’t stopped him from being good at sport and having lots of friends – it’s not a big deal. He doesn’t allow his stutter to stop him from doing what he wants to do.

Rajesh: That’s true. He even helped me do a presentation on the new environmental society that I am starting up at school.

Marsha: We all have things we can and cannot do well. Like you, Thandi. You are a good netball player and Rajesh is good at chess. But you would not be any good at chess, and Rajesh would not be any good at playing netball. And Peter may be better at singing than he is at talking. I think Peter would be great for our band. How about we ask him to join?

Thandi: I do not think so. I do not think he would be good enough to be in our band.

Lilly: He would be perfect! His voice is just what we need to complete our band. Then we can enter the talent concert!

Narrator 2: The group calls him to come back and they ask him to join their band. Peter was surprised that they would ask him to join. He has always struggled with his speech and this has stopped him from making friends and talking to people. He therefore keeps to himself and tries to avoid talking in class.

Narrator 1: Peter was unsure about whether he wanted to join the band, but realised that this was a chance to make some friends and he could show people that just because he stutters, it does not mean that he cannot sing.

A week later, after long hours of practice and lots of hard work, the band was ready to take part in the talent concert.

It was finally the night of the concert. As they walked on stage to set up, the band heard whispers coming from the crowd.
**Person 1 from crowd:** Why is Peter up there?

**Person 2 from crowd:** He’s the boy who talks funny.

**Narrator 2:** Peter and the band can hear the comments in the background. But they continue to set up the stage. They wait for Thandi to give the drum count to start the first song, but there was no sound. Thandi sat there, without moving. She felt like her body had frozen. She feared the crowd of people before her waiting for her to perform under the blinding lights of the stage. The band did not know that she suffered from stage fright, as they had never performed on stage in front of an audience before. She could hear the band members shouting at her to start playing:

**Tubs:** Thandi! What are you doing? We are ready to start!

**Rajesh:** Thandi, hit the drums!

**Lilly:** We cannot start without you!

**Narrator 1:** Just as she was about to run off the stage, Peter begins to sing. The first lines of the song begin to echo throughout the school hall. The people sat silently; amazed. The rest of the band blended in with their instruments and soon enough, Thandi was drumming along too.

The teachers and pupils who knew Peter could not believe that the boy who stutters was the one who could sing so beautifully.

After the competition, the band huddled together in excitement backstage.

**Tubs (while munching down on his chocolate bar):** Peter, if you had not started singing, we probably would not have played at all!

**Narrator 2:** Marsha noticed that Thandi was unusually quiet and withdrawn. Before Marsha had a chance to reassure her, Peter was already by her side.

**Thandi:** I do not know what happened tonight. I have never felt so terrified before.

**Peter:** But Tttthandi, in the end, you managed to play and gave a great performance. We all have something that we are afraid of.
For me, it'sssss talking, and for you, it's being on stage in front of an audience.

Rajesh: Thandi, you are always so tough, and nothing ever seems to get you down.

Lilly: Guys, just because someone seems tough, it does not mean that they cannot ever feel scared.

Peter: You tttook the first step to overcoming your fear by playing those drums tonight and not walking off the stage. For me, being part of your group was difficult because I am a sttttutterer – I had to face my fear of speaking to other people.

Narrator 1: By changing our own negative feelings and reactions toward other people, it opens our eyes to the fact that these differences are actually what make us unique. In the end, this is what gives us character.

Tubs: Guys, enough talk already… I say we celebrate over a round of milkshakes. That performance really took it out of me... I'm starving.

Rajesh: But hold on a minute! The new National Geographic documentary starts in the next ten minutes.

All band members (Tubs, Thandi, Lilly, Marsha and Peter): RAJEEESH!

THE END

Class Activity

Brainstorm around the theme of communication:

1. What does communication mean? (Includes talking to people, understanding what other people say and expressing your ideas and feelings).

2. What communication difficulties can people have? (E.g. hearing loss, cleft lip and palate, lisp & reading and writing problems)

3. Which character in the story had a communication difficulty?

4. What was this difficulty?

Activity 1: “In Peter’s Shoes”

Goal: To encourage positive feelings and to explore negative attitudes toward differences amongst peers in the classroom.
(Focus mainly on communication and communication difficulties, and then on general differences among people)

Method:

First, the teacher will lead the class in a discussion about general differences among people (for example, differences in personality and appearance)

Then, the class will brainstorm what they may be teased about in class (for example, being very tall/short, being sporty / artistic, or being studious / lazy)

The class will brainstorm how they would feel if they were a person who stuttered (had a communication difficulty) and how people might react to them.

Then, brainstorm the different reactions that Peter could have shown toward the teasing comments (both negative and positive)
**Appendix B: Stuttering Resource Outcomes Measure (SROM)**

*Positive Social Distance (PSD), Social Pressure (SP), and Verbal Interaction (VI)* are the three psychometrically-approved constructs evaluated by the SROM that represent attitudes (Langevin et al., 2009).

---

**Items of the SROM According to Subscales**

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item</th>
<th>Subscale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I would like having a child who stutters live next door to me.</td>
<td>PSD</td>
</tr>
<tr>
<td>5.</td>
<td>I would enjoy doing a class project with a child who stutters.</td>
<td>PSD</td>
</tr>
<tr>
<td>7.</td>
<td>I would introduce a child who stutters to my friends.</td>
<td>PSD</td>
</tr>
<tr>
<td>8.</td>
<td>I would be happy to have a child who stutters for a friend.</td>
<td>PSD</td>
</tr>
<tr>
<td>10.</td>
<td>In class I would like to sit next to a child who stutters.</td>
<td>PSD</td>
</tr>
<tr>
<td>12.</td>
<td>I would like a child who stutters to talk for my group in class.</td>
<td>PSD</td>
</tr>
<tr>
<td>14.</td>
<td>I would let a child who stutters hang out with us.</td>
<td>PSD</td>
</tr>
<tr>
<td>15.</td>
<td>I would enjoy being with a child who stutters.</td>
<td>PSD</td>
</tr>
<tr>
<td>16.</td>
<td>I would be best friends with a child who stutters.</td>
<td>PSD</td>
</tr>
<tr>
<td>18.</td>
<td>I would like having a child who stutters in my class.</td>
<td>PSD</td>
</tr>
<tr>
<td>20.</td>
<td>I would spend time at break with a child who stutters.</td>
<td>PSD</td>
</tr>
<tr>
<td>2.</td>
<td>I would avoid a child who stutters.</td>
<td>SP</td>
</tr>
</tbody>
</table>
3. Children who stutter are like normal children.  SP
4. I would be ashamed to be seen with a child who stutters.  SP
6. Children who stutter are weird.  SP
9. I would not go to the shop with a child who stutters.  SP
11. I would be frustrated listening to a child who stutters.  VI
13. Listening to a child who stutters would annoy me.  VI
17. I would be embarrassed to be with a child who stutters.  VI
19. Children who stutter should not play games that involve talking.  VI

Note. PSD = Positive Social Distance. SP = Social Pressure. VI = Verbal Interaction

Stuttering Resource Outcomes Measure (SROM)  Coded number:  -

Adapted from the PATCS- 36 scale (Langevin & Hagler, 2004).

School code: ________________________________

Age: ________________

Circle: Girl Boy

Class: ________________

Do you know a person who stutters? (Circle) Yes / No

If yes, how do you know this person?

______________________________

Practice items:

Read each statement silently while I read it aloud. Then indicate how much you disagree or agree with the statement. There are five choices. Circle the choice that is best for you. There are no right or wrong answers.

1. I would eat earthworms.

   Strongly Disagree Disagree Not Sure Agree Strongly Agree

2. Bryan Habana is a great rugby player.

   Strongly Disagree Disagree Not Sure Agree Strongly Agree

3. I would enjoy playing soccer.
<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Not Sure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. I would not go to the movies.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I would not play in the rain.</td>
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<td></td>
</tr>
<tr>
<td>6. I would not want a present.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Read each statement silently while I read it aloud. Then indicate how much you disagree or agree with the statement. There are five choices. Circle the choice that is best for you. There are no right or wrong answers.

1. I would like having a child who stutters live next door to me.
   - Strongly Disagree
   - Disagree
   - Not Sure
   - Agree
   - Strongly Agree

2. I would avoid a child who stutters.
   - Strongly Disagree
   - Disagree
   - Not Sure
   - Agree
   - Strongly Agree

3. Children who stutter are like normal children.
   - Strongly Disagree
   - Disagree
   - Not Sure
   - Agree
   - Strongly Agree

4. I would be ashamed to be seen with a child who stutters.
   - Strongly Disagree
   - Disagree
   - Not Sure
   - Agree
   - Strongly Agree

5. I would enjoy doing a class project with a child who stutters.
   - Strongly Disagree
   - Disagree
   - Not Sure
   - Agree
   - Strongly Agree

6. Children who stutter are weird.
   - Strongly Disagree
   - Disagree
   - Not Sure
   - Agree
   - Strongly Agree

7. I would introduce a child who stutters to my friends.
8. I would be happy to have a child who stutters for a friend.

9. I would not go to the shop with a child who stutters.

10. In class I would like to sit next to a child who stutters.

11. I would be frustrated listening to a child who stutters.

12. I would like a child who stutters to talk for my group in class.

13. Listening to a child who stutters would annoy me.

14. I would let a child who stutters hang out with us.

15. I would enjoy being with a child who stutters.

16. I would be best friends with a child who stutters.
17. I would be embarrassed to be with a child who stutters.
   Strongly Disagree  Disagree  Not Sure  Agree  Strongly Agree

18. I would like having a child who stutters in my class.
   Strongly Disagree  Disagree  Not Sure  Agree  Strongly Agree

19. Children who stutter should not play games that involve talking.
   Strongly Disagree  Disagree  Not Sure  Agree  Strongly Agree

20. I would spend time at break time with a child who stutters.
    Strongly Disagree  Disagree  Not Sure  Agree  Strongly Agree
Appendix C: Written Permission from Department of Education as distributed in the earlier phases of the study

The Director: Education Research
Western Cape Education Department
Private Bag X9114
CAPE TOWN
8000

Dear Sir/ Madam

Permission to Conduct Research Study

The diverse nature of the South African school environment contributes to communication difficulties in the classroom. The aim of this study is to explore whether an educational resource aids in altering Grade 7 peers' attitudes towards children with communication difficulties. The study intends to engage collaborative efforts of Speech Therapy researchers, teachers, learners and significant others.

As Undergraduate Speech Therapy students from the University of Cape Town, the researchers will be conducting research to supplement a greater study concerned with communication in the classroom. The researchers will have the guidance and supervision of Prof. Harsha Kathard and Fatemah Camroodien-Survê, qualified Speech-Language Therapists. Attached you will find the detailed proposal. Ethics approval has been obtained from the Faculty
of Health Sciences Human Research Ethics Committee. Ethical Clearance Number: 638/2012.

The first phase of the study is an exploratory study and intends to determine whether learners' attitudes towards peers with communication difficulties change as a result of an educational resource tool. The Stuttering Resource Outcomes Measure (SROM) will be administered pre and post administration of the Classroom Communication Resource (CCR intervention). The SROM will measure whether the resource tool altered the learners' attitudes towards their peers with communication difficulties. The administration of the resource will take one classroom lesson to complete. The researchers will be present in the class while the resource tool is being administered. The inclusion of specific learners engaged in the study will depend on permission from school principals, informed consent from teachers and parents as well as assent from learners themselves who are able to participate in a voluntary capacity. No pressure will be placed on learners to participate in the study, and there will be no repercussions regarding their decision to not partake in the research process. There is no financial benefit for participants to taking part in this study. The researchers will comply with all of the ethical guidelines outlined in the proposal. This study will include intervention and control groups. The control group classes will still receive the CCR intervention after pre and post-intervention data has been collected for their potential benefit.

The researchers will outline their need for a voluntary, English mainstream mixed gender Grade 7 class. The researchers will examine whether the educational resource has altered the Grade 7 learners' attitudes towards peers with communication difficulties through the administration of the SROM. The researchers will collect data on the learners' responses through observation in classrooms and administering learner questionnaires. Data collection will take place over a period of approximately six weeks (January – March 2013) and care will be taken to disrupt classes as little as possible.

The second phase of the study involves further post-intervention evaluations and interviews with both teachers and learners. This part of the study will form part of the larger study conducted by postgraduate students.

At any point in the process, the researchers will be available to discuss any aspect of concern that might arise. The final write up of results will be shared with your department and the results will also be disseminated through academic publications.

I hereby request permission to conduct this study.
Thank you for considering this request.

Yours sincerely

Julia Weidmann
Tel: 083 550 4539
Email: wdmjul002@myuct.ac.za

* Prof. Harsha Kathard (research supervisor): Harsha.Kathard@uct.ac.za, Tel: 021 406 6401

* Chairperson of Faculty of Health Sciences Human Research Ethics Committee: Prof Mark Blockman

Marc.Blockman@uct.ac.za, Tel: 021 406-6496

Attachments: (see separate document 'Proposal and Attachments'

Attachment A: Research Proposal
Attachment B: Classroom Communication Resource (CCR intervention)
Attachment C: Stuttering Resource Outcomes Measure (SROM)
Attachment D: Information and Consent Letters
Appendix D: Written permission from the school

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Department of Health and Rehabilitation Sciences
Divisions of Communication Sciences and Disorders,
Nursing and Midwifery, Occupational Therapy, Physiotherapy
F45 Old Main Building, Groote Schuur Hospital,
Observatory 7925
Tel: +27 (0) 21 406 7667Fax: +27 (0) 21 406 6323

The Principal

Dear Sir/ Madam

RE:  Permission to Conduct Research Study

A group of undergraduate Speech Therapy students from the University of Cape Town are conducting a research project to supplement a larger study concerned with communication in the classroom. Communication can be defined as “an interaction or exchange of one’s feelings, ideas, thoughts or wants among two or more people by such modes as speech, writing, facial expression, gesture or touch.” Therefore, a communication difficulty arises when there is a breakdown at any stage of this exchange. The diverse nature of the South African school environment contributes to communication difficulties in the classroom.

The aim of this study is to determine the changes, if any, which occur in Grade 7 peers’ attitudes towards children who stutter after a classroom lesson. This study aims for Speech-Language therapists, researchers, teachers, learners and significant others to work together. Since this is an undergraduate study, the students will have the guidance and supervision of Prof. Harsha Kathard and Fatemah Camroodien - Survê, qualified Speech-Language Therapists. Ethics approval has been obtained from the Faculty of Health Sciences Human Research Ethics Committee.

The study will be done in Grade 7 classrooms. It will be conducted at times that are convenient and aims not to disrupt classroom activities. The first phase of the study will be conducted as follows: presentation of a video clip of
an adolescent who stutters, administration of a short questionnaire by the researcher (Stuttering Resource Outcomes Measure: SROM), administration of the Classroom Communication Resource (CCR intervention) by the teacher and, lastly, a repeated administration of the questionnaire. The educator will be briefed on how to administer the class lesson beforehand. The researchers will collect data through the administration of the questionnaires and will be present in the class while the class lesson is presented by the teacher. The questionnaire aims to measure whether the communication resource changes Grade 7 peers’ attitude towards learners who stutter. The collected data will subsequently be analysed by the researchers.

The second phase of the study involves further post-intervention evaluations and interviews with both teachers and learners. This part of the study will form part of the larger study conducted by postgraduate students.

The inclusion of specific participants engaged in the study will depend on permission from school principal, as well as informed consent from the parents and teachers. Assent will also be obtained from the learners to ensure voluntary participation. No pressure will be placed on learners to take part in the study, and there will be no repercussions regarding their decision not to partake in the research process. In addition to this, participants will be made aware of their right to withdraw from the study at any point. There are no risks for the learners in taking part in this study. All results will be kept confidential with no names used as part of results. There will be no financial benefit from participants taking part in this study.

At any point in the process, the researchers will be available to discuss any aspect of concern that might arise. The final write up of results will be shared with your department and the results will also be disseminated through academic publications.

I hereby request permission to conduct this study in Grade 7 classrooms at your school.

Thank you for considering this request. You are welcome to contact the research supervisor or the researchers with any queries.

This project has met the ethical obligations expected by the Faculty of Health Sciences, University of Cape Town.

Ethical Clearance Number: 638/2012

Yours sincerely
Thembeka Mhlongo
Tel: 073 740 3015
Email: mhlthe028@myuct.ac.za

* Prof. Harsha Kathard (research supervisor): Harsha.Kathard@uct.ac.za, Tel: 021 406 6401

* Chairperson of Faculty of Health Sciences Human Research Ethics Committee: Prof Mark Blockman
Marc.Blockman@uct.ac.za, Tel: 021 406-6496
Appendix E: Written Permission from Teacher

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Faculty of Health Sciences
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F45 Old Main Building, Groote Schuur Hospital,
Observatory 7925
Tel: +27 (0) 21 406 7667
Fax: +27 (0) 21 406 6323

The Educator
Dear Sir/ Madam

RE: Permission to Conduct Research Study

A group of undergraduate Speech Therapy students from the University of Cape Town is conducting a research project to add to a bigger project about communication in the classroom. Communication can be defined as “an interaction or exchange of one’s feelings, ideas, thoughts or wants among two or more people by such modes as speech, writing, facial expression, gesture or touch.” Therefore, a communication difficulty arises when there is a breakdown in this. The diverse nature of the South African school environment adds to communication difficulties in the classroom.

The aim of this study is to determine the changes, if any, which occur in Grade 7 peers’ attitudes towards children who stutter after a classroom lesson. This study aims for Speech-Language therapists, researchers, teachers, learners and significant others to work together. Since this is an undergraduate study, the students will have the guidance and supervision of Prof. Harsha Kathard and Fatemah Camroodien-Survê, qualified Speech-Language Therapists. Ethics approval has been obtained from the Faculty of Health Sciences Human Research Ethics Committee.

The study will be done in Grade 7 classrooms. It will be conducted at times that are convenient and aims not to disrupt your classroom activities. We will visit your class for two sessions of about an hour each. The first phase of the study will be conducted is as follows: presentation of a video clip of an adolescent who stutters, administration of a short questionnaire by the
researchers (Stuttering Resource Outcomes Measure: SROM), administration of the Classroom Communication Resource (CCR intervention) by you, the teacher, and lastly, a repeated administration of the questionnaire. You will be briefed on how to administer the class lesson beforehand. The researchers will collect data through the administration of the questionnaires and will be present in the class while the class lesson is presented by you. The questionnaire aims to measure whether the communication resource changes Grade 7 peers’ attitude towards learners who stutter. The collected data will be analysed by the researchers afterwards.

The second phase of the study involves further post-intervention evaluations and interviews with both teachers and learners. This part of the study will form part of the larger study conducted by postgraduate students.

Who gets to take part in this study will depend on permission from the school principal, as well as informed consent from the parents and yourself. Assent will also be obtained from the learners to ensure they want to take part. No pressure will be placed on you or the learners to take part in the study, and there will be no consequences regarding a decision not to partake in the study. You have the right to withdraw from the study at any point. There are no risks for you or the learners in taking part in this study. All results will be kept confidential with no names used as part of the results. There will be no financial benefit for you taking part in this study.

At any point during the process, the researchers will be available to discuss any aspect of concern that might arise and answer any questions you might have. The final write up of results will be shared with your department and the results will also be disseminated through academic publications.

I hereby request permission to conduct this study in your classroom Grade 7 classroom.

Thank you for considering this request. You are welcome to contact the research supervisor or the researchers with any questions.

Ethics approval has been obtained from the Faculty of Health Sciences Human Research Ethics Committee.

Ethical Clearance Number: 638/2012

Yours sincerely
Thembeka Mhlongo
Tel: 073 740 3015
Email: mhlthe028@myuct.ac.za

*Prof Harsha Kathard (research supervisor): Harsha.Kathard@uct.ac.za, Tel: 021 406 6401

* Chairperson of Faculty of Health Sciences Human Research Ethics Committee: Prof Mark Blockman
Marc.Blockman@uct.ac.za, Tel: 021 406-6496
Information about Research Study: Invitation and Consent to Participate

A group of undergraduate Speech Therapy students from the University of Cape Town is conducting a research project at your child’s school to add to a bigger project about communication in the classroom. The aim of this research study is to look at the changes in Grade 7 learners’ attitudes towards peers who stutter after taking part in a classroom activity. The study forms part of an undergraduate degree requirement and depends on the teamwork of the Speech Therapy researchers, research supervisors, teachers and learners. Ethics approval has been obtained from the Faculty of Health Sciences Human Research Ethics Committee.

A communication difficulty may involve not understanding what other people say, or having difficulty talking. These difficulties can affect how children talk to each other in the classroom and lead to negative attitudes if the difficulties are not understood. The researchers want to know whether changes occur in your child’s attitude toward peers who stutter after taking part in a classroom activity. The classroom activity will take one lesson of about an hour to complete. Your child will have to fill out a form that determines their attitudes toward children who stutter (before and after the lesson). At a later point in time, further students will be conducting follow-up research, requiring your child to fill out another form. This will give us valuable information to help us find out whether the lesson can teach learners about stuttering and change their attitudes toward peers who stutter. The researchers will not reveal the name of your child to anyone and will not share private information. Your child
is free to withdraw from the study at any point without any consequences. There is no risk for your child to take part in this study. They can potentially benefit by learning more about stuttering and having a more positive attitudes toward other children who stutter. The study will take place at times that are convenient and will not disrupt classroom activities. There is no financial reward for taking part in the study.

You are welcome to contact the researchers on the number below if you have any questions. Thank you for considering this request.

Kind regards

_________________________
Thembeka Mhlongo
Tel: 073 740 3015
Email: mhlthe028@myuct.ac.za

Ethics approval has been obtained from the Faculty of Health Sciences Human Research Ethics Committee.

* Chairperson of Faculty of Health Sciences Human Research Ethics Committee: Prof Mark Blockman
Marc.Blockman@uct.ac.za, Tel: 021 406-6496

*Research Supervisor: Prof. Harsha Kathard
Harsha.Kathard@uct.ac.za, Tel: 021 406 6401

Response from Parents: Part A

I have read the invitation and understand what this study is about.

I, ____________________________ (parent/guardian) do give consent for __________________________ (learner name) to take part in this study.

Signature: ____________________________
Date: ____________________________
Contact number: ____________________________
Response from Parents: Part B

This form is only to be completed by "allocated person" if the parent is unable to read and understand the letter on their own.

I, __________________________, have read the letter to
____________________________________ (parent/guardian name).

I have explained the contents of the form and answered questions where needed. S/he has understood what it is about and has given me a verbal answer saying that s/he does want his/her child to take part in this study.

Name of "allocated person": __________________________

Signature: __________________________

Date: __________________________

Contact number: __________________________
Appendix G: Information Letter and Assent: Learners distributed during the earlier phases on the study.

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Department of Health and Rehabilitation Sciences
Divisions of Communication Sciences and Disorders,
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F45 Old Main Building, Groote Schuur Hospital,
Observatory 7925
Tel: +27 (0) 21 406 7667
Fax: +27 (0) 21 406 6323

Dear (Learner) _____________________________

Information about Taking Part in Our Study: Invitation and Assent to Take Part

A group of Speech Therapy students from the University of Cape Town is conducting a research project at your school to add to a bigger project about communication in the classroom. The purpose of this study is to see if Grade 7 learners’ attitudes towards children who stutter change after taking part in a classroom activity. You, along with your teacher and the Speech Therapy researchers, will be part of this study.

A communication difficulty may include not understanding what other people say, or having difficulty talking. These difficulties can affect the way children treat each other in the class and lead to bullying and teasing if they do not know about these difficulties. We want to see if there are changes in learners’ attitudes toward children who stutter after taking part in a classroom lesson where your teacher reads you a story and talks with you about it. The lesson will take about an hour. We will ask you to fill in a form to tell us what you think about children who stutter. Your name will not be made known to anyone. You are free not to take part in the study at any point without any consequences. There is no risk for you in taking part in this study and you might benefit by learning more about stuttering. The study will take place at times that suit the school and teacher and will not disrupt classroom activities. You will not get any money for taking part in the study. You are welcome to
ask us questions when we come to your classroom if you don’t understand something.

Thank you for thinking about this invitation

Regards

_________________________

Tel: 073 740 3015

Ethics approval has been obtained from the Faculty of Health Sciences Human Research Ethics Committee.

* Chairperson of Faculty of Health Sciences Human Research Ethics Committee: Prof Mark Blockman

Marc.Blockman@uct.ac.za, Tel: 021 406-6496

*Research Supervisor: Prof. Harsha Kathard

Harsha.Kathard@uct.ac.za, Tel: 021 406 6401

Response from Learner

I have read the invitation and understand what the research study is about.

I agree to take part in this study.

Name (in block letters): _________________________

Signature: _________________________

Date: _________________________

Contact number: _________________________
Appendix H: Information Letter and Assent: Learners at six months post-intervention

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Department of Health and Rehabilitation Sciences
Divisions of Communication Sciences and Disorders, Nursing and Midwifery, Occupational Therapy, Physiotherapy
F45 Old Main Building, Groote Schuur Hospital,
Observatory 7925
Tel: +27 (0) 21 406 7667
Fax: +27 (0) 21 406 6323

Dear (Learner) _____________________________

Information about Taking Part in Our Study: Invitation and Assent to Take Part

A group of Speech Therapy students from the University of Cape Town is conducting a research project at your school to add to a bigger project about communication in the classroom. The purpose of this study is to see if Grade 7 learners' attitudes towards children who stutter change after taking part in a classroom activity. You, along with your teacher and the Speech Therapy researchers, will be part of this study.

A communication difficulty may include not understanding what other people say, or having difficulty talking. These difficulties can affect the way children treat each other in the class and lead to bullying and teasing if they do not know about these difficulties. We want to see if there are changes in learners' attitudes toward children who stutter after having taken part in a classroom lesson where your teacher read you a story and spoke with you about it. We will ask you to fill in a form at this time again to tell us what you think about children who stutter now. Your name will not be made known to anyone. You are free not to take part in the study at any point without any consequences. There is no risk for you in taking part in this study and you might benefit by learning more about stuttering. The study will take place at times that suit the school and teacher and will not disrupt classroom activities. You will not get any money for taking part in the study. You are welcome to
ask us questions when we come to your classroom if you don’t understand something.

Thank you for thinking about this invitation

Regards

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Rizwana Badroodien
Tel: 0825583123

Ethics approval has been obtained from the Faculty of Health Sciences Human Research Ethics Committee.

* Chairperson of Faculty of Health Sciences Human Research Ethics Committee: Prof Mark Blockman
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**Response from Learner**

I have read the invitation and understand what the research study is about.

I agree to take part in this study.

Name (in block letters): _________________________

Signature: _________________________

Date: _________________________

Contact number: _________________________