

A mixed method analysis of an Early Intervention Program for students with behavioural and concentration difficulties in two schools in Malmö, Sweden

by

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WORK NOT SUBMITTED ELSEWHERE FOR EXAMINATION

I hereby declare that this thesis has not been and will not be, submitted in whole or in part to another University for the award of any other degree.

Signed

Date

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Abstract

The aim of this research, set in two schools in Malmö, Sweden, was to examine the outcomes of a combined approach of a behavioural modification program and a biofeedback intervention for students, aged 7 to 12, with behavioural and concentration difficulties. Biofeedback is the use of technology to measure physiological changes in the body (such as heart rate and breathing) and gives this information back to the user. The behavioural modification program was an intervention known as Family Class, whereby students (and their parents) attended for 12 weeks to work on classroom issues identified by the teacher. It is accepted that students with behavioural and concentration difficulties are at risk of going on to develop more severe problems such as ADHD, if early intervention programs are not implemented (Barkley, 1996). In addition, the Swedish education system is under increasing political pressure given poor international results (PISA, 2013) and poor high school graduation rates (Cederberg et al, 2011). Working as a social worker across two schools, I was ideally placed to assess the current intervention provision, adapt it and subsequently carry out the research to evaluate the outcomes.

The research drew on a pragmatist epistemology (Hall, 2013) that supported the semi-experimental design used in the study. A mixed methods approach to gathering the data from parents, teachers and the students was used. Qualitative data collected before and after the intervention, were sought through interviews with students in which vignettes were used to identify their ideas on self-regulation of behaviour, whilst quantitative data on the impact of the combined intervention were gathered through pre/post measures using The Strengths and Difficulties Questionnaire, Biofeedback software and behavioural sheets.

The thesis also traces the author's changing identity from a practitioner to a researcher-practitioner. The experience of doing the research was interwoven into the fabric of the study, helping to ensure that the study is rooted in practice. In that respect, a key social work value, empowerment, was critically discussed by referring to the theories of Michel Foucault and John Dewey. A view that self-regulation can be seen as an act of empowerment was the resulting outcome of this theoretical discussion. This position supported the author's personal practice and the intention behind the intervention was the focus of the research.

The key findings from the qualitative data suggested that the majority of the sample of 13 students (most of whom had experienced difficulties for more than a year) had learnt self-regulation skills and understood self-regulation ideas; from their responses to the vignettes, it appeared students had moved from a position of reliance on teachers and other adults when managing behaviour and concentration difficulties to a position that encouraged a balance between the students' self understanding on how to manage classroom challenges and the role the teacher can play in this. This was backed up by SDQ feedback from the parents and teachers on the changes in the students' own behaviour in relation to the following categories: hyperactivity and attention, peer interaction and pro-social behaviour, conduct behaviour, emotional difficulties, impact on relationships and perceptions of the problem. The biofeedback data also showed that the group as a whole had learnt how to regulate their breathing and heart rate.

The key implications for social work practice are that the combination of a behavioural modification approach such as Family Class with biofeedback has potential in helping students with behavioural and concentration difficulties in a school setting. The methods and methodology used in this research proved to be a suitable approach to identifying the impacts of an innovative intervention and could be considered by other social workers carrying out research in similar settings.

Chapter One: Research background, aims, objectives and the structure of the thesis.

1.1 Introduction

This thesis is concerned with the impact of a combined intervention of Biofeedback and behavioural modification group work, in a school setting, with a group of students aged from 7 to 12. These students were considered to have behavioural and concentration difficulties in classroom settings and the majority had experienced these problems for over a year. The research used a mixed method approach to gather the quantitative and qualitative data in order to give a triangulated perspective on the experiences of the students and the feedback from the parents and teachers. This introductory chapter provides some background for the thesis. It begins with a look at how my interest in the research project came about during my social work practice and how the study has transformed my identity from practitioner to practitioner-based researcher. It is followed by a brief introduction to the study's engagement with existing social work practice and socio-educational policy on interventions for students with behaviour and concentration difficulties in Sweden and further afield. The chapter then outlines the arguments to be developed, sets out the aims of the study and ends with an overview of the chapters that will follow for the rest of the thesis.

1.2 Becoming a practitioner-based researcher

Due to family circumstance I moved to Malmö, Sweden in 2009. Prior to that, I have spent five years working in different social work positions in various countries around the world, such as New Zealand, Pakistan and Ireland. During that first year I learnt Swedish and subsequently in 2010 found a job as a social worker shared across two schools delivering a program for students with behavioural and concentration difficulties. The journey of being an overseas social worker was challenging but made easier as my language skills and cultural understanding progressed. My social work practice with the students had been primarily based on the Family Class (FC) method. FC is a behavioural modification approach in a systemic form

that works with students and their families in a school context. Students, (maximum of 6 in a group), together with their parents, meet for four hours once a week for 12 weeks. In its original form, the FC students spend time doing homework with their parents, participate in group-building exercises and work on their communication and relationships with their parents. By the end of the 12-week period the hope is that the students are able to improve their behaviour and concentration in the classroom (Cederberg et al, 2011). This is helped though having the parents involved and engaged. The goal of 'partnership' with parents holds a special focus in much of social work research, in particular in the area of child protection (Broadhurst et al, 2011). However, despite this family approach, in my experience this model did not provide the students with an awareness of their own potential to change their behaviour or improve concentration and presented a conflict for me, the practitioner, in terms of where it stood in relation to empowerment as a value and theory for social work practice.

During a work-based presentation from an overseas practitioner I was introduced to the practice of Biofeedback. This is a method of working that gives instant feedback to the client on how their body is performing physiologically (e.g. heart rate) through the use of technology to gather and present the information. I was fascinated with the idea and considered that this approach could have a synergy with the intervention I worked with, *Family Class* (FC). This approach appealed to my interest in the students becoming more self-aware through the potential to regulate themselves in situations where their behaviour and concentration impede a positive classroom experience. Following investigations about its suitability for use in the school context, and having secured backing from the school to both introduce and research a combined intervention I developed, delivered and evaluated the intervention combining Biofeedback with the behavioural modification approach used in FC.

Consequently this study has also been an exercise in *becoming* a practitioner-based researcher. Such a role is relatively unheard of for social workers working in schools in Malmö and was also something new to me myself. The change in role from practitioner to practitioner-based researcher has a cultural and socio-economic significance. The social work profession in Sweden and other European countries has gone through many phases in its relatively short existence, from the 'do-gooder phases, the religious phases, social movements, clinical and now perhaps mindfulness phases' (Viggiani *et al.*, 2002, p 604). In the context of the growth of evidence-based practice discussions (Smith, 2004, Webb, 2001), I suggest that the social-work-practitioner-based researcher could take a step up into the development of the social work

profession. Bridging the academic and practice world is a constant effort and could be a way forward in progressing social work professionalism. This could be carried out through linking research, theory and practice in order to provide an innovative and relevant care support that meets the needs of service users and relevant care actors.

The formation of my new identity - practitioner-based researcher - was a complex and, at times, isolating experience. However, the realization that the intervention I was providing was making a difference in the lives of the students who were participating spurred me onwards. My improving language skills and cultural knowledge further strengthened my self-reflexivity through constantly re-thinking and re-evaluating what I said, heard, observed, read and understood in the day-to-day professional setting. This process also contributed to the creation of a practice and research identity, which Miehl and Moffat (2000) argued is heavily influenced by the action of 'self-reflection'. Michel Foucault (1997, p. 343) commented that isolated 'historical practices that were based on bringing attention to bear on oneself (which are) integral to the care of the self is a form of "*askesis*". He defines *askesis* as the 'work that one performs on oneself in order to transform oneself or make the self appear'. According to Foucault (1997) this task is never finished and the self is never completely present. To give the reader a deeper sense of the 'lived experience' of this practitioner-based research, I will further explore this discussion in Chapter 4 with my experience of designing and conducting the research.

The rest of this chapter provides some background information for the thesis. It looks at the current situation for social work involvement in education settings in Sweden and further afield. It then outlines the arguments to be used in the study, sets out the aims and objectives of the research and concludes with an overview of the chapters planned for this thesis.

1.3 Background to the study

Awareness of the problems that children with behavioural and attention difficulties face was introduced into the clinical arena in 1902 by an English physician, George Frederick Still. He gave the earliest medical description of attention deficit hyperactivity disorder (ADHD), known as Minimal Brain Damage, based on research involving 43 children with serious sustained attention and self-regulation difficulties (Still, 1902). The current

Diagnostic Statistical Manual of Mental Disorders 5th Edition (DSM) explanation of ADHD considers it to be possibly a genetically determined neuropsychiatric condition, which manifests in aggressive and defiant behaviour. This constitutes a major educational, social, cognitive and emotional difficulty for those affected.

In Sweden, the importance of social work interventions with students with behavioural and concentration difficulties (including ADHD) is well evidenced as the consequences are felt across all of the aspects of the lifespan. For example, Malmö City Council has found that over the last few years 20-25% of students in Year 9 did not meet the educational standards for admission to high school with many having behavioural and concentration difficulties in the classroom (Cederberg *et al.*, 2011). One of the responses to meet this challenge is to provide early intervention in assisting the students with developing their ability in academic subjects and social competences (Socialstyrelsen, 2007). Many studies (e.g. Stipek & Miles, 2008) emphasise the benefits of having supportive contact with adults. This connects with *systems-theory*, a view that looks to the family as a key actor in the support system of the child, fitting well with a social work practice approach. The National Board of Health and Welfare (Socialstyrelsen) (2007), further supports research into positive relations between children and adults within schools, as these can develop protective factors (e.g. stable home life, prosocial behaviour) for children in need. In addition, some of the key principles of the Swedish National Education Act (1985) were ‘*a school for all*’ and ‘equal access to education to the entire population’ (Isaksson *et al* 2010; Lindblad *et al.*, 2002). The Swedish Social Services Act (Socialtjänstlagen, 2009) has specified the school’s responsibility to assess and to meet the educational and social needs of students. As a result, there is a national movement towards the employment of more social work and counselling support in school settings.

Nonetheless, it is worth noting that the decentralisation process has been rapidly launched in Sweden since the 2000s and the country has transitioned from one of the most centralised to one of the most decentralised education systems in the Western world (Ahlin & Mörk, 2007). This means that there are many different approaches in practice to be found within the country studied. For example, in Malmö there is a push to develop joint working practices for schools and social services, backed up by the local political statement: ‘*we have allocated a lot of money to get all of society’s actors - schools, social services, police, local organisations- to work together and this has led to clear changes*’ (Akademikern, 2013). The Biofeedback and FC intervention in this study is one example funded by the social care and educational system.

Research (e.g. Kleen & Reitsma, 2011) has shown Biofeedback to have good results in combination with other approaches such as Cognitive Behavioural Therapy and with Acceptance Therapy. In addition, some scholars (e.g. Henriques *et al.*, 2011) argue that the use of technology in social work settings is progressive and a necessary step in today's culture. Equally supported in the research was the suitability of conducting research in school settings (Matuszek *et al.*, 2003) and the age of the students studied in this study (Amon & Campbell, 2008). Therefore, one can argue that the literature supported the supposition that Biofeedback in a school setting, in combination with other intervention approaches (i.e. FC), was an appropriate approach to work with students and provided a useful and relevant research topic for social work practice in school settings.

Denmark, Sweden's neighbour, shares many cultural similarities, including challenges of behaviour management in their education system. A recent study in Denmark indicated that the rate of serious problems (violence, extremely challenging students) relative to other issues (for example, not completing homework, and coming late to school) in the classroom is at about 10% (Egelund & Hansen, 2000). This report also indicated that teacher gender is of no importance in the cause of the violence, while 'teacher experience is a major factor in managing behavioural problems'. Surprisingly the report found that 'class size does not have any significant relation to the degree of disturbance' (p 169). This would suggest that supporting new, inexperienced teachers with low cost resources would be of benefit to them and their students (Orr *et al.*, 2013). This was also backed up in the Swedish context by Fransson and Gustafsson (2008, p 11) who stated that 'to be a newly qualified teacher is often a challenging period, and that is perhaps why hardly any phase in teacher careers received more attention in research in proportion to its limited extension time. Most challenging for new teacher seems the classroom management, the leadership and discipline'. For instance, based on my own experience, many teachers regret not knowing how to work with children with ADHD-type symptoms. Teaching an ADHD child, or any child with such behaviours, can be a 'frustrating experience, since impulsivity and the related difficulties with oppositional and non-complaint behaviours often interfere with the teachers abilities to maintain order and proceed with academic tasks' (Kapalka, 2006, p 275). In some instances it maybe sufficient to point the teacher in the right direction with some advice such as that offered by Kapalka (2006, p 276),

‘Threatening the child in the middle of a conflict is often ineffective, since the situation has already progressed to the point that the child’s defensive attitude (and the desire to protect himself or herself and, often, respond in kind) prevents him or her from successfully processing the threatened consequence. When the student and the teacher remain calm, the child is more likely to stop his or her current activity and appropriately process the warning’.

That said, students are never one-dimensional and while the focus of my research is on behaviour and concentration, many of the students were also reported by teachers to be dealing with issues of anger. Dealing with anger at an early stage in the school career is vitally important as ‘in the short term, pupils exhibiting anger problems are at risk of temporary or permanent exclusion from school and engaging in delinquent behaviour. In the longer term, uncontrolled anger is linked to substance abuse, domestic violence, health problems, and the breakdown of relationships’ (Humphrey & Brooks, 2006, p.6). There is also precedent in other jurisdictions for collaborative efforts between social workers and teachers in the school setting. For example, such an intervention is the Social Work-Teacher Classroom Collaboration (SWTCC) in New York. Previous research ‘suggests that early intervention provided in a collaborative manner while linking educational and social services within the school setting is an effective way of preventing school failure’ (Viggiani et al, 2002, p. 606). In the SWTCC, for example, a teacher and a social worker collaborated in a classroom with the goal to improve attendance, classroom behaviour and student grades. This project had belief in the collaboration between professionals which means ‘members of a collaborative effort view each other as partners and are willing to share risks, resources, responsibilities, and rewards’ (Himmelman, 1993, p. 1).

In summary, a typical classroom teacher is presented with a wide variety of problems and a wide variety of solutions. The intervention used in the research that is the subject of this thesis is a good example of the joint working which social workers and educators can engage in and is a creative approach to issues of behaviour and concentration. In addition, the approach builds upon practice-based research, which generates knowledge about practice at a local level, knowledge that can be integrated to wider discussion, for example in terms of policy.

1.4 The key argument presented in the thesis

This thesis aims to argue that a combination of Biofeedback and FC is an example of innovative practice for social work in an educational setting, which may empower students with behaviour and concentration difficulties, so as to learn how to manage their own behaviour. At the root of this research is the placement of empowerment theory as a key social work value, understood by Adams (1996, p.2) who states that 'empowerment could be, if it has not already become, the central emerging feature of social work'. However, empowerment is a contested term and therefore requires a critical analysis of how it fits with theories of power and control. Wendt & Seymour (2010) argue that post-structuralist ideas can benefit social work research and practice because this theory unsettles taken-for-granted assumptions by social workers who claim empowerment in their practice. With that reasoning in mind, this thesis presents arguments of power and control, in terms of the student's engagement with the teacher vs. an empowerment approach that underpins this social worker's values. To do so, the works of Foucault and Dewey are positioned, challenged, applied and integrated. From a philosophical perspective, pragmatism is the overarching epistemology that guided this research. One of the originators of the pragmatist tradition, John Dewey, argued that there is no sharp boundary between everyday life and research. Instead, research is simply a form of inquiry that is performed more carefully and more self-consciously than most other responses to problematic situations (Morgan, 2013). This approach helped demystify the research process for me and proved to be a sound fit for an emerging practitioner-researcher. Dewey's understanding of the world sees place for both a constructionist and a post-positivist perspective and that it is important to make that link between human experience and research.

1.5 Research aims and objectives

The research aims to investigate empowerment through self-regulation by students with behavioural and concentration difficulties. To do so, the study explores the a combination of Biofeedback and FC, as an example of an innovative social work intervention for students, aged 7 to 12, who have behavioural and concentration difficulties in the classroom. This study explores two key questions:

- What are the outcomes for students who partake in the intervention of

Biofeedback and FC?

- Is there evidence to suggest that the students have learnt self-regulation techniques as a consequence of the intervention of Biofeedback and FC?

These questions reflect the accumulation of a long process of reflection, reading and discussion. They also point to an apparent epistemological incoherence as the first question has a post-positivistic inclination and the second leans towards a qualitative perspective. However this is the hallmark of a mixed method approach in the sense that perspectives from different angles are generated (Hall, 2013).

1.6 The structure of the thesis

This chapter provides some background information for this thesis. It began with a brief introduction of my position in the research as a practitioner-based researcher and provided a brief discussion of the background to the study. It then outlined the argument to be developed and set out the aims and objectives of the study. In Chapter Two, an account is given of the current research relating to Biofeedback and FC intervention for children with concentration and behavioural difficulties. It examines the design and findings of the selected research in terms of the characteristics of their research participants, research objectives, methods, findings and research limitations to support the research method and methodology of this study. Chapter Three discusses how a framework, which could then be used to evaluate the outcome of the Biofeedback and FC intervention on self-regulation, was developed. The framework has two aspects. One is a theoretical framework derived from Foucault's power relations in the classroom and the technology of normalisation within the school context. The other aspect comes from Dewey who, as one part to his overall philosophy of education, promoted self-regulation as the way to empowerment. It is important to note that both concepts are inter-linked. Empowerment theory is used here as a bridge between the critical perspective on power and the pragmatic position on developing student potential. Chapter Four, exploring the empirical methodology and method, explains my pragmatist epistemological position and discusses how the semi-experimentalism and mixed-methods study was conducted and describes the groups of participants who participated in the study. The following two chapters (Five and Six) go on to explore the views of various participants

and/or the representation of the students studied. Each chapter explores how far the Biofeedback and FC intervention helped the student to improve their self-awareness and representation of their behaviour and concentration, based on the measurement and analytical framework identified: *hyperactivity/attention, peer interaction and prosocial behaviour, conduct behaviour, emotional difficulties, impact on relationships and perceptions of the problem* before and after the intervention (Chapter Five); and *power relationship and self-regulation* before and after the intervention (Chapter Six). Specific points for future practice are signalled in the concluding notes of each chapter.

The concluding chapter draws together practical issues, and explores the lessons to be learnt from the semi-experimental and mixed-methods findings that might form the basis of further research and be considered by social work and other care professionals who are working with children who experienced similar behavioural and concentration difficulties. The strengths and limitations of such an innovative intervention are discussed.

In the next chapter, the focus will shift to a review of the existing literature related to the topic of the study. However, before progressing to Chapter Two, I wish to reiterate that, although not all of the findings from this small semi-experimental and mixed-methods study are generalizable, there are, nonetheless, a number of key messages that can contribute to future social work research and practice development on working with children. Throughout the duration of this project, my efforts were not only put into the research but into innovating and implementing this new method of social work intervention with children, their teachers and parents at school. What this study tries to do is to offer a partial and highly contextual account of school social work intervention with children, an account that offers a re-think on how to empower children sensitively and achievably.

Chapter Two: An assessment of the literature in the area of Biofeedback and behavioural modification.

2.1 Introduction

As discussed in Chapter One, this study aims to explore the usefulness of Biofeedback in a school setting, in combination with a program called Family Class, when working with students who have concentration and behavioural difficulties. Some key questions to be addressed through a review of the relevant literature are,

- How Biofeedback has been used with other interventions and in other research studies?
- What are other intervention approaches that have combined Biofeedback?
- How does one examine the successfulness or failure on biofeedback related interventions?

It was important to carry out literature-based research to gain an overview of the existing research and knowledge on Biofeedback interventions with students with behavioural and concentration difficulties in order to structure the research focus, the empirical research method and select the appropriate empirical analytical methodologies. The literature review could assist with gaining an insight to the wider research on the topic, thus providing the best chance of knowing how to build a suitable empirical research design. As Hitchcock (1995, p. 91) argues, 'a good literature review and its products should inform and underpin the whole of a research project'. Indeed, the aims of the literature review in this study were to help broaden and refine existing knowledge in the area studied. This literature review aimed to highlight themes from a wide selection of sources so as to help develop the empirical research design (see Chapter Four) on the use of Biofeedback with children experiencing behavioural and concentration difficulties in a school setting.

This chapter therefore consists of an examination in part of the recent literature in the area of Biofeedback and interventions for students with behavioural and concentration difficulties in Sweden and beyond. It also looks at literature related to this topic that meets a set of general inclusion criteria. There were at least three reasons for conducting this literature review. The first was to identify what is known about the combination of Biofeedback with other

intervention approaches. Secondly I sought to inform my own empirical research design. The third purpose for examining the literature for this thesis was to synthesize the empirical, psychological and social work literature on Biofeedback interventions, particularly combined with other approaches, so as to: (a) identify the different instruments and approaches that have been used, (b) identify the purposes of Biofeedback research, and (c) identify the data sources used in the study of Biofeedback in behavioural and attention difficulties.

To maximise the validity of the literature review findings, a rigorous literature review method and methodology was fundamental. Therefore, the Chapter begins with discussing the literature review method and methodology in order to establish the validity of the literature review findings.

2.2 Literature review: Method and methodology

In this section I explore the impact of the researcher-practitioner role on conducting the research, the means by which the literature was gathered, how the literature was subsequently analysed taking into consideration reliability, validity and limitations of the search.

2.2.1. Impact of the researcher-practitioner role

My ontological and epistemological arguments, which are discussed in more depth in Chapter Four, support the practice of combining research and practice. However, as Shaw (2005, p.1238) notes, 'the role of practitioner researcher as both insider and outsider, and as moving between the two, is sensitive and frequently difficult to sustain'. The focus of 'evidence-based practice (in the United States of America) has been a rallying point for improving direct practice in the human services, whereas in Britain, the focus has tended to be on improving service outcomes' (Shaw, 2005, p. 1233). Whatever the angle, the role of the researcher-practitioner brings considerations of bias, influences and presumptions on the part of the individual. The point in this section is to show that this is also a factor in the design and implementation of a literature review and the actions of the researcher can lead to bias, even in the searching of literature (Braye & Preston-Shoot, 2007).

My role as both researcher and practitioner is referred to at numerous points in this thesis as an effort to point to the 'interweaving nature' of the researcher-practitioner identity (Brown & Roberts, 2000). By highlighting myself in the writing, I make visible both the practitioner delivering the intervention and the researcher examining the impact of the intervention. By offering this transparency, even at the literature review stage, every effort is made to manage bias in the selection and analysis of the research.

2.2.2 Means of gathering Literature

The literature review was conducted primarily in 2011 as part of the Doctorate in Social Work programme in Year Two (Critical Analysis Study (CAS) assignment) prior to the research project and was followed up by further searches in 2014. The method of conducting this literature review is best described as a 'narrative method' (Kiteley and Stogdon, 2014). This is 'characterised by a concern for drawing together conceptual and theoretical ideas from a range of literature' (Kiteley & Stogdon, p 11). The alternative to this approach is often a 'more rigorous and more systematic (approach) in how the review process is carried out, the material is assessed or appraised and how the findings are reported' (*ibid*, p 11). Sharland (2012, p 483) argues that 'as a whole, the systematic review process aims, and claims, to be as transparent, consistent and bias-free as possible'. While the literature review conducted in this thesis is not presented as a systematic literature review, the attributes of sound literature review are present in the form of use of search strategies, inclusion and exclusion criteria and the transparency of the review process. For this study, the adding of a different combination of searches to the re-run of the original literature search speaks to the fluid redefining process discussed by Sharland (2012). In addition, following Sharland's (p 494) assertion that 'reviewers need to ask questions that include and extend beyond 'what works' and in answering them to draw on empirical research across all paradigms', Randomized Control Trials (RCT) and experimental designs were given equal weight with methods from other traditions, such as case studies and qualitative findings. In addition one concept-based paper was also included as it was thought that this could deepen the understanding of the connection between practice and theory and have an influence on practitioners (Sharland, 2012).

In 2011, for the CAS, the general search terms of -Biofeedback, ADHD, school, technology, social work, family therapy, mindfulness, in various combinations were made in a number of search engines such as Scopus, Psychinfo and Google Scholar. This search produced 1300 hits to which the exclusion and inclusion criteria (see Table 2.1) were applied. After this 13 articles were considered to meet both sets of criteria.

Table 2.1 Exclusion and Inclusion Criteria

Exclusion criteria	<p>Research published prior to 1996</p> <p>Research that has not been peer reviewed.</p> <p>Neurofeedback based approaches- This is discussed in more detail later in this section</p>
Inclusion criteria	<p>Location of research (non-geographical):</p> <p>First preference for naturalistic locations (e.g. schools, hospitals),</p> <p>Second preference for controlled settings (e.g. laboratory)</p> <p>Research design: Any, with particular interest in mixed methods and triangulated approaches.</p> <p>Age: First preference for similar age to students in this study (7 to 12 years),</p> <p>Second preference for no age restriction</p> <p>Biofeedback in combination with another intervention</p> <p>Position paper on concept of using biofeedback in school settings</p> <p>Connection with preference given to social work, then school based psychology.</p>

In 2014, the search was re-run with additional combinations of the general search terms- Biofeedback & Social work, Biofeedback & interventions, ADHD, behaviour, mixed methods research & interventions school modification & Biofeedback in schools, Mindfulness, ADHD & school based intervention, ADHD & Biofeedback (Appendix 1). As in the CAS, research carried out in schools was prioritized. I was also interested in reviewing research that was practice led and which could be transferrable across different settings, keeping in mind that in a naturalistic setting, a 'fundamental premise is that the researcher deliberately does not try to manipulate variable or conditions, that the situations in the research occur naturally' (Cohen et al, 2007 p

138). I was also open to reviewing research that measures improved symptoms as in my professional role I was interested in the outcomes for the students.

This new search presented approximately 1500 articles based on these general search terms. From this, the number was whittled down to 17 (4 new articles, plus the previous 13) when the more specific inclusion and exclusion criteria were applied (see Appendix 2). It is important to note one main exclusion criterion of the search. The field of Neurofeedback is often labelled under the general term of Biofeedback but was part of the exclusion criteria for this literature review. This is due to the fact that Neurofeedback was not considered as part of the intervention and research design as it requires specialized training and, in some countries, registration. The equipment used, which measures brain waves, is also expensive and my service did not have the financial resources to purchase it.

Another exclusion criterion and possible limitation of this review lies in the sole focus on peer-reviewed publications. I am aware that this is a somewhat ironic position given that in this thesis I advocate practitioner-based research as a means of generating social work knowledge. However, Cooper (1998, p 75) points out that ‘focusing only on published research can be justified as it can generate results of many relevant studies; but one then misses information “contained in informal channels”, such as practice based magazines like the USA based, ‘Social Work Today’. This could be considered to contradict my practice focus as I am aware of what Cohen et al (2007, p 138) calls ‘ecological validity within the research process’, pointing towards a sensitivity to what is happening at ‘the chalk face’. Considering that it can take a long time to when an article comes to press from when the research was actually carried out, there is an argument to support the use of non-peer reviewed studies. As a result, with the goal of being informed about the ‘chalk face’, I searched Google, in 2014, using the search terms - heart based biofeedback, ADHD. Based on this search, I have read a number of unpublished studies (e.g. Connolly, 2009) that largely support the design and results found in the peer reviewed selection. While this information was not used in putting together the design of the research, it helped give me context and motivation in knowing that others recognise the potential with connecting technology and social work intervention for students with behavioural and concentration difficulties.

The 17 articles are presented in a table format (See Appendix 2) showing purpose of study, methodology, subjects and results. This format was influenced by Rose et al (2010, p 45) who argues that ‘the ordering of literature is an essential process that enables the researcher to

undertake the task of reading in a logical manner whilst retaining a focus upon specific issues of concern in relation to the overall research questions’.

2.2.3 Choice of Methodology for analysing the literature reviewed

The main ambition with undertaking the literature review can be summed up by Rose et al (2010, p. 92) who explain ‘it is essential that the researcher uses the literature review to develop a rationale and argument for her own particular choice of methods’. On top of this, the process also helped my learning of what a piece of research looks like, at least at the publication level. Kaplan (1973) supports this when he suggests that the aim of methodology is to help us to understand, in the broadest possible terms, not the products of scientific inquiry but the process itself. This view about analyzing the literature ‘recognise(s) the need to develop an ordered approach to reviewing, which in considering coverage, synthesis and methodology enables the reader to gain insights into the theme under scrutiny’ (Rose et al, 2010, p 92). As mentioned in the above section, the selected articles and the themes by which they were assessed were presented in tabular form, inspired by Rojas et al (2005) who also presented an in-depth review in this format. The 17 articles reviewed were examined from the perspective of – 1. Purpose of the research, 2. Design of the research, 3. Intervention type and Time Scale, 4. Profile of the Participants and 5. Results of the Intervention. These categories were generated before the articles were examined and follow the approach outlined above regarding Kiteley and Stogdon’s (2014) narrative method.

As stated above, this literature review presents research from qualitative and quantitative traditions. In order to do so, it is important to be able to recognize the distinctions between qualitative and quantitative approaches. Qualitative data often focuses on experiences of research subjects and produce analysis that tends to be detailed and rich (Cohen et al, 2007). At ‘a practical level, quantitative research rapidly amasses huge amounts of data’ (p 462, *ibid*) and is often presented in statistical form. However, the use of ‘mixed methods has become increasingly popular as a means to harness the strengths of both approaches, triangulate data and illuminate statistical findings with, for example, case studies and/or vignettes’ (Somekh & Lewin et al, 2005, 215).

As Cohen et al (2007, p 86) state, the 'prepared researcher will need to consider how the data will be analyzed'. In this instance, and in combination with the above categories, I used the following framework (Basse, 1990) for identifying and evaluating the key content of each paper,

1. What contribution to knowledge was claimed?
2. What conceptual background did the author indicate was the starting point for this research?
3. What methodology underpinned the enquiry?
4. Was the collection of data, as reported, appropriate, sufficient and ethical?
5. Was the analysis and interpretation of the data transparent?

2.2.4 Reliability and validity of the selected literatures

Reliability and validity are crucial in determining the quality of research. Cohen et al. (2007 p 146) see reliability in 'quantitative research [as] essentially as a synonym for dependability, consistency and reliability over time, over instruments and over groups of respondents. There are three principal types of reliability: stability, equivalence and internal consistency'. The 17 articles in this study were examined for their level of reliability and validity through a process of discussing their limitations, acknowledging however that the expectation of how reliability and validity can be demonstrated vary between quantitative and qualitative research. It was believed that the study in this thesis could be designed in a manner that recognised its own limitations and thereby enhancing its reliability and internal validity. The research reviewed was considered from two angles (Cohen et al, 2007):

1. Internal validity seeks to demonstrate that the explanation of a particular event, issue or set of data which a piece of research provides can be actually sustained by the data.
2. External validity refers to the degree to which the results can be generalized to the wider populations, cases or situations.

The categorizing of the papers, using the themes discussed above in section 2.2.3, (i.e. the columns in Appendix 2), facilitated the organising of the literature. From this point, the papers were contrasted and compared with each other. The analysis of the articles through the use of

a general narrative approach, together with a specific critique on critical aspects such as validity, reliability and limitations, makes up the focus of next section.

2.3 Literature review analysis and discussion

The table in Appendix 2 represents an overview of the 17 articles examined, with their content categorized according to the framework discussed in the previous section. In this section I expand on what emerged in more detail in the following section.

2.3.1 Study participants

Less than half (7 out of 17) of the literature reviewed had subject participants in the age range of 7 to 12 years. Within those, the size varied from 150 children (Wenck, 1996) to single case studies of individual children (McHugh et al, 2010). For the rest of the literature reviewed, two of the studies, (Finger et al, 2002 and Matuszek et al, 2003) were literature reviews and the remaining studies had older students, college students and adults as the subjects (Kleen et al, 2011, Henriques et al, 2011, Cohen, 2010, Bradley et al. 2010, Ducharme et al, 2012). The studies were carried out in schools, laboratory settings and hospitals with participants living in the United States and United Kingdom. Gender difference or socio-economic differences were not recorded for the simple reason this research study did not plan on making any assessment on these factors impacting the research outcomes. While the geographical spread is narrow, it does point to the cultural conditions that give spaces for such research to take place. Therefore the conclusion drawn from this is that there is a basis upon which to justify using the approach with the students in FC. The review of the participants does not lead us to suggest that Biofeedback is more suitable for one set of people over another; rather it appears to have an appeal that can be adaptable to any age.

2.3.2 Research objectives

When grouped as a whole, the purposes of the research reported in the papers can seem quite varied. For instance school-based interventions (Matuszek et al, 2003) are discussed while Biofeedback in an oncology service is also presented (Cohen, 2010). However I suggest that there are many similarities between the articles, all of which met the inclusion

criteria presented at the start of the chapter. Finger & Arnold (2002), chosen as the concept paper, advocate for the application of Biofeedback in schools, administered by a social worker. The standout theme is the application of Biofeedback in conjunction with other interventions. McHugh et al (2010) support such integration when they write that Biofeedback is often used with other intervention approaches (such as systematic family therapy) and is seldom used as a standalone intervention as it is used to complement the messages of other approaches. In their work, for instance, biofeedback feedback based on stress levels and high heart rates was audible for everyone, thereby involving the family members in managing the young person's stress level when the device emitted the sound. This is further supported by other papers reviewed, as Biofeedback is shown to have good results in combination with Cognitive Behavioural Therapy and with Acceptance Therapy (Kleen et al, 2011, Shockey et al, 2013) as the message behind these approaches is expressed in a way that allows the user to connect their bodily reactions to the language of the therapeutic approach. The inclusive multidisciplinary nature of the Biofeedback method is evident by the range of different disciplines that appear comfortable in using it e.g. medicine, psychology, social work and education. Some of the research articles (e.g. Mendelson et al, 2010, Singh et al, 2010) make the connection with mindfulness, which draws the same conclusions on using bodily information to improve mental understanding. The significance of this is that research designs which use mindfulness can also, arguably, inform research design for Biofeedback.

The purpose of much of the research covered above is to evaluate the effectiveness of Biofeedback as a method that can help with a specific client base (Wenck, 1996). The majority of the studies have very clear aims and clear questions regarding what they want addressed. Underlying the research aims are the desires to provide a better service to the clients, to evaluate if something works and apply scientific rigour to answering those questions. The purpose of the concept-based papers and literature papers (such as Finger et al 2002) was to present arguments on why Biofeedback fits with social work values. The papers reviewed tended to be discussion based and did not carry out their own research; rather they referred to what others have done. As presented above, Sharland (2012) makes the argument that these types of papers have a place in evaluations of research as they bring another dimension to what constitutes relevant knowledge.

2.3.3 Research methods and methodologies

Overall, the research presented was largely designed with quantitative methods (11 out of 17). While some of the research studies also applied qualitative methods (2 out of the 17) only one used a combination of mixed methods. The qualitative methods included the application of a case study methodology (McHugh et al, 2010) and informal interviews (Singh et al, 2010). One study (Kleen & Reitsma, 2011) attempted to assess the effects of the subjective experience of the client and facilitator whilst using Biofeedback through quantitative methods. The majority of the studies had an evaluative focus to their purposes and surprisingly only two were led by a research objective that looked to explore the subjective experience of the user of the Biofeedback.

Questionnaires were used in one study (Kleen & Reitsma, 2011) but it was more typical to find the use of scaled surveys as a research method (e.g. Singh et al, 2010, Henriques et al, 2011). A scale is a popular tool used in psychology for assessing problems and measuring change in clients. With the spread of evidence based practice their use has also grown in social work (e.g. Frans, 1993). A wide range of measurement tools were used in the different studies reviewed, for instance, the Responses to Stress Questionnaire (RSQ), the Involuntary Engagement Coping Scale, the Short Mood and Feelings Questionnaire-child version and Relations with Peers and School-self reporting in Mendelson et al (2010). Singh et al (2010) used the Mood and Anxiety Symptom Questionnaire (MASQ) together with the State Trait Anxiety Inventory to capture data. All of these scales have been developed in prior research and the authors argue that they stand up to the demands of internal and external validity. In one research project (Amon et al, 2008) a scale was used which the authors themselves put together. The limitations of this are discussed later in the chapter. Another popular scale, the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997), was used by two of the research studies (Amon et al, 2008 and Lloyd et al, 2010). This scale is widely used and is freely available, making it a popular and valid instrument for the measurement of the effectiveness of interventions. In comparison to the other scales, the SDQ allows the researcher to focus on issues including, but not limited to, behaviour and concentration. This survey, administered to parents, teachers and students over a certain age focuses on hyperactivity/inattention, conduct problems, emotional difficulties, pro-social and peer relations and perceptions of the problems.

The practice of using an intervention ‘off the shelf’ so to speak and evaluating its effectiveness, held a strong resonance with my project’s approach, and was present in five of the studies (e.g. Singh et al (2000) & Ducharme et al (2012). For two of the research projects (Tyron et al, 2006 & Bradley et al 2010) the Biofeedback instrument was itself used as the instrument that measured the activity levels of the child. Bradley et al (2010) and Ducharme et al (2012) both made use of semi-experimental design in carrying out their projects with classroom children and adolescents with anger issues. This approach is commonly used in social sciences to mark changes and in the absence of having a control group.

2.3.4 Results in literature reviewed

All the empirical studies reported positive results from the Biofeedback use and point to Biofeedback’s adaptability to be integrated with other approaches. As many of the samples were small, authors were slow to make generalizations, instead advocating for further research to be conducted in the area. The positive claims about one particular form of Biofeedback technology point to the potential adoption of this technology in my research design and intervention. That said, one study questioned the grounding of the concept of coherence, a key perspective in the technology’s theoretical approach, in being an accurate reflection of internal functioning and mental well-being (Henriques et al, 2011). Edwards (2013, p. 236) presents physiological coherence as a ‘state of synchronization between heart, brain, immune and autonomic nervous systems’. Henriques et al, considered that the technology ‘could become a significant and important tool in our culture’ (*ibid*, p. 111) in addressing anxiety in children. This seems to suggest that whilst the findings on coherence were in question, the technology had potential in helping students.

The research examined also produced relevant findings. Finger et al (2002, p58) provide a good overview on connecting mind-body interventions to social work practice. They acknowledge that,

‘While researchers suggest that social workers might use reduction approaches, the research has generally not examined which specific techniques might be appropriate and the reasons behind them. In addition,

little discussion has taken place about what the social work profession needs to do to make more of a presence in this growing area'.

More significantly there is 'very limited social work presence in the literature on mind & body perspectives, particularly in the area of outcome research' (Finger et al, 2002, p. 69). By outlining the dearth of research conducted by social workers in the area, the authors are advocating an expansion of the knowledge base. Few research articles by social workers in this topic exist, and as Finger et al (2000, p. 69) outline 'the majority of the existing studies were conducted by physicians or psychologists'. Additionally, few solutions to remedy this situation have been proposed and/or implemented.

Matuszek et al (2003) provides a coherent philosophical base from which to argue for further research in Biofeedback in schools so that the 'intervention moves the practitioner away from the medical model of treatment (a crisis model) to a learning model that is conducive to a strengths perspective intervention' (p. 31). They argue that 'recent improvements in instrumentation make Biofeedback a viable, reliable, and accessible adjunct to interventions' (*ibid*, p 33). Bradley et al (2010, p.278), comment on their own research that 'this the first study that we know of to show what high school student's HRV (Heart Rate Variability) can be increased over a relatively short period of time, and that as such improvement in autonomic function can be accomplished through a supplementary classroom program'.

2.3.5 Biofeedback technologies and intervention timeframes

This section will briefly examine the different Biofeedback technologies. The purpose of this is to highlight the range of the devices reviewed (6 different types in the 17 articles reviewed). The area of Biofeedback utilizes many different devices but those produced by one particular company were more common than others in the research reviewed. They produce a device that is used in three of the research projects. Other devices were also used such as the computer game based intervention that makes use of meditation techniques and breathing exercises described by Bradley et al (2010). McHugh et al (2010) make use of a Biofeedback belt and watch that measures heart rate. A beep is sounded in the ear of the user once the heart rate goes over exceeds a certain threshold. The belt records the heart rate and is used to facilitate discussion on incidents that happened whilst the user is wearing the belt.

Tyron et al, (2006) used an actigraph, which measures activity levels in ADHD children. An actigraph is a non-invasive device which measures rest and activity levels. Other variations of Biofeedback devices included the use of thermal training (skin temperature) and electromyography (muscle tension) in the effort to help reduce children's anxiety (Wenck et al, 1996). All these devices were used to facilitate measurements of physiological changes and give this feedback to the user. However, some authors found that some of the expected physiological changes were not observed (Henriques et al, 2011).

The time span for the interventions was varied; however 12 weeks and 12 sessions emerged as a length of time for interventions (e.g. Singh et al, 2010 & Mendelson et al 2010) that was comparable to the length of time that Family Class runs. In another example, Amon et al (2008) allowed participants to choose the frequency of attendance, e.g. once a week or three times a week. The results showed that there was little statistical difference between the once a week intervention and the three times a week intervention. Not all the studies involved the use of a clinician or a therapist. Henriques et al's (2010) research design had it such that subjects received only simple instruction on how to work the technology themselves. Subjects used the device daily for 20 minutes session over a four-week period. Other studies has subjects receive the intervention daily (both control and experimental groups) with others having subjects record 30 minutes of activity across a number of sessions in the school class setting. The older participants were given less direction, presumably because of their cognitive abilities.

As this section shows, there was no overall consensus on the length of the intervention, how the use of biofeedback device was integrated or how the intervention was delivered. This means that there was a degree of flexibility with how Biofeedback was to be integrated into the FC model but some basic lessons were learnt. Primarily, the younger children would need support in helping to understand how to work the Biofeedback and for it to make sense in their everyday life. Secondly, a time-slot within the FC day would need to be allocated. Based on the research review a time period of 15 to 20 minutes could be considered appropriate. The findings that 7 out of the 17 articles had biofeedback as part of an intervention for children suggests two things: the first is that this indicates that Biofeedback can be an approach suitable for children; the second is that there is a need for more peer-reviewed publications regarding biofeedback and its effectiveness as a method of working with children.

2.4 Lessons learnt and Limitations of research results

A critical assessment of the research was necessary so that I would be able to design my research with the utmost attention to recommendations and shortcomings of other pieces of work, in particular the articles examined for this chapter. For example, Steinar et al (2011, p 621) comments that 'our failure to find changes in teacher reports may result from the fact that assessments were completed in different school years by different teachers, thus lowering reliability, or from a lack of improvement in classroom behaviour and performance'. This insight determined the timing of my intervention to coincide with the start of the school term so as to eliminate the possibility that the students needed to change teacher. In Amon & Campbell's (2008) study, the research was conducted at a University campus. One can argue that any research conducted outside of a natural environment, such as the classroom, brings with it questions of efficacy and transportability. This infers that the artificial environment of the research, in this instance the university, can threaten the external validity of the findings. Equally significant was the fact that the research was conducted in a group, but the authors did not provide any discussion on group dynamics and interaction. Group interaction and dynamics can play a significant part in the changing behaviour, a fact I can attest to from many years of working with groups and which is backed up by other studies (e.g. McRae & Short, 2010). A further limitation of Amon & Campbell's study was that the authors did not include a longer-term follow up, such as 1 month or 3 months post treatment. This would have added more significance to their positive findings. The authors used a number of different measurements such as the SDQ but also created their own AD/HD questionnaire. Their discussion in the article lacked any analysis on whether this measurement has been validated or subjected to independent research. While I am not claiming that this detracts from the results, an open discussion on the reasoning behind the instruments would have given more credibility to their findings. The authors stated that their aim of the study was to explore the use of Biofeedback video games to teach relaxation skills to children aged 5 to 15. It is not unreasonable to argue that this is a wide age spectrum and from a developmental perspective, an intervention for a 15 year old can be a very different experience when compared to that of a 5 year old.

In support of Biofeedback, Amon et al (p.82) go on to point out that 'it is not surprising that in this generation of technically advanced children, participants in this study took great interest with the therapy through the video game format'. It would have been interesting to discuss this

point with reference to the possibility for sensitization to experimental conditions. The question remains: how much time is optimal, where a balance of effectiveness and engagement can be met, before the student loses interest? In relation to the same article, the authors state that 'it would not be ethically viable to use a waitlist control group because research has shown there are treatments for AD/HD' (p 81). Ethical discussion was absent in many of the papers such as Slutsker et al (2010) and Singh et al (2009). Wenck & Leu (1996, p.429) identified a subject population of 150, with half of the sample receiving Biofeedback treatment as the experimental group whereas the control group did not receive any. The authors did not discuss ethics as part of the research process and, as identified earlier in this chapter, this can be a contentious ethical issue as there are treatments for children who display anxiety and worry. The 150 subjects were identified by psychologically validated measurements so were representative of a population of children who display anxiety and worry. Other articles acknowledged the ethical approval process, which made the absence of any discussion in other articles all the more glaring. As a consequence, the ethical process involved in this thesis is given significant space in Chapter Four.

Some opportunities were missed to enhance the readers' overall understanding of the context of research. For instance, Lloyd (2010) refers to inconsistencies in 'the capture (ing) of data on the Heart Rate Variability (HRV) coherence' (p. 41) but does not explain this further. This could have provided interesting information as my research had a similar target group. Singh et al (2009) planned training in mindfulness for parents and children. The research design could have been enhanced if the authors had considered some measurement of change in the school setting. Evaluation from the perspective of those working in schools is supported by other research (Lloyd et al, 2010). Henriques et al (2011) recruited subjects by offering college credits for attendance. These raise interesting questions about having a representative sample, where one could argue that receiving credit could impact a subject's motivation and 'experimental mortality', i.e. dropout.

On reflection, all of the articles reviewed, bar two (Ducharme et al, 2012- in the form of a session survey, & Kleen & Reitsma, 2011) did not attempt to present the views of the children or adults who were being studied. One felt quite detached from the subjects whilst reading about them. This fact was a key motivator in deciding that the students in the research underpinning this thesis would be given space for their voices to be heard. Another key lesson

learnt, considering the absence of a control group in this intervention, is that the semi-experimental design, used in two of the articles, could provide a feasible approach to capture the effects of the FC intervention on the students.

2.5 Conclusion

The aim of this chapter was to synthesise the information from the 17 chosen articles and to establish if a basis exists for using and researching Biofeedback as an intervention for children with behavioural and concentration difficulties. The chapter outlined the various research aims of the articles with the majority of the articles having an evaluative slant to these objectives, i.e. evaluating if the Biofeedback is effective or not. The articles indicate that Biofeedback is an adaptable tool and can be combined effectively with interventions such as Cognitive Behavioural Therapy, Acceptance Therapy and Mindfulness. The research design of the 17 articles was predominately quantitative with discussion supported by statistical analysis. Qualitative methods were represented in a small minority, with the use of case studies and informal interviews. Most of the research used scales, such as the Strengths and Difficulties Questionnaire, to help evaluate if the interventions were effective and to help identify subjects for the studies.

The characteristics of Biofeedback technology were varied but five studies stood out for the use of technology from a particular organization (Amon et al, 2008, Henrique et al, 2004, Slutsker et al, 2010, Bradley et al. 2010 and Shockey et al, 2013). Six of the research projects reviewed made use of a computer-based program that used biological information. The study participants were varied but some were in the 7 to 12 year age bracket. This supports further research with this age group as none of the papers discussed pointed out any negative side effects of their research. In fact all of the papers reviewed found that Biofeedback had positive effects, but understandably, many were slow to generalize due to either small samples or highlighting the need for further research. It is also worth considering at this point the phenomenon of publication bias, whereby researchers tend to publish results that show 'success', studies that result in no-change or had negative results are less likely to be offered for publication (Rubin & Babbie, 2009, p. 255). The concept paper (Finger et al, 2002) supported

the theoretical and practical connection with Biofeedback and social work, helping to create a foundation for future research.

The chapter concluded with a discussion on the limitations of the research reviewed. The most glaring inadequacy in the articles was the lack of discussion on ethics and the absence the child's perspective. The child is often the centre point of empowerment-focused intervention; as a result it is important that the child's voice is heard. Taking this on board, the student's perspective was given equal weight in the research design in this thesis. The literature review was conducted so as to identify how biofeedback was combined with other interventions in therapeutic contexts. Within this review was the hope to learn from other research papers on possible empirical designs. As a consequence, research questions identified in Chapter One were guided by gaps identified in this literature review and the semi-experimental design discussed in Chapter Four builds on approaches taken by other researchers covered in this review.

Chapter Three: Empowering students with behavioural and concentration difficulties via Biofeedback in Family Class: A conceptual framework

There is more than one kind of freedom...Freedom to and freedom from. In the days of anarchy, it was freedom to. Now you are being given freedom from. Don't underrate it (Atwood, 1985, p 34)

3.1 Introduction

The above quote, from Atwood's dystopian novel 'The Handmaids Tale', sheds lights on the struggle for freedom of women in the novel's society of totalitarian theocracy. The various forms of subjectification ensured that the women's reality was a daily struggle to attain various forms of internal and external freedom. Atwood's words give imagery to the personal freedom that is experienced differently by each individual. For students with behavioural and concentration difficulties, freedom from *externalized* behaviours and *internalized* struggles are fundamental to the student's experiences in the school and need to be well supported through social work interventions in schools. Therefore, by drawing upon relevant multi-disciplinary (e.g. sociology, psychology, social work and pedagogy) perspectives on empowerment, this Chapter argues firstly that empowerment can be seen as an effort in countering normalisation and control, and secondly, that empowerment can be seen as empowering through promoting freedom. The reunification of mind and body via self-regulation can be seen as an innovative empowerment practice through which students can take control of their behaviour and concentration in the classroom.

The chapter examines the initial concept of empowerment in social work, and follows by evaluating the power relations in the classroom through Michel Foucault's post-structuralist arguments on power and normalisation. Then, based on Dewey's pragmatism, it will discuss empowering and promoting freedom as the way forward for empowerment.

3.2 Empowerment as one of the key social work values and ethics

Empowerment, both as process and outcome (Miley & DuBois in Shera & Wells, 1999, p 2) holds an important place in the theoretical perspective taken in this thesis. To begin

with it is important to acknowledge that the place and time of this research afforded me the privilege of working without significant amount of bureaucratic pressures often associated with social work. The local politicians created the possibility for a joint working arrangement with social services and schools in Malmö. Subsequently, employed as the social worker to run the FC intervention, this space allowed me to reflect and directly affect my practice. Such a work environment may not directly reflect the practice reality for many other social workers; however I make the argument that one can look for possibilities of promoting empowerment in all interactions with clients, taking account of the power relations at work in any given context.

The discussion on whether social work is 'freedom-friendly' (Jordan, 2004, p 6) or has lost its way from the origins of its initial mission is a relevant one. Putting that argument in context, Jordan (2004, p 6) tracks the development of social work 'from the being at the cutting edge of policy innovation in the post-war welfare state, to identification with many themes of personal liberation and anti-discriminatory collective action in the 1960s and 1970s, to the implementation of government policies for risk assessment, rationing and enforcement in the past decade'. In some ways, the theoretical focus for this thesis, upon which I will elaborate later in this section, reclaims the voices of the 1960s and 1970s and seeks the empowerment of the students as individuals. The echoes of the past decades are present but with new technologies and theoretical applications the approach taken in this research is innovative and new.

An empowerment approach has intrinsic aspects that most people can agree on (Askheim, 2003). For instance, empowerment has a positive and optimistic focus on the individual's ability to take action in their life. Others see it as 'a process of increasing interpersonal or political power so that individuals can take action to improve their life situation' (Gutiérrez, 1990, p. 149). Or as Thompson looks at it, empowerment is 'the process of giving power to clients in whatever way possible-resources, education, political and self-awareness and so on' (Thompson, 1993, p.32). Regardless of which definition is most representative, empowerment is considered as one of the key social work values (Dominelli, 2002). It is a term that is used broadly, even when the users may have different political positions and as such it can 'contain trends which are ideologically in strong opposition to each other' (Askheim, 2003, p 231). In Sweden, 'the concept is associated with professional social work' (Heimersson & Jönson, 2013, p 11) and is aligned with the first section of the Swedish Social Services Act (SFS 2001:453) that

describes the objective of municipal social work as 'aimed at liberating and developing the innate resources of individuals and groups' (*ibid*, p 9). In the UK, empowerment theory in social work is often presented as an element of anti-oppressive practice (Dominelli, 2002). Akin to this is the issue of individual rights and the concept of 'consumer citizenship' (Evans & Harris, 2004). Within this discourse, 'individual citizens' rights are seen as an essential counterbalance to professional power and self-interest' (*ibid*, p. 70). Rights, like empowerment, can 'confine as well as having the potential to liberate' (*ibid*, p. 70). The connecting of the concept of the citizenship with the rights of individuals helped inform major policy decision in the UK during the 1990's with the rhetoric of being an *active consumer citizen* who makes decisions based on rational choices. The dilemma for social workers was based on whose definitions of need were given priority and how to understand empowerment within this setting. Braye and Preston-Shoot (1995, p 27) go so far as to say that 'consumerism and customer care ideologies in welfare do little to promote rights of citizenship or to respond to collective need'. In an effort to challenge this influence on social work practice, Broadhurst (2012, p 294) argues, we need to identify practice examples, which 'may serve to colonise and disrupt normative neoliberal formulations of welfare and its subjects'. In fact the process and outcomes of not doing this could have disempowering experiences for clients. This is why Evans & Harris (2002, p88) call for the focusing on aspects of politics in everyday life that 'leads in the direction of seeking to rectify imbalances in power by recognising the capacity of service users to exercise human agency, acting in their own interests as citizens'. However despite the conflicts and struggles of how to work empowerment into practice, Askeim (2003) notes that although the concept has been developed mainly in Britain and USA, 'the tendencies are similar all over the western world', thereby giving social workers a *felt*, yet often unstated understanding of what the concept means to them. The challenge is to balance the re-discovery of agency within the neo-liberal 'ethic of self-sufficiency and self governance' (Broadhurst, p 295). Zimmerman (2000) has written extensively on empowerment and sees that within each perspective, empowerment is central to the work of improving human lives.

Lassiter et al (2006, p 246) outline that 'empowerment has been defined as the ability to influence people, organizations, and the environment affecting one's life'. Cochran (1987) and Hasenfeld (1987) see it as the gaining, developing, seizing, enabling, or *giving of power* (Staples, 1990) and attaining control over one's life, including further participation in the community is

the focus of Berger & Neuhaus (1977) and Katz (1984). Cattaneo & Chapman (2010, p 646) connect empowerment to research and practice when they point out that 'in short, the compelling nature of the concept of empowerment has led to its widespread use in the contexts of research, practice, and social action in psychology and related fields'. Indeed it is this 'compelling nature' that motivated me to question the FC intervention and ask whether the values of empowerment were present in the social work practice I was delivering.

The influence of political decisions on practice is always present. For example, Jordan (2004) argues that government policy in the UK has had a significant impact on how social work constitutes itself and in turn how empowerment is used to achieve political aims. In the post war UK, the creation of the welfare state brought social work into new relationships with people. He then considers that through a 'technology of self' the political agenda of creating engaged and active citizens was integrated into the discourse of current day social work. The fact that social work is charged with empowering people and at the same time has to deal with being more 'demanding, more controlling and more coercive' (Jordan, p 17) means that the core values are challenged and lip service often paid to terms such as empowerment. Jordan forecasts that 'practitioners in state services (and their managers) will increasingly face the frustrations and failures of their practice, if it pays lip-service to autonomy, choice and empowerment, but actually deals in rationing, risk-assessment and court orders' (Jordan, 2002, p 16). As such it is important to have an empowerment theory that can reflect the genuine best wishes on the part of the social worker for her/his clients for creating of opportunities and possibilities for their growth.

Practice based ethical dilemmas based on control and empowerment, as discussed by Tew (2006), reflect the tenuous relationship between empowerment and social work. He suggests that there has been an insidious tendency for the 'technologies of empowerment' to be appropriated by practitioners who may thereby find a way to retain their status as "experts", and their ability to exert influence over other lives. In this context, Tew argues that the modernist view sees power to be possessed by individuals or society as a whole. This view of power supported approaches to social work that had Marxism and anti-oppressive practices as core focuses. These efforts looked to reclaim power *for* marginalised and oppressed people *from* those who possess it. Like Jordan, Tew argues that understanding power is integral to how empowerment is manifested.

The insight offered by post-structuralist/post-modernist perspectives allows for a critical analysis of empowerment. This is necessary in order to reclaim empowerment from political agendas and set it back as the driving force behind social worker practice. Peace notes (2002, p 139), that most definitions of power rest upon 'a judicial model' understanding of the term. He goes on, referencing Young (1997), to say that this model of power and domination, such as a Marxist structural analysis, is inadequate in explaining domination and resistance in the lives of members of oppressed people as 'many services users may feel so disenfranchised from any reality of citizenship that the operation of power may be experienced as very much one-way' (*ibid*, p 35). However, Peace (2002) argues that seeing power as based on relations between people and expressed through interactions implies greater capacity for 'deep empowerment' (Macdonald & Macdonald, in Shera & Wells, 1999, p 51). This leads to the individual exercising psychological control over personal affairs with the outcome of empowerment leading to an 'end state of achieving either personal or political power'. The power relations, in the context of this research also include the relations that I had with the parents and teachers and the expectations that an evaluation of an intervention implied. The underlying hope shared by the school and I was that the FC and Biofeedback could be evaluated and knowledge from the ground level could be created.

Criticisms levelled against empowerment, in particular against the view that focuses on the individual, suggests that 'empowerment may thus give the illusion of equality while in fact maintaining the hierarchical character of the worker-client relationship' (Peace, 2002, p. 136). This is in spite of the good intentions of those 'who seek to empower others, the relations of empowerment are themselves relations of power' (*ibid*, p 137). The struggle of individuals to be free from restraints imposed by other people and from those, which are self-imposed, is at the core of the view I take on empowerment theory. This perspective on empowerment is a challenge to Langan's argument (1998, p. 214) when he postulates that empowerment 'implies an individualistic conception of power which by reducing social relations to the interpersonal level, obscures the real power relations in society'. Supporting my focus on agency, Sue (1981, p 87) suggests that one way of 'overcoming self-reinforcing defeats, is to help clients from disempowered groups move towards internal locus of control/external locus of responsibility, which is a characteristic of those who, despite a lack of opportunity, believe in their ability to

shape events in their own lives if given a chance'. This is seen to challenge internal oppression and the negative self-image that maybe internalized by socio-economic struggles.

The social work practitioner is in the position of facilitating, helping to identify obstacles, and otherwise 'supporting a client's own process of empowerment' (Cattaneo & Chapman, 2010 p 656). This position sits comfortably in the epistemological paradigm of this thesis. As social workers engage with social justice issues and not just the 'intrapsychic', it is important to point out that empowerment must also look at the areas that can constrain or facilitate the efforts of their clients (in the context of this thesis, the influence the classroom, family systems and so forth have on the students). The power relations are also present for the social worker, the intervention and the school. This interaction needs to be considered but is outside the scope of this research project to examine in any detail. The aim of the Biofeedback and FC intervention is to create a better relationship between the 'intrapsychic' and the social world. One cannot ignore that empowerment is difficult to pin down because it is very much context dependent. Smith supports the subjective nature of empowerment when he states (2004, p. 420) 'if we really believe in empowerment, then we need to position the children as participants in that process too'; that said 'children's empowerment does require conditions to be put in place. It is situational' (Ansell, 2014, p 28). A postmodern and post structural approach to power supports this view and encourages space for the voice of all participations in the relations of power. This space creates the possibility for interactions that are based on the student's reality through engagement that is meaningful to them.

In the education context the social movement activist Paulo Freire argues that some types of education can stifle true engagement and conceal the students' power and wisdom through the use of foreign or strange concepts and theories. Liberating education, on the other hand, regards 'dialogue as indispensable to the act of cognition which unveils reality' (Freire, 2001, p 83). It could be argued that Biofeedback and FC could potentially be an appropriate approach to assist students with unveiling their own reality, which can liberate them from labels (and modernist agendas), such as '*that student with behavioural and concentration problems*'. Garrison (1998, p 114) sees that most education is simply uncritical indoctrination into pre-existent social practices. A liberating education, as opposed to a merely liberal one, teaches that self-knowledge and creation is a never ending and often-painful process of critical and creative interpretation.

This section argued that empowerment is one of the key terms in Western social work and holds a significant place in the value base of social workers. Empowerment is a difficult term to pin down but at a basic level the focus for this thesis is on assisting students to find ways to manage their behaviour and concentration through understanding that power is more than the modernist view of something to be given or taken, and existing as something removed and abstract. The next section will explore a post- structuralist view of power relations in more detail. This will allow for a deeper examination of how the students perceived their reality through the bringing of their voice to the discussion.

3.3 Applying a Post-structuralist perspective to Empowerment

In this section I argue that focusing a post-structuralist Foucauldian lens at empowerment theory is a useful exercise to ensure that empowerment is critically reflected upon. Not questioning empowerment can be dangerous and dis-empowering of clients (Wendt & Seymour, 2010). I argue that using a post-structuralist theory to challenge ideas of power and control allows for a clearer focus on what empowerment actually is the context of this research.

In order to understand empowerment on an everyday level, as offered above, one must first take a critical look at power relations at the core of ones interactions with others. Gilbert & Powell (2010, p4) suggest that Foucault provides ‘an authentic toolkit to interrogate power relationships between health and social care professionals and service user groups’. Power is an important topic for social workers to engage with, as part of our value base aims to empower and give voice to those clients in vulnerable positions (Hasenfeld, 1987). Power is an integral part in the relationships we form with our clients and is no different in my work with the students in this research group. As Foucault (1991) would suggest, power is present in all facets of human life and can be misused to control populations and individuals. By applying Foucault’s earlier work we would be justified in arguing that any interventions in a school setting have an end point in the control of the students through ‘governmentality’, resulting in docile subjects (Peters, 2002). Foucault (1980) argues that the practices of power regulate subjects through a process of self-regulation and self-discipline. Subjects collaborate in the policing of their own lives. Foucault calls this mechanism of power governmentality. So for Foucault, self-regulation

by students is a manifestation of political power, not empowerment as expressed in the preceding section. Peace (2002) suggests that being open to the 'stories of others' and to our own interpretations *of* those stories, we allow space for resistance to dominant power discourses. Foucault (1977, p 55) argued that disciplinary power 'emerged with the rise of modern institutions and spread throughout society' such that the continuities of power relations are evident not only in schools, hospitals, prisons, factories and other institutions, but also outside institutions'. In Foucault's view the macro realm of power shifts to the micro level of bodies. Gore's (1995, p 166) research, using a Foucauldian framework, had the 'contention that the apparent continuity in pedagogical practice, across sites and over time, has to do with subtle but pervasive exercises of power relations, in educational institutions and processes, that remain untouched by the majority of curriculum and other reforms'. She goes on to say that 'educational researchers have paid little attention to this micro-level functioning of power in pedagogy'.

The FC system, used in this research, is a behaviour modification program that uses a point system that draws its effectiveness through commodification of behaviour. With that in mind, Foucault (1980, p 58) asks us to consider 'what kind of body does the current society need?' More specifically in relation to this research, what kind of body does the school classroom need? We can get an indication of the ideal type student by some of the goals that are set for children in FC:

- Sit still in your chair
- Hold your concentration for at least 20 minutes
- Raise your hand when you want to ask something
- Show respect to adults and your fellow classmates

The goals suggest that the premise of the intervention is to create a student that is docile and behaves according to a norm. As mentioned in Chapter One, my initial concern on the FC intervention was the degree of control it forced upon students. In many ways one could argue that being docile and obedient are required for everyday classrooms and that as an intervention FC has an unstated objective to control these students for the benefit of the teacher and the rest of the class, who may be disrupted by their actions. If social work holds

empowerment as a value, the question which faced me was *where is empowerment expressed in my practice?*

The process of governmentality, presented above, makes explicit the influence others have on the formation of the individual self. It also draws the supposition that self-regulation and self-knowledge play a crucial role in the internalisation of power relations and control. Rabinow (1984 p7) states that Foucault looked to 'create a history of the different modes by which, in our culture, human beings are made subjects'. Foucault (1977, p 77) follows up this theme in 'Discipline and Punishment', where he states that,

'He who is subjected to a field of visibility and who knows it, assumes responsibility for the constraints of power; he makes them play spontaneously upon himself; he inscribes in himself the power relation in which he simultaneously plays both roles, he becomes the principle of his own subjection'.

From a historical perspective the rise of centralized governance brought with it a need for the fostering of life and 'the growth and care of populations become a central concern of the state, articulated in the art of government, a new regime of power takes hold' (Rabinow, 1984 p.17). Foucault names this as the period of bio-power, which has a deeper focus on the body as a site of potential control. The aim of this bio-power is to force a 'docile body' to be subjected, used, transformed and improved (Rabinow, 1984 p. 19). This has echoes in the normative effect of FC intervention that focused on rewarding good behaviour and being critical of negative. That said it also could be applied to using biofeedback that has a focus of creating self-knowledge as an internalised means of control (Heller, 1996).

A comparison between the way schools and factories are run was discussed in the Critical Analytical Study submitted in October 2011 as part of this Doctorate program. There, I highlighted that there was a strong connection between the rise of the modern education system and the spreading of capitalism and bureaucracy. In this context, Foucault (1980) sees the growth and spread of disciplinary mechanisms of knowledge and power as preceding the growth of capitalism in both the logical and temporal sense. Although these technologies did not cause the rise of capitalism, they were part of the prerequisites for its success. The process of normalization appears to be finely gradated with measurable intervals in which individuals can be distributed around a norm, a norm that both organises and is a result of this controlled

distribution. The tension with the notion of empowerment for the social worker, as identified above, is often coupled with the awareness of the normalizing effects of one's actions and with the desire to facilitate empowerment. Standardised education and behavioural treatments programs (e.g. Family Class), from a post-structuralist perspective, are essential components of the technologies of normalisation. They play a key role in the systematic creation, classification and control of 'anomalies' in the social body. Foucault sees (1980) the whole process of offering support to people outside of the norm as being operated by different technologies of normalization that serve to isolate anomalies and once they can be identified and isolated are normalised through corrective therapeutic procedures.

This generalising view of Foucault's has the potential, in my opinion, to leave the social worker disempowered in his or her efforts to help empower his or her clients. Houston (2010, p 1739) attests to this when he suggests that 'Foucault's anti-humanist and decentring view of 'agency' leaves little room for the exercise of intentional acts of resistance or proactivity that shape or challenge prevailing discourse'. However at the later stage in his career, Foucault began to integrate a more productive view of agency, without actually stating the potential of the subject, when he focuses more on the idea of 'self-knowledge' as a more interesting truth game as the subject is established relationally (Seitz, 2012). This is a new view for Foucault in comparison with the idea of fixed subject that is acted *upon*. Foucault's version of ethics, also known as by the term 'practices of freedom', can be understood as the behaviour required of an individual so that the actions are consistent with the social norm, such as the '*well-behaved student*'. In Foucault's work, there is the desire to master one's own self, such as the Greeks displayed in terms of seeking and controlling pleasure (Foucault, 1988). However, crucially, the motivation here, to a large degree is the impact of the public shame and disapproval that is levied by the community towards the self. It is here that the juncture with social work values and Foucauldian analysis, for me, can be problematic.

This thesis is interested in the power relations between the adults and the students and how this is expressed by the views of the students and behaviours witnessed by the adults. Foucault viewed power as a 'dynamic energy, which requires continuous production at multiple sites, making it unstable at the local level' (Kennan, 2001, p 219). This nonlinear view of power expresses something more than a one-dimensional understanding of a 'top down' power. Instead, Foucault sees power as existing everywhere and in everything we do. So, for instance,

the social worker in the school role is working on different levels of power relations with the students, his superiors, his peers, the political and the personal level. This also means that potential for action within the student's life is possible. This power can work in a number of ways and it is through the categories outlined below that the data from the interviews with the students will be examined (see Table 3.1 for clarification on their significance for the subjectification process). These processes of hierarchy, normalizing judgment and examination, 'create[s] and cause[s] the emergence of new objects of knowledge and accumulate[s] new bodies of information' (Foucault, 1980, p 51).

Table 3.1 Foucault's model of subjectification

Hierarchical	This involves the observation of people by people, such as the traditional 'top down' concept of power. Within this hierarchical modality lies the act of observation, such as societal surveillance and the 'big brother' culture.
Normalizing judgment	This act aims to 'quantify behaviour, by relying on techniques of binary division and differential distributions' (Keenan, 2001 p. 213). Binary division (i.e. 01,01) sets the world in two categories- such as, good/bad, normal/abnormal, and insane/sane. The 'normalising judgement' deployed by the social worker in child protection assessment is often based on having a sense of what is inside or outside a 'normal' category (Graham, 2006). As I will show later many of the comments, which the students provided in the interviews, echo this binary view on life. Foucault (1977, p199) contends in 'Discipline and Punishment' that the creation of binaries is integral to the maintenance of disciplines and the exploration of new disciplinary techniques. These binaries denote heavily dichotomous relationships between those who are labelled sick or healthy, sane or insane, mentally ordered or mentally disordered'. The application of disciplinary techniques and the consequent interaction with the domestic sphere

	ultimately increase the legitimacy of discursive binaries. For Foucault, disciplinary techniques and the construction of normalcy go hand in hand. Moving within hierarchical positioning and the technique of normalizing judgment the social worker, or indeed any person working within this discourse of the helping professional, goes on to perform the third mechanism, the examination.
The examination	This refers to the application of training, experience and knowledge the social worker uses when meeting the client they are working with. Foucault gives an esoteric feel to his idea where the gaze of the professional highlights the one subjected to the gaze. It is as if a bright and intense lamp is shone upon the face of the client allowing them to see, all of a sudden, the dance of their lives, on a stage, startled by the light but also caught in the music of their own lives. The student in this research may have been influenced by fact that they are being research and 'viewed' by the adults involved, thus participating to a process of subjectification.

The purpose of this section was to present a critical view on power and control and show how the process of subjectification can manifest for students in schools. It was argued that aspects of FC could be challenged on the basis that they serve to control and normalize students. However, as this thesis takes an active empowerment perspective, the case will be made in section 3.5 that by the change in direction taken by adding Biofeedback to the FC model, the normalizing features of the intervention are counter balanced by offering a focus on individual capacity and potential. The argument is not that control and normalizing will therefore be absent but following the application of a post-structuralist perspective, a deeper awareness of how power works is present. The addition of biofeedback, together with critically informed view of empowerment offers a balanced and achievable mode of promoting empowerment in students with behaviour and concentration difficulty.

The next section will present the theoretical basis upon which the argument is made that self-regulation is more than a tool of normalization. In fact, this thesis holds that self-regulation is a key tool in empowerment for the student with behaviour and concentration problems.

3.4 Self-regulation as a means of empowerment

Hecato the Greek philosopher asks us to reflect on the following statement: '*what progress, you ask, have I made? I have begun to be a friend to myself*'. The implications are that understanding how one works internally and externally is important in having a happy and fulfilled life. Becoming friends with oneself creates the possibility of self-regulation and in turn empowerment. The capacity for 'conscious and voluntary self-regulation is central to our understanding of what it is to be human.... our conceptions of freedom and responsibility depend on it' (Bronson, 2000, p 1). In early years, Bronson (p 2) argues that 'self-regulation is primarily reactive, with *external* events and *internal* biological requirements and reflexes setting the stage for organizing, modifying and regulating responses'. Young children 'cannot separate their feelings, thoughts, and actions as older children and adults learn to do' (*ibid*, p 3). Therefore it seems appropriate that the age profile for this research (7 to 12 years) is conducive to the developmental norm. From the age of 7 to 8 the older child begins to be more aware of this ability to use strategies to self-regulate.

The literature on self-regulation is mainly located in the field of psychology but the concept is seen in practice in many approaches used by social workers such as Cognitive Behavioural Therapy and Mindfulness. Cleary et al (2004, p 539) point us in the direction that 'to understand the structure of self-regulation processes and their relation to important academic motivational beliefs' we need to have a cyclical model of self-regulation from social-cognitive theory, such as the one put forward by Zimmerman (1989, 2000). This model has been successfully applied to education (Zimmerman & Martinez-Pons, 1992), athletics (Cleary & Zimmerman, 2001; Kitsantas & Zimmerman, 2002), and health domains (Zimmerman, Bonner, Evans, & Mellins, 1999). From this perspective, self-regulation is defined as self-generated thoughts, feelings, and behaviours that are planned and cyclically adapted based on performance feedback to attain self-set goals (Zimmerman, 1989). In general, self-regulated learners are proactive learners who incorporate various self-regulation processes (e.g., goal

setting, self-observation, self-evaluation) with task strategies (e.g., study, time-management, and organizational strategies) and self-motivational beliefs (e.g., self-efficacy, intrinsic interest). It is assumed that these types of learners will regulate their academic behaviours and beliefs in three cyclical phases:

1. Forethought (i.e., processes that precede any effort to act),
2. Performance control (i.e., processes occurring during learning efforts), and
3. Self-reflection (i.e., processes occurring after learning or performance).

The forethought processes influence the performance control processes, which in turn influence self-reflection phase processes. A cycle is completed when the self-reflection processes impact forethought phase processes during future learning attempts. It should be 'noted that these phases are cyclical in that feedback from previous performances is used to make adjustments during future learning efforts and attempts' (Zimmerman, 2000, p 43). There is a large body of research showing that students who have been trained in self-regulation processes during learning such as goal setting, self-monitoring and self-reflection processes display high levels of motivation and achievement (Cleary et al. 2004, Schunk, 1996, Wood, et al. 1990). These processes cultivate positive self-motivating beliefs, increasing the knowledge base of learning strategies, and help to apply strategies to academic-related tasks in a self-regulated manner. Poor student motivation, use of ineffective strategies and poor self-regulation are key factors contributing to low academic achievement (Cleary et al, 2004, p 540, see also Gettinger & Seibert, 2002; Pintrich & Schunk, 2002; Weinstein et al., 2000). My own observations in practice support this where poor regulation of emotions and the lack of application of effective strategies have a significant impact on the student's self-motivation to partake in education. Therefore, to maximise the successfulness of the Biofeedback and FC intervention studied, it is important to consider how to promote the student's self-motivation by incorporating various perspectives of self-regulation.

Self-regulation can be understood from different psychological positions, such as the Vygotskian and Piagetian Perspectives (Bronson, 2000). The former emphasized the role of the social cultural environment in shaping self-regulation, although he considered the desire for control as innate. He argued that at about the age of six the 'voice' goes internal and becomes

‘indistinguishable from thinking itself’. Vygotsky also suggested that the school systems in the West have a specific impact on the mind. The latter considered self-regulation to be as intrinsic to the mind as homeostatic self-regulatory processes is to the body. Development occurs in stages approximately ages: **2** *The Preoperational Stage*-symbolic representations with development of language, cannot control own thought processes, does not appreciate psychological difference between animals and humans and inanimate objects: **7** *Operational Stage*- logical thinking, less ego centric, can define and create rules for social interactions: **12** *Formal Operational*- thinking hypothetically about the world, propositional logic. So instead of blurting out the child goes internal and so begins the lifelong conversation (Bronson, 2000). Each perspective has influenced practice techniques and approaches and forms the basis of many social work interventions. The Behavioural Perspective, outlined by Bronson (2000, p 14) sees that ‘the basic components of self-regulation, from the operant perspective, are goal setting, self-instructions, self-monitoring, and self-reinforcement’. The benefits of these are that the student learns to wait for rewards rather than acting impulsively. Causal Attributions (locus of control, external and internal) argues that the perception of individual self-efficacy (personal causation) motivates self-regulatory behaviour and increases effort. When individuals feel able to control situations, they set realistic goals, determine actions they can take to reach the goals, and assess their progress toward reaching them (deCharms, 1984). Feelings of control and freedom are also related to responsibility and can reduce the experience of stress (Glass, Reim & Singer, 1971). In practice terms, this involves helping individuals build up self-belief and self-esteem to take on issues that are affecting them. The combination of the Behavioural Perspective and the Causal Attributions perspective best describe the combination of FC and Biofeedback from a self-regulation theory perspective.

The effort to integrate different theoretical perspectives, as has been undertaken for this intervention, is in keeping with the approach taken by Barkley (1997a, 1997b). He looked to integrate the concept of self-regulation by examining how by delaying the immediate affective response to an event, the individual has time to reflect on the event and to modify his or her eventual response. In this context he has also proposed a unifying theoretical model of ADHD in which he identified behavioural inhibition as the primary or core deficit of ADHD (Crundwell, 2005 p. 63). It is the ability to countermand or counterbalance the initial charge of external events that results in the development and appropriate control of emotional self-regulation

(Kopp, 1989). Barkley (1996, 1997a) predicted that individuals with ADHD could have the following:

- Greater emotional expression in their reactions to events,
- Less objectivity in the selection of a response to an event,
- Diminished social perspective as emotional reactions are not delayed long enough to take into consideration the views of others and their own needs into account,
- Diminished ability to induce drive and motivational states, especially with regard to goal-directed behaviour.

While the students with behavioural and concentration difficulties may not have the diagnosis of ADHD, many of them share similar symptoms with those who have been diagnosed. As such, the link between behaviour and self-regulation is not reserved for those with ADHD diagnoses but is also relevant for those with other issues. In that respect research has indicated that displaying less control amongst children is also linked to higher frequency of behavioural problems (Barkley, 1996). It also follows that children with ADHD are more actively rejected by peers and experience more behavioural difficulties across social settings (Barkley, 1996, p 71). These results support the view that children who display better skills in regulation and lower levels of emotionality are rated as having fewer behavioural problems.

Within the literature on ADHD there is a growing collection of research on the connection with bodily functionality and poor self-regulation. For example, Eisenberg et al (2011) argue that children with impulsive behaviour and poor self-regulation have been shown to have low parasympathetic tone. Their research sought to examine if Heart Rate Variability, a measurement that I am using in the Biofeedback technology, outlined in Chapter Two, is a mediator of attention. They examined 77 children who participated in a Continuous Performance test (TOVA test) and had their heart rate recorded for Heart Rate Variability Measurements. Subjects were assigned to groups according to their performance on the TOVA test and a general linear model for repeated measures applied. Pearson Correlations were applied for TOVA scores and HRV Values at four epochs. The results showed that there were no individual correlations found between Attention Scores and HRV. However, there was a significant group difference showing that good performers had a higher vagal tone than poor performers. One can conclude by this that the parasympathetic system as measured through

HRV is not a mediator of attention but may be an indicator of better health and ability to self-regulate.

Musser et al (2011, P 841) left it unclear whether emotional dis-regulation is a secondary symptom present in only some individuals or a core feature by which we may understand attention and behavioural disorders. However they point out that 'research in this domain has begun to suggest that emotional impulsiveness is a central feature of ADHD' (p 842) and this has been shown to be associated with impairment over and above that associated with the traditional dimensions of inattention, hyperactivity, and behavioural impulsivity (Barkley and Fischer, 2010). According to this framework, emotions are biologically based reactions and are brief and malleable, resulting in changes in physiology, subjective experience, and expressive behaviour. Emotion regulation is the manipulation of the physiological, subjective, or behavioural components of the emotional response. Suppression is one type of emotion regulation that involves consciously inhibiting one's expression of behaviours during emotional arousal (Gross and Levenson 1997; Gross 1998; Gross and Levenson 1993).

This section has attempted to give an overview of self-regulation as an action that transverses the biological, psychological and the social. Research is indicating that self-regulation plays a significant role in how well a young person manages symptoms of ADHD. The case is now made for self-regulation as a viable and evidence backed means of empowering students to manage behavioural and concentration problems.

3.5 Empowerment as promoting freedom

In this section I will draw together self-regulation, Dewey and Foucault to offer a robust reformulation of empowerment theory. Firstly I will present some of the views of Dewey in order to show how he can contribute to the core arguments of this thesis. As Broadhurst (2012, p 298) points out, 'when we unearth the early work of those such as John Dewey, we find a strong ameliorative impulse cognisant with social work's project of improvement in individual and collective wellbeing'. Dewey has, at the core of his writing on education, the belief in 'what works' and what is practical takes precedence over anything else, hence the association with classical pragmatism. Broadhurst (2012, p 294) argues that by 'drawing on classical pragmatism and focusing on the work of John Dewey, (...) lessons from

this early work offer explanatory precepts for understanding the possibilities of human agency'. In contrast to Foucault's, somewhat dehumanized view that interventions in schools could be seen as exercises of domination, with the aim to make students docile, Dewey was interested instead in the empowered, self-thinking student who realises their own potential in democratic educational settings. As Greene (1973, p 47) argued '[children] who [have] been motivated to succeed [have] almost always been the [children] whose belief in [themselves] and [their] future [have] been sustained and reinforced by [their] family and by society'. This value belief is at the core of his work. Dewey considered that dealing with real life problems, such as behaviour and concentration, should be at the heart of education practice (Dewey, 1938). Through a 'cultivation of the individual' (*ibid*, 1938) one can engage in a conversation of change with the student. In the educational context, this is carried out through equipping individuals to hold their own against societal labelling (Prawat, 1997, p. 16) and embracing self-realization practices such as 'developing the process from the private to the social, from impulse to intelligent habits'. Through 'psychologizing' with the student education can then become more meaningful and experimental (Smith & Girod, 2003 p 297). The pragmatic approach of teaching the school subject (e.g. Maths, Geography) through the 'lived experiences of students, rather than its codified disciplinary form' (Smith & Girod, p 303) can also be transferred to ways of delivering interventions, which seek to help students with challenges and empower their experiences.

Dewey tried to break the distinction between knowing and doing. Genuine inquiry, he argued, is the key to achieving this goal. In 'genuine inquiry, knowing slides over into doing (thereby) lessening the distance between the two' (Prawat 1997, p 19). Therefore, in this study, it is important to examine whether the students studied 'knew' some possible methods of how to manage behaviour and concentration. This is an on-going challenge for education, therapies and many disciplines, which work with people in the building of skills. Dewey proposed that the major catalysts to learning are 'ideas'. Thus the idea of having students learn self-regulation skills and deploying them in relevant situations is a significant idea that Dewey would probably support. However it is not just lofty aspirational ideas that inspire good educational experiences for students but the action component of the ideas as 'action is at the heart of ideas' (Dewey, 1988, p.134).

For Dewey, the human being has to interact with the environment and other people in order to reach a state of moral peace and stable well-being by transforming one's idea and values into

efforts and actions. Essentially Dewey wanted students to participate and not be passive. School must help to develop an individual's potential through a multitude of ways, such as developing intellectual power, moral responsibility, social awareness and ethical integrity. Psychological resistance to their perceived difficulties is the aim of creating a self-reflective student who regulates their own behaviour. The result, and at least the aim, is for students who are empowered by the knowledge and action, that they can impact their own reality. A student in this sense draws on her past experiences and knowledge in order to make sense of a problematic present situation. She first deliberates about the possible actions she can take, imagining the consequences that could arise from each possible action before she arrives at a hypothesis. However for Dewey, a self-outside of all association with society was absurd. Because Dewey saw individuals as made up of multiple selves, he understood another goal of schooling to be the promotion of balance and integration across an individual's multiple associations (Schutz, 2011). He argues, sharing a view with Foucault that much of the education of people has focused on normalising students rather than educating them to think for themselves.

Dewey was concerned with the factors which help us understand when the 'self becomes more reflexive of itself. That is those moments when habit breaks down or when habits clash, and the self is forced to monitor itself reflexively' (Burkitt, 2002, p220). Within this context, knowledge is concerned with actions and consequences. For Dewey, the human being was to be conceived as an organism, a fusion of mind and body, and essentially as a creature of habits on the one side of the coin, and as a set of beliefs on the other side of the coin, where habits and beliefs are but obverse 'pictures' of one another (Marshall, 1994). The term technology, also used by Foucault, can be seen as a form of the practical accompanied by practical reason, which aims to instil in the body certain habitual actions and later, to give people the reflexive powers to reason about their virtues or skills, providing them with the capacity to refine, modify or change them. In other words, technology is a means through which humans produce not only products and works, but also themselves as humans in both their reflexive and non-reflexive aspects.

Foucault and Dewey do not see truth as absolute. Both were interested in the 'transactions' in reality (everyday interactions, or in Foucault's word 'relations'). In moving away from a dualist perspective on reality, Dewey 'put forward a framework that starts with interactions- or, as he later preferred to call it, transactions- taking place in nature and in which nature itself

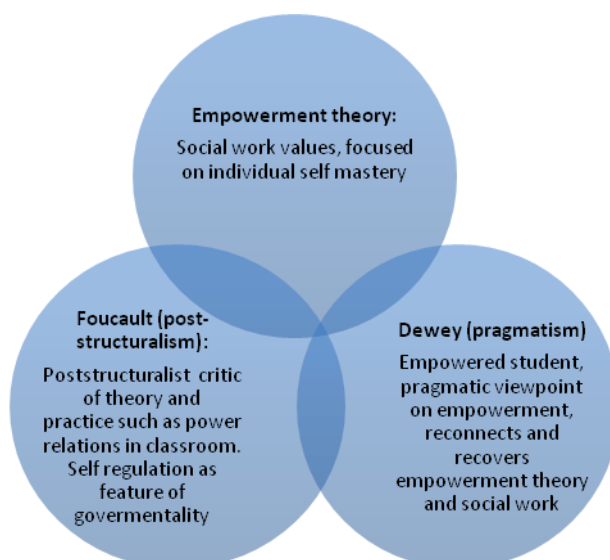
understood as a 'moving whole of interacting parts' (Tashakkori & Teddlie, 2010, p 106). Dewey's definition of 'knowing' had to do with 'the transformation of disturbed and unsettled situations into those controlled and more significant' (Dewey, 1929, p.236). Both Foucault and Dewey share a critical view on power and control in society but the latter 'emphasizes the moral possibilities of solidarity in democratic community, Foucault emphasizes the dangers of power and knowledge' (Garrison, 1998, p 112). In Dewey's thinking, the act of self-creation 'creates better community and better communion with the individual, others took precedence, whereas for Foucault, community and individual others were secondary' (Garrison, 1998, p 114). As a result, for Dewey the objective of education was 'to acquire a mind which means to become able to participate productively in the discourse practices of a culture' (p 124, Garrison) whereas it is considered that Foucault's final subject was a 'narcissistic selfish creation carried out by egotists determined to achieve complete detachment and autonomy from others' (Garrison p 128). By engaging with students and the families, one can have a knock on effect on the whole community. All that is required is the school to open its doors and engage with the outside world (Dewey, 1916/1995).

What Foucault doesn't give us is what Dewey wanted to give us – a kind of hope, which doesn't need reinforcement from 'the idea of a transcendental or enduring subject'. Dewey offered ways of using words 'like "truth," "rationality," "progress," "freedom," "democracy," "culture," art,' and the like which presupposed neither the ability to use the familiar vocabulary of what Foucault calls "the classic age," nor that of the nineteenth-century French intellectuals' (Rorty, 1982, p 159). In the words of Rorty, although 'Foucault and Dewey are trying to do the same thing, Dewey seems ...to have done it better, simply because his vocabulary allows room for unjustifiable hope, and an ungroundable but vital sense of human solidarity' (Rorty, 1982, p 163). Broadhurst also advocates the viewpoint that human agency needs to be re-engaged, so that the hope that Dewey offers can be realized in current social work practice:

'(the) radical decentering of the human subject which depicts the human condition as essentially passive-subjects are simply the conduits, bearers or sites of discourses of power/knowledge. If we accept this latter formulation of the human subject, then we are indeed lost in the face of an expanding neoliberal project' (2012, p 296)

The practical implications of connecting Biofeedback and FC have historical and cultural connections as the area of mindfulness, a popular intervention, seeks the reunification of mind and body. The method has become very popular over the last decade as a separate intervention for main types of psychological and social problems (Hick & Bien (eds), 2008). This position is also supported by Konstanski & Craig (2008, p 16) when they point out that ‘although not always specifically identified, the utilization of mindfulness practice within the therapeutic environment is evident’. For example, fundamental to psychoanalysis is the process of free association or awareness of thought processes. Similarly, gestalt therapy focuses on the explicit nature of the here and now (Perls, 1973), and self-determination theory strongly promotes open awareness as being valuable to one’s ability to choose behaviours that are consistent with one’s needs, values and life interests (Ryan & Deci, 2000). Biofeedback has a similar message albeit through the medium of technology. Empowerment theory, in the context of this research, also receives a revitalization following the engagement with Dewey after the challenge provided by Foucault’s arguments. The sense of hope, an emotion which fuels empowerment, is given space to flourish. The theoretical outcome of this (see Figure 3.1) is an understanding of empowerment theory that includes the awareness of the mechanism of control and normalisation and yet finds a space in which the students can empower through self-regulation.

Figure 3.1 Integrated theoretical framework



3.6 Conclusion

This chapter has brought together some of theories of Foucault and Dewey in the context of self-regulation as empowerment in a framework that is used to interrogate the data in Chapters Five and Six. Foucault's earlier work, such as the process of subjectification and normalisation, was used to highlight power relations within the classroom. It was also argued that Foucault's approach does not position the individual (i.e. the student) as a subject who can better their life situation, thereby presenting a challenge for the value base of some. In particular, the aspects of hierarchy, normalisation and the examination were presented as categories for engaging the analysis of the qualitative data in Chapter Six. By applying a post-structuralist viewpoint, a deeper awareness of the power dynamics in delivering an intervention was discussed. It was argued that in order to have a pragmatic and realistic application of empowerment in schools a critical discussion on power in classroom relations needed to first take place. Following this, self-regulation as means of empowerment was presented and the argument was made that it constitutes more than a mechanism of control. Different theoretical perspectives on self-regulation were discussed and the case was made that FC and Biofeedback were best represented in the self-regulation theoretical literature as a combination of the Behavioural model and the Causal Attributions model. The introduction of Dewey into the mix matured the idea of empowerment theory, which can help link self-regulation to positive change. It was argued that the connection between self-regulation and empowerment is a comfortable fit with social work practice and values, in that it has an optimistic focus that embraces a pragmatic view on empowerment. The integrated framework (Figure 3.1) also expressed the reality that schools are a 'complex and multi-layered set of shifting contractions and continua between myriad different definitions' (p 268, Schutz, 2011) and that the subsequent analysis is not a matter of having either a solely Foucauldian or a solely Dewey perspective. The theoretical framework presented in this Chapter provides a novel approach to capturing the power relations between students and teachers and the promises of increased self-control on the part of the student. Empowerment theory, from the perspective of this research, is given a new security in that power relations are considered and accounted for within a framework of empowerment via self-regulation.

Chapter Four: Semi-experimental single case study: Research ontology, methods, methodology and ethics.

4.1 Introduction

The main focus of this chapter is the presentation of the research design used for this thesis, namely a semi-experimental single case study. As indicated in section 2.4, the absence of a control group or the possibility of having a waiting list in the FC meant that a pure experimental design for this research was ruled out. Semi-experimental, also known as quasi-experimental designs are adopted when it is not possible to allocate individuals randomly to the group. As a result, the absence of random selection means that generalization to the wider population cannot be made. In other words, with a semi-experimental design external validity is poor, but internal validity is high. Trinder (1996, p 236) positions semi-experimental designs in the pragmatist tradition with ‘an unashamedly empirical approach to research, steering a course between the scientific empiricism of the positivist project and the messier politicized approach to research of participative/critical researchers’. She goes on to suggest that pragmatists tend to worry about how to get on with the job at hand and generally do not concern themselves with epistemological difficulties: ‘the pragmatist appears to continue to exist in splendid isolation from developments and debates in research methodology outside of social work’ (*ibid*, p 236). This thesis, while taking a pragmatic perspective, does not shy away from ontology and epistemology and as such section 4.2 outlines the philosophical ground that this thesis is built upon. The impact of the role of the insider researcher is considered and discussed. The process of integration of Biofeedback into FC is presented. Following this, a review of the small pilot carried out before the research is presented, together with the lessons learnt. The phases of the research are then presented followed by a discussion on the ethics. The ethics for this research were given extensive consideration, as this was an identifiable absence in the 17 articles identified for the literature review.

4.2 Ontology and Epistemological Framework

This thesis charts the course of an evaluation of an intervention from a semi-experimental research design position and involves the use of mixed methods in achieving this. With this complex research design it is clear that a robust epistemology was required. I came to

this research project with social constructionism as a guiding perspective, influenced by works of Witkin (2012), which acknowledge the influence that human interaction and language have on the construction of the self. Social constructionism is an approach that takes a critical stance in relation to taken-for-granted assumptions about the social world. For example, Gergen (1985, p. 271) characterises social constructionism as a movement toward redefining psychological constructs such as 'mind', 'self' and 'emotion' as socially constructed processes, to be 'removed from the head and placed within the realm of social discourse'. Social work approaches generally proclaim the importance in trying to understand the worldview of the client's life. This is a position that is often developed in therapeutic situations (e.g. Rodgers, 1961) and is a core value when empathising with the client's problems and solutions.

However, given the focus on the individual student throughout this thesis, I was forced to reflect on the compatibility of social constructionism in helping answer the research questions. I was faced with theorizing the students' worldview, a reality that is 'not reducible to the text or a language game that has brought with it a de-centering of the human subject in social analysis' (Houston 2001, p 849). This has led Houston to argue for the use of a critical realist perspective in social work as it meets the 'central challenges in the social and psychological sciences at the present time (...) how to promote a theory of human agency whilst at same time taking account of the impact of social structure' (p 849). As pointed out in the previous chapter, empowerment theory is a guiding value for this research topic and in my own personal practice. With these factors considered, the connection between the research questions and social constructionism began to feel uneasy. It felt as though the student was losing focus in discussions of structures and language. As Houston (2001, p 849) goes on to add, referring to Lister (1998), 'without a fully developed position on human agency, it is doubtful whether social work can take forward a model of empowerment and active citizenship which are necessary in a world beset with social exclusion'. For social work theory, the challenge is to find a balance between understanding the effects of structures and also to 'promote a theory of human agency' (*ibid*, p 849). It is important to state that I am not offering a new theory for social work but rather looking outside the philosophical position I approached this research with, so as to make a coherent justification for the research design and to answer the research questions. As Borden (2013, p 260) argues, 'if we are to avoid a willy-nilly eclecticism, it is crucial to establish a point of view and organizing principles that guide our use of differing ideas and methods over the course of an intervention in ways what we can justify and defend in light of the particular

circumstances of the clinical situation'. My interest in mixed methods encouraged a search for an epistemological approach that allowed for the combination of qualitative and quantitative methods and ensured that the logic in doing so was clear and transparent. Evaluating my own preconceived theories resulted in a new set of focuses, namely those that orientated around 'the problems of restoring integration and cooperation between man's beliefs about the world in which he lives and his beliefs about the values and purposes that should direct his conduct is the deepest problem of modern life. It is the problem of any philosophy that is not isolated from life' (Dewey, 1929, p 255). In common with my approach to social work, Borden (2013 p 261), using a Deweyan perspective on pragmatism, 'emphasizes pluralist approaches to understanding and the practical outcomes of beliefs and ideas in everyday life'. Theories should seek to serve human good, and the fundamental aim of knowledge ought to be concrete outcomes that help us cope and negotiate the challenges of everyday life. Borden holds pragmatism as a way of cross professional collaboration in the pursuit of a common good. This approach also roots us to action and not to be constrained by one perspective or the other, because our experiences of reality are varied and constantly changing. For Borden (2013 p 263) 'Dewey embraces pluralism, believing that multiple lines of inquiry strengthen understanding and action, and he centers on the practical consequences of beliefs and ideas in efforts to address the concrete problems of daily living'. The individual, for Dewey, is the 'carrier of creative thought, the author of action, and of its application, the individual mind is 'the vehicle of the experimental creation' (1925, p 12). Pragmatism, I suggest, also offers a demystification of the research process as it brings the focus of a research to the practical everyday level, out of the apparent wilderness of the qualitative/quantitative debates.

In the context of this research the epistemological framework of pragmatism calls for the understanding of the practical impact of interventions. The thrust of the theoretical argument of this thesis is that self-regulation, an action which encourages reflection on the part of the student, is an opportunity for the students to affect their own thoughts, feelings and actions and provide themselves with opportunities for empowerment, creating more positive school experiences and better relations with classmates and teacher. A pragmatist research approach also sees that 'Truth is what works at the time; it is not based in a strict dualism between mind and a reality completely independent of the mind' (McLaughlin, 2009, p 126) which position the process and results of this research in a particular time and place. In the final analysis it is the

hope that these students will gain the ability to regulate their own behaviour through the awareness of their own habitual patterns.

Hall (2013, P 16) refers to the situation where the 'current usage of the term pragmatism has been trivialized in the field of mixed methods, and that a paradigmatic approach to mixed methods evaluation has emerged'. As an attempt to challenge this issue Hall argues that Deweyan pragmatism is 'considered relevant to the discussion on credible mixed methods evaluation' for the following reasons:

- His approach accomplishes 'contextual sensitivity and tangible process for how inquiry and credible evidence are achieved'.
- His views on 'intelligent action' advance reflection, ethics and social justice.
- His main objective is to address societal problems by taking action in an intelligent way.

For Dewey, the use of mixed methods is not a contradiction as the 'transactional framework' opens the possibilities for different types of data, methods and even assertions to be integrated. This is based on the premise that both means and their consequences are developed and perfected in the processes of continuous inquiry (Dewey, 1938, p11). Within a pragmatist perspective the use of reflection adds value to the use of mixed methods. Reflection can be seen as the "active, persistent and careful consideration of any belief or supposed form of knowledge in the light of grounds that support it, and the further conclusions to which it tends" (Dewey, 1910, p. 6). As Garrison (1998) points out,

'The key to freedom and self creation for the Deweyan pragmatist lies in becoming reflectively aware of the socio-cultural practice (including forms of knowledge/power) that establish the contingencies that condition our conduct, including self creative conduct, and striving in creative democratic community to alter them' (P 119).

This section presented pragmatism as an epistemology that supports the use of mixed methods. The approach allows for the inclusion of the empowerment perspective outlined in

Chapter Three. This position focuses on students potential to regulate their own behaviour and concentration thereby highlighting the importance of agency within social work intervention provision in school settings.

4.2.1 Developing an insider and outsider researcher mentality and individual challenges

This research project provides an insight to the challenges of insider/outside research in the sense of trying to maintain research rigour and dealing with the reality of everyday practice, such as managing a student who is having a bad day, or a parent who is struggling to manage relationships at home. In these uncertain sets of circumstance it was always a struggle to maintain focus on the research goals. However, on the other hand, trying to preserve the integrity of the research design in the face of these everyday disruptions made the research feel alive and based in, *and* on, everyday experiences. In some respects this gave the end results, presented in Chapter 5 and 6, a deep sense of *'the everyday experience'*. Combining the role of the social worker and that of the researcher gave rise to a lived experience of what can be termed 'insider researcher'. This multi-layered position, which includes being a foreigner in Sweden and a social worker working in a school, is clearly a complex amalgamation of identities. This section gives a sense of this arrangement and how this has impacted in creating a new identity of researcher-practitioner.

To start with, Mercer (2007) suggests that we should not see 'insider-ness' and 'outsider-ness' as an 'either/or' duality, as we could create a situation whereby one is tempted to judge one as better than the other. Conversely, the more we conceive of them as points on a continuum, the more we are likely to value them both, recognizing their potential strengths and weaknesses, in all manner of contexts. As I had a working relationship with the students and the parents it was important for me to engage with the idea that 'in this way, conducting insider research is like wielding a double-edged sword. What insider researchers gain in terms of their extensive and intimate knowledge of the culture and taken for granted understandings of the actors may be lost in terms of their myopia and their inability to make the familiar strange' (Hawkins, 1990, p 417). Therefore, it became a matter of self-understanding of my position as a social worker in a school and as doctoral research student, accounting for it and understanding the impact this may have on the research process. Shaw (2006, p 953) comments of practitioner research that:

1. The role of practitioner evaluator as both inside and outside, and as moving between the two, is sensitive and frequently difficult or even, on occasion hazardous.
2. There is an ever-present risk of marginalization for practitioner evaluators. This stems mainly from the frequent points at which relationships of authority and power shape the decisions, for good and ill, about access, methods, and the use of evaluation results.

In my experiences I grappled with the challenge of my research becoming lost in the 'business' of everyday practice. This was reinforced in what I perceived as a lack of practice-based research carried out by colleagues and of the wider professional relationship with research on the ground in terms of organisational support. Kim (2011) poses questions on the challenges of being an insider researcher when working with children and the difficulties of balancing roles. Her questions acted as a guide for me in developing a standard of academic rigour and self-directed reminders at various points, such as design, implementation and analysis, in the research. My relationship with the students was of prime importance so as to help the students feel relaxed and '*at home*'. The 12-week period also gave opportunity for the students to express their behavioural and concentration difficulties and allowed them to feel as comfortable as possible in the surroundings. I was confident I would be able to manage the build working relationships with the students and parents during this time span, based on my professional experience of working with children and families. I have ensured that the self-reflective element in the discussion of creating a new researcher-practitioner identity helps manage my subjective perceptions so that they are not having a disproportionate influence on the managing the role of researcher and practitioner. In some respects it was creating a new position, which allowed for a view over both aspects simultaneously.

In my search of the academic literature on insider researcher from a social work practice perspective, I found that it was not extensive, save for some writers such as Humphrey (2013). This is surprising when one considers the increase in professional doctorates in social work. Indeed, 'traditional textbooks on research methodology...tend to gloss over the intricacies of insider research conducted at one's place of work, and researchers in such a position are not well-supported in their attempts to navigate the 'hidden ethical and methodological dilemmas of insider-ness' (Labaree, 2002, p. 109). In that context, this section looks at the role of self in the process of carrying out research like this. As the only researcher on this project, it was vital, for the sake of accountability and transparency, that I constantly reflected on how my position influenced the research design, the gathering of the data and the subsequent analysis.

Maintaining the balance of research standards and professional expectations was constantly on my mind. For example, the students received schoolwork from their class teacher before they came to FC. In FC the parents helped their child with the work and, if needed, the teacher provided assistance. Given the pressure of time and the quantity of work, sometimes the Biofeedback element of the intervention was in danger of being pushed to the side. However, as the research design required that each student used Biofeedback it required good negotiating skills in managing particular situations and effective management on my part to convince my co-workers of the importance of sticking to the intervention design. For example, in one particular session, a student displayed a lot of aggression and frustration towards his parent, as he was not able to do the homework assigned to him. I intervened and asked him to take a non-scheduled session with the Biofeedback. Following this he was calmer and was able to resume his work with his parent.

The keeping of a learning journal further facilitated my on-going self-reflection. I used this writing space to consider how the group functioned in each session, good points about the interactions and things, which I needed to focus on for the next week. This proved to be a useful tool and made for interesting retrospective reading. To support this individualistic style I also took time to discuss critically with my colleagues how they felt each session went and how we worked together as a team. This ensured that communication was kept clear and that they understood the reasoning for the on-going focus on the combined research and practice.

4.3. Semi-experimental research: Implementing Biofeedback intervention into family class

During June 2010, I attended a lecture during which the presenter spoke about Biofeedback. I was intrigued by the idea and, as my interest deepened, I decided to explore the idea and the potential application of it in my work as a social worker in schools. This led me to developing the idea in the Critical Analytical Study (an assignment as part of the doctorate program, hereby referred to as the CAS), which I conducted during the period of between June 2010 and September 2011, where a comprehensive literature review on the suitability of Biofeedback as an intervention for age group (7-12 year old) was conducted. The results of the CAS suggested that Biofeedback in combination with other interventions has the potential to

be an effective tool for working with students with behavioural and concentration difficulties and that it can be combined with other interventions (such as Cognitive Behavioural Therapy) without much difficulty. As a result of this I began the process of identifying, sourcing and funding the purchase of Biofeedback equipment.

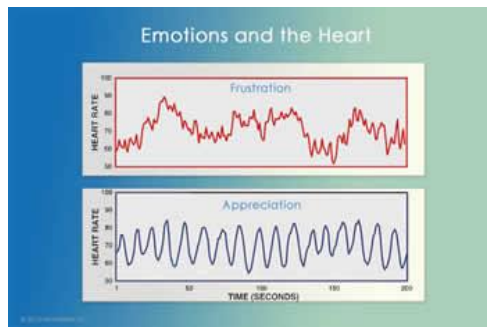
I made contact with a number of Biofeedback companies, such as one which produced T-shirts which had inbuilt Biofeedback technology. However, the results from the CAS highlighted another company from the USA who sold software that could be used in the FC setting (See section 4.4). I then applied to my manager for funding to purchase the Biofeedback product. I presented two core arguments:

- That the use of Biofeedback in FC could improve our service by offering an innovative and evidence based approach for students with behavioural and concentration difficulties.
- The use of Biofeedback in FC would constitute my research project and thereby generate evidence of practice from the ground level.

The management was directly on-board with these two arguments and did not hesitate in purchasing the required equipment (which cost around 200 Dollars). Once a decision was made that I would purchase the product, I signed up for Webinars offered by the manufacturer of the product, to familiarise myself with the technology and how it could be adapted in the FC model. These courses, plus other online teaching aids and literature (all available on the company's website) provided me with a scientific and practical understanding of the mechanism of the device plus the usability in different scenarios. For instance, I learnt how one explains what happens in the body, specifically the heart in terms of frequency of heartbeats, when we are experiencing frustration and how this is represented in Heart Rate Variability (HRV). I was able to then explain to the students that by my breathing correctly and focusing on positive feelings like 'feeling happy, or love, can change what happens in your heart'.

In the graph below the HRV appears jagged when experiencing the emotion of frustration. This represents the erratic rhythms in time between each heartbeat (i.e. HRV). When the individual feels a positive emotion, such as feeling appreciation, the HRV appears as a smooth sine-like wave.

Figure 4.1 Graph showing the HRV when experiencing frustration and then appreciation



Source: Company who supplied the Biofeedback product

From this, I planned how I would integrate the technology into the FC model. The integration of Biofeedback into the FC model meant that I had to negotiate the length of time the student would use Biofeedback. Through discussion with my colleagues in FC, my own experience of using the technology and my experience of the piloting of the device (where I found that students started to lose focus after 15-20 minutes) I concluded that each student would receive 10-15 minutes a week with the computer in a quiet corner of the room. This was supported by similar findings presented in Chapter 2 of this thesis (for example, Henriques et al, 2010). In order to get a baseline reading each student was asked to 'do his or her best' and try and get into the 'green zone'. The green zone is the place in the software which represents physiological coherence, and the students getting into this zone is considered to be the goal of the software.

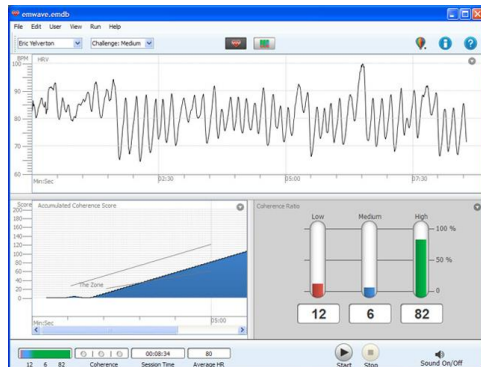
The FC model was still a relatively new model in Malmö having been introduced following a study visit by school management and social services to a number of schools in Denmark in 2008 and a subsequent two-day training course from a UK agency that also work with the model. As mentioned in Chapter One, the FC normally last for 12 weeks based on one session a week lasting for four hours each. Students attend with their parents to do school work, discuss behavioural and concentration issues, and receive feedback and advice. In the FC, the focus on a family strength-based approach means parents-child communication was a particular focus and the parents were encouraged to spend time with each other's children so as to help build up a group identity. Such an approach could constitute an imbalanced power relationship between the students and their parents, and risk the voice of the student becoming lost. It is important to note that the family class model is not a licensed concept, sold to agencies. In that

respect, there is nothing prohibiting making any changes to it. However, agreement from my line manager was needed, as was a discussion with the principals from the schools part of the research. At the school level, I scheduled meetings with the principals of schools A and B, as they have overall responsibility for the service, given it was students in their school, and with the FC team. In these meetings I demonstrated, and had them try, the Biofeedback device and presented the findings from the CAS. I explained to them that I was interested in seeing the effects of a combined approach of FC and Biofeedback, not specifically one over the other. I also offered my hypothesis that the combined approach of FC and Biofeedback would enable the students to enhance their self regulation abilities and thus help to change their behaviour and concentration situations. On the whole, the team of my co-workers for the research group (2 in total) and the principals were positive about adding Biofeedback to the model and about the focus of the research.

As mentioned above, once I had decided to use the device, I read, listened and watched as much as I could on the best practices in using that device for students with behaviour and concentration difficulties. This also involved personal use of the technology and I learned the techniques, which I put into practice in my own life, such as breathing, creating self-awareness of my heart rate and focusing on generating positive thoughts. The idea of Biofeedback, explained in Chapter One, was presented to students and parents at the introduction meeting of FC and information on what it entailed in both the research and the intervention was written on an information sheet and consent form (see Appendix 5 & 6), one for students and one for parents. During the information meeting students appeared excited by the prospect of playing a computer based game in FC, indicated by their comments that *'it looked cool'* and that some of them couldn't *'wait to start'*. Some parents were interested in the Biofeedback, others initially less so. As we journeyed through the weeks I encouraged all the parents to try it. This also helped the students to engage with it. In FC the students were asked in which order they would like to use the Biofeedback device, i.e. who would go first, next and so on. Once sitting next to me, we spent a few minutes, reviewing the last session they had with Biofeedback. We usually discussed which games we would try during the session and the techniques, which were needed in order to succeed with the games. Reviewing previous sessions was simply showing the review function in the software. The figure 4.2 below shows a review session for one of the students. The top graph gives the Heart Rate Variability scores, the bottom left and right show

the time spent in the different coherent levels in graph form and in bar form. For instance the green bar (82% under it) means that the student was spending 82% of the time in a state of coherence. This is mirrored by the HRV sine-like wave graph above it. We can deduce from this information that this student was experiencing a period of calm and positivity.

Figure 4.2 screen shot of student's session



Each Biofeedback session lasted between 10 to 15 minutes, held at various times after the opening group meeting. Weekly progress was discussed at the day's opening group meeting and again at the day's end closing group meeting. This ensured that the language used in Biofeedback session (red, blue and green, breathing correctly, focusing on your heart, positive thinking, managing your thoughts) was intermingled with the language of the FC. This allowed for a greater amalgamation of the ideas of FC and Biofeedback, ensuring a coherent message for the students and parents.

The students were quick to engage with the games (see Photo 4.3) and the fact that all students were using them promoted an interest in each other's performance. This did cause some competition but it was not obvious that this level of competition was uncomfortable for any of the students.

Photo 4.3 Students playing two of the games.



4.4 Mixed methods in social work research

Since the 1980 and 1990's mixing methods in the social sciences has become a popular means for conducting research. This has also led some to argue that these approach could act as 'catalysts for social change' (e.g. Denzin, 2012, p 85). The term triangulation is often, but not always (see Flick et al, 2012), said to refer to the mixing of methods, being broadly defined by Denzin as 'the combination of methodologies in the study of the same phenomenon' (1978, p 291). Flick et al, (2012, p 101) suggest triangulation can also refer to 'looking for convergence between results.' At a deeper level Denzin delineated between two types of methods within triangulation: 'between methods' and 'within-methods'. The former is 'largely a vehicle for cross validation' (Jick, 1979,p 602) with the latter 'essentially involves cross-checking for internal consistency or reliability' (Jick, p 603). The weighing of the particular methods and whether the results from the different sources converge at some point become key questions in understanding some of the issues for a mixed method approach. The 'delicate exercise to decide whether or not results have converged' can be challenging but the use of triangulation allows 'researchers to be more confident of their results' (Jick, p 609). It also allows space for the 'artful researcher who uses the qualitative data to enrich and brighten the portrait' (Ibid, p 609).

The difficulties that come with mixed methods approach are that they tend to be idiosyncratic to the research location so replication can be problematic. While this thesis attempts to describe a coherent epistemology on using mixed methods research, there is no consensus on the paradigm compatibility of quantitative and qualitative traditions with commentators arguing that 'an ad hoc mixing of methods can be a serious threat to validity' (Denzin, p 81). Current day issues are associated with 'post-positivism, audit cultures, neoliberal regimes, and the abuses associated with evidence-based movements in the United States' (Denzin, 2012, p 80). Creswell (in Denzin, 2012) identifies key controversies being raised in Mixed Method Research. These issues 'include, (a) disagreements over definitions, (b) just what is a mixed method study, (c) paradigm debates, (d) how the current conversation privileges postpositivism, and (e) what value is added by mixed methods. Unfortunately I cannot address these issues in any detail in this thesis suffice to say that the application of mixed methods is carried out with attention to bringing forth the voice of the child in the context of a program evaluation.

However despite these areas of concerns, using ‘multiple methodological practices, empirical materials, perspectives, and observers in a single study is best observed as a strategy that adds rigour, breath complexity, richness and depth to any inquiry’ (Denzin, p 81).

4.5 Single case study design with mixed method approaches

In order to explore the multiple realities of how Biofeedback and FC intervention impacts on students with behavioural and concentration difficulties, a single case study with mixed research methods seemed to be one of the most appropriate research methods for this study. In the absence of a control group, due to the ethical issues of having a waitlist for a service in a school, the single case design permits the grouping of the FC and Biofeedback students as one entity. This allows us to make some assessment of the effectiveness of the intervention along a timeline of the ABA design (Roberts & Yeager 2006). Single-case research design has a ‘long history of application throughout the social and educational sciences and has contributed greatly to the empirical basis for a variety of practices’ (Kratochwill, et al 2010, p 125). In the context of this research there is also the extra dimension of measuring outcomes. The suitability of using single case designs in social work research is both contested and supported, as noted by Rubin & Babbie (2009, p 294) ‘although some researchers dismiss these designs as little more than idiosyncratic case studies that cannot be generalised, a case can be made for their increased usage in social work’ (p 294). The use of single case designs is becoming more and more popular as ‘important considerations can also be made by exploratory studies that use more flexible methods, including smaller samples, in efforts to discover new insights and generate hypotheses and theories for which generalizability can be tested later in more tightly controlled studies using larger samples’ (p 295). While the external validity of the design has been questioned, ‘the internal validity of single case designs is enhanced when the baseline period has enough measurement points to show a stable trend in the target problem and enough points to establish the unlikelihood that extraneous events that affect the target problem will coincide only with the onset of intervention’ (p 302).

The use of this design in my research context is justified as the design can be built into practice without disruption (Kazi & Wilson, 1996). The design is relatively easy to use and understand, and can be used in the same timeframe currently in use in the FC and Biofeedback intervention. The approach taken in this research speaks to the challenge posed by Shaw & Norton (2008, p

956) to incorporate both ‘quality-as-measured and quality-as-experienced’ data, thereby giving a sense of the multiple realities of the students and of the data collected.

Like other experimental methodologies, single-case intervention in semi-experimental conditions designs seeks to establish causal relationships between the independent (intervention) and dependent (outcome) variables on an individual’s (or group’s) response to an intervention such as reinforcement or a related operant variable. In each of the design variations, one or more intervention conditions are compared with one or more baseline or non-intervention conditions, with the basis for drawing valid inferences consisting of either (a) a change in the unit(s) between baseline and intervention phases or (b) a differential change of intervention and control units between baseline and intervention phases.

The time line for this research and the approaches to the data collection are shown in the Table 4.4. The use of the SDQ (as discussed in the literature review in Chapter Two), the vignettes with the students, the behavioural charts for gathering data on success with classroom goals and the Biofeedback data have used different time points along the research process. These data collection methods will be explained in more detail in Section 4.5.

Table 4.4 Time line of the research with methods of data collection

Stage/Time	Approach	Tradition	Participants	Research Focus
Time 1 Start August 2012 Pre-intervention stage	Agreeing behavioural goals SDQ Vignettes Interviews	Quantitative Quantitative Qualitative	Students (16), parents (22) and teachers (5) Parents (22) and teachers (5) Students (14)	Behaviour and concentration improvement Behaviour and concentration improvement Empowerment practices and thoughts
Time 2 August 2012 to May 2013 Intervention Stage ----- (End of 12 weeks)	Behavioural charts Biofeedback data ----- Vignettes Interviews	Quantitative Quantitative ----- Qualitative	Parents and teachers Students ----- Students (13)	Behaviour and concentration improvement Self Regulation abilities ----- Empowerment practices and thoughts

Time 3 June 2013 Four week post intervention.	SDQ	Quantitative	Parents (22) and teachers (5)	Behaviour and concentration improvement
------------------------------------------------------------------------------------	-----	--------------	----------------------------------	-----------------------------------------------

As shown in Table 4.4, Time 1 (T1) represented the time period where data was collected from the SDQ (parents, n 22 and teachers n, 5) before the intervention. The behavioural goals for the 16 students were set at this point as well as the interviewing of the students. These interviews were conducted in a separate room, in quiet surroundings with the interviewer and student sitting face to face. The interviews lasted on average 15 to 20 minutes.

Time 2 (T2) refers to the period of time over the course of the research where the intervention was delivered. As part of the intervention and data collection, over the course of the 12 weeks the students submitted 'goal sheets' to the class teacher on a daily basis and received a mark from 4 to 1, depending on how well they managed with their individual goals. The teachers were encouraged to ask the student how they felt they were doing regarding the goals and their score was to be decided based on upon that discussion. Also during T2, the biofeedback data was collected during the 12 weeks the students were in FC. Each student had 15 minutes to sit with the computer to practice self-regulation techniques. On the final day of the intervention the students were re-interviewed in the same setting and under the same conditions. At the four-week follow up period, know in this research as Time 3 (T3), the SDQ survey was again administrated to the parents (n 12) and teacher (5) in relation to the 13 students who completed the program.

It is important to note that some of the students started at different times in FC dependent on when the student was referred to the class. The replication criterion advanced by Horner et al. (2005, p. 168) represents a fundamental characteristic of single-case designs: 'in most cases experimental control is demonstrated when the design documents three demonstrations of the experimental effect at three different points in time with a single participant (within-subject replication), or across different participants (inter-subject replication)'. Single-case intervention designs always involve a systematic comparison of two or more experimental phases. One of these phases is generally a baseline, control, or pre-intervention phase, and the other is an intervention phase. As per this system, this research followed up with each student in terms of

the SDQ survey, a final biofeedback reading, final behavioural scores recorded in the classroom and a post interview following the ABA single case study design.

4.6 Mixed methods in the data collection

This section expands on the information presented above in Table 4.4 and by taking into consideration the reflections from the pilot study I will begin by explaining in more detail the methods used. To begin with, The Strength Difficulties Questionnaire (SDQ) was used to gather the perspective of the parents and teachers at two time points: at the start of the intervention and at the four week follow up period. The SDQ evaluates the respondent's perceptions of the following in respect of the students:

1. Hyperactivity–inattention,
2. Conduct problems,
3. Emotional symptoms,
4. Peer problems and
5. Pro-social problems

SDQ has been validated as a reliable instrument for the measurement of the effectiveness of interventions on children and it has been widely replicated in research and practice (see for example; Smedje et al 1999; Kalsen et al 2000; Amon et al 2008 and Lloyd et al 2010 in Chapter Two). The questionnaire generally took around 10 to 15 minutes to complete and was made available in different languages where necessary. Some parents of the students who participated in the research did not have Swedish as their mother tongue and so it was more helpful for them to be able to answer the questions in their own language (e.g. Somalian and Arabic). The SDQ is in a tick box format making it easy for research participants to record their answers.

The use of behavioural charts, one of the other quantitative measures, is a common approach that is used in schools to help teachers improve behaviour in younger students. In the FC context the charts are based on agreed goals (a maximum of four such goals) jointly made by students, their parent and the teacher. The student receives a score of 4 to 1, following feedback from their teacher after each class. Typical FC goals include 'staying focused for 20

minutes', 'raising your hand when you have a question' and 'showing respect to your classmates'. The goals scores were added up at each FC meeting and discussions around how to improve them took place at a group and individual level. For the data analysis the scores at the start and end of the T2 period will be compared (start and end). This facilitates greater coherence of the research narrative rather than an in-depth weekly analysis of the student's scores.

The research also used Biofeedback data gathered from students once a session over the 12 weeks. The Biofeedback software records all the time that is spent in physiological coherence ('Green Zone'). In every session time spent in coherence is calculated and recorded by the software. It was hypothesised that an increase in coherence scores would also be reflected in the behaviours perceived by the parents and the teacher (see Henriques et al, 2011 for discussion on a similar hypothesis).

Qualitative data were gathered using vignettes interviews with students in an attempt to identify how students perceived issues of hyperactivity/inattention, conduct, emotions, pro-social and peer relationships (See Appendix 4). The vignettes topics were based on the SDQ categories outlined above. The purpose of this was to strengthen the connection between the methods. While the connection of the SDQ themes to the vignettes did not imply that data convergence was a given, it did ensure that the vignettes themes shared the validity afforded to the SDQ as indicated in Chapter 2. This helped me, the researcher, in feeling confident that the themes had the potential to reflect as much of the student's experiences as possible. The use of vignettes provided me with a framework for the interviews. Vignettes are short fictitious descriptions of hypothetical persons or situations and in this context they were used, following their presentation, to open up a conversation with students (Huebner, 1991). Using vignettes enabled me, the researcher, to 'clearly define the situations and the conditions under which the phenomenon under study takes place' (Poulou, 2001, p. 56). For this research, the vignettes allowed me to develop rapport with the students in a safe and novel way. The students could engage with stories about other students' difficulties in school settings and then relate those experiences to their own. The use of a structured interview methods (e.g. Hodges, 1993) have their place in more formal clinical settings but I considered that in this instance where I wanted to hear about the subjective experiences of the students, the use of vignettes would open up

this world in a more natural way. The interviews took place in a room other than where FC was held. All interviews were recorded and subsequently transcribed. In practice the vignettes were used to open the discussion following a short rapport-building period. After the initial discussions, the students were asked to reflect on their own life in the context of the storylines outlined in the vignettes. Some questions, such as *'on a scale of 1 to 10 where do you think your level of difficulty with concentration in the classroom is'*, were used when students had difficulty in reflecting on their own situation. The response to the scaling questions was also useful in getting feedback from the students on their impressions of the FC and Biofeedback intervention. The views of parents were also gathered through informal conversations at various times throughout the intervention process and at the follow up meeting. These comments were recorded in my research diary and reviewed during the data analysis stage.

4.7 Participant selection in the research group

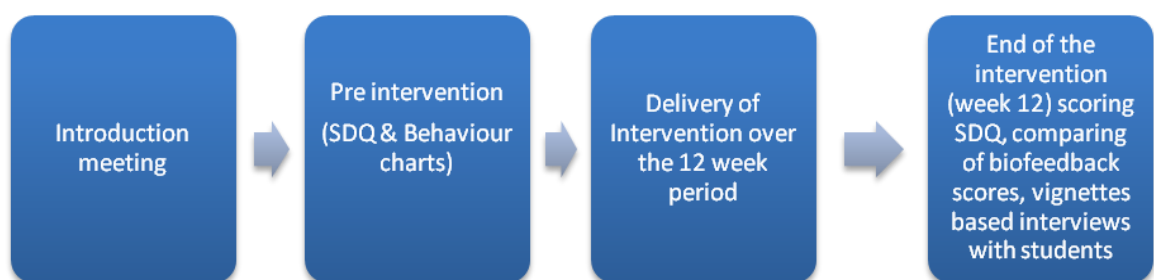
The research design adopted an organic approach, focusing in-depth on a relatively small sample of students that had behaviour and concentration difficulties and the relevant adults involved in their education and care. It focused on 16 students aged between of 7 and 12 in the FC at schools, radiating out to at least one of their parents and one of their teachers. A sample of 16 students, their parent and teachers was identified through a convenience sample method (Seidman, 2013) starting August 2012 and ending May 2013. This sampling method proved useful in that it allowed for a natural flow of students to the service rather than FC personnel going to teachers and asking for students. Instead the class teacher and or other support staff at the school suggested the family class intervention to the parents of the students. On the negative side the convenience sampling method ensured that it was a tense wait to see how many students could take part in the research. Thankfully the teachers supplied names of potential students and once the parents stated that they were interested, an individual information-giving/goal setting meeting was arranged with FC staff, the student and the parents. The only inclusion criterion for the research group was that the student had behavioural and concentration difficulties, which was considered as a difficulty by the teacher. Parental attendance for the duration of the program was demanded so any parents who were not able to commit to this were not accepted. Thankfully, this situation did not arise but if it had the students and parents would have been referred to the school counsellor for support in

relation to behavioural and concentration difficulties. In school A, one student did not complete the program due to their parents' work commitments and in school B two students started too late in the year to have four week follow-up. For that reason, the data from these three students could not be used in the final analysis. It is important to note that in this research, the students included were not only those with ADHD but also those with similar behavioural and concentration difficulties that had been present for some time. Added to this is the fact that many of the school children presenting with behaviour and concentration difficulties had not been medically diagnosed but would benefit from service support. All the participants were referred to the service via the class teacher.

4.8 Pilot Study

This section will give an overview of the pilot of the project, which was conducted from March 2012 to June 2012. The pilot was conducted in one school in the research catchment area. The two students who were part of the pilot were selected based on the convenience sampling method (Seidman, 2013). These students were part of a larger FC group of 5, but were the only students participating in the study. I was looking forward to trying out in reality what I was planning on paper. Even though I had planned meticulously, the first few weeks felt as if I were learning how Biofeedback itself worked, what the research design looked like in the 'light of day' and how the students would react to 'being researched'. Above all was the uncertainty of how I would react to being both social worker and researcher. As shown below in Figure 4.5, the stages followed,

Figure 4.5 Stages of the pilot



The aim of the pilot was to challenge the relevance and clarity of the research questions and to experience the new combined intervention of Biofeedback and FC. This allowed a fine-tuning of the research design before the next stage of empirical data gathering took place. The goal of the pilot was to promote empowerment of students (aged 7 to 12 and with behavioural and concentration difficulties) with the use of Biofeedback technology and the FC programme. The research questions, as presented in Chapter One, section 1.8, were:

- What are the outcomes for students partook in the intervention of Biofeedback and FC?
- Is there evidence to suggest that the students have learnt self-regulation techniques as a consequence of the intervention of Biofeedback and FC?

The results showed improved scores in relation to SDQ, the behavioural charts and the biofeedback software. As stated, the vignettes were only used at the end but still showed that they were an interesting way to engage the students and bring forth their knowledge and experience. Despite the lack of comparison with pre intervention interviews, it could be suggested that the students learnt self-regulation behaviours and change in terms of classroom concentration and behaviour was observed by teachers and parents. Originally it was considered that students could use self-reflective diaries that would provide a space for them to develop their own reflections during their time in FC and Biofeedback intervention and give an additional space for their subjective view to be included in the research. The self-reflective diary would focus on reflecting upon where the students used the techniques discussed in the intervention, how they felt about using Biofeedback in FC and other things they wanted to talk about related to self-regulation development through using Biofeedback. The method would provide primary data from the students in a non-threatening manner and also broaden the research's scope from the school and into the outside world of the student. It is important to note that while diaries are often used in research with children they do demand a certain level of literacy and commitment on the part of the children and parents (Punch, 2002). However, as a result of the experiences from the pilot, it was considered that diaries were not practical in that they placed extra work on the student that was not welcomed by parents or students.

During the pilot I also experienced challenges with the continuing integration of Biofeedback into the FC. It felt on some occasions that I was conducting something secret in the corner of

the room that was not fully understood by the group. For the main research, I ensured that Biofeedback was more integrated into FC by using strategic language when describing Biofeedback, such as the colours green, blue, and red (which indicate coherence levels). I also was more explicit in encouraging parents in helping their children to practise the self-regulation methods at home.

There was also the practical challenge of having to have the workload of administering the service, the delivery of the intervention and the management of the research. For instance on one occasion I could not attend a follow up meeting so was not personally able to collect the SDQ sheet. This resulted in the form not being collected until a few weeks after. Once the research proper commenced I needed to factor in time to be able to take full responsibility for the administration of the research. The interviews were also quite short in length, partly due to the newness of the vignettes method and uncomfortable interviewing surroundings. So as to develop these interviews and to help get free flowing narrative from the students, better surroundings were required. In that respect I later ensured that interviews took place in a quiet room. I also supplied headphones for the student when they used Biofeedback on the computer. Previously the sound disturbed the others in the class and those around them distracted the students at times.

4.9 The phases of the research

The CAS was completed by September 2011, following which approval from my employer to conduct a research project within the work place was sought and granted (see Appendix 3. D). In January 2012 a pilot of the intervention and a mixed method data collection approach was carried out following approval from my supervisor, Dr. Henglien Lisa Chen. A research proposal was prepared and accepted by the Department of Social Work and Social Care, University of Sussex, by May 2012. Ethical approval was then sought and received by June 2012. The data gathering started in September of the same year and ran all the way through to May 2013, when the school year finished. As there was no fixed admissions time for entrance to FC (e.g. two intakes per year), some students started later than others and thereby finished later in the year than others. School A had 5 students in the group and School B had 8 students over the course of the academic year.

4.10 Approaches used for analysis of data

The mixed methods used in this research generated a range of data, which needed to be analyzed before the interpretation could take place (for the framework of conceptual interpretation see Chapter Three). Accordingly, the quantitative data (i.e. SDQ, biofeedback and behavioural charts) were processed through the Software Package for Statistical Analysis, SPSS Version 22, to calculate basic statistical analysis, such as mean and standard deviations. The SDQ scores were calculated by inputting the survey responses on the SDQ website. These results were presented in three separate predetermined categories (normal, borderline and abnormal)¹. In order to process the basic statistical analysis, I attributed a numerical value of 1 to 3 for each of the categories (i.e. normal =1, borderline = 2 and abnormal =3) to facilitate the inputting of the results in the SPSS. Descriptive statistics are commonly used in educational research (Cohen et al, 2007), which can yield important information and give an overview of the situation being analysed. In this instance the use of descriptive statistics allowed me to build up a broader picture of the reality of the students who participated in this research through the expression of the views of parents and teachers in numerical form and to describe one aspect of the story of the research through numbers. The behavioural chart data was processed weekly in Excel to calculate a percentage for the students related directly to their goals.

A thematic approach (Cohen et al, 2007) was used to analyse the data gathered from the interviews using the vignettes with the students at the start of the intervention and at the end of the intervention. The interviews were translated from Swedish to English whilst transcribing them and subsequently organised according to the five SDQ-related topics embedded in the storylines of the vignettes. The framework presented by Braun & Clarke (2006) was used to guide the ensuing thematic process. A theoretical thematic analysis would tend to be driven by the researcher's theoretical or analytical interest in the area, and is thus more explicitly analyst-

¹ The author is aware that the language used to describe the categories in the results of SDQ is not in keeping with social work values of non-labelling. However given that the SDQ has shown research validity, as indicated in Chapter Two, the survey was used to help answer the research questions despite the reservations about the language use.

drive. So in this instance the categories of questioning were identified before the interviews, such as focus on behaviour and concentration in one of the vignettes. If the study had a focus on linguistics and deconstruction of language then a semantic approach where the 'themes are identified within the explicit or surface meanings of the data, and the analyst is not looking for anything beyond what a participant has said or what has been written' (p 84, *ibid*) would have been used. In this instance the themes arose inductively from the interview material. The themes from the ensuing analysis is then compared and contrasted with the data from the quantitative analysis, thereby presenting the information in a triangulated format.

4.11 Ethical issues

This section presents an ethical approach that is grounded in Article 12, UN Convention on the Rights of the Child, which advocates the rights of the child to be consulted and listened to. Building upon this, a 'Code of ethics for social work and social care research', proposed by Butler (2002) is established as an overarching framework. Butler argues that the 'ethical foundation for a code of ethics for social work research can derived from the ethics of social work itself' (*ibid*, p 241). He puts forward a code which is compatible for social workers carrying out practice and research, based on the model referred to as 'four principle plus scope' (Beauchamp and Childress, 1989, in Butler, 2002). This covers the principles of autonomy, beneficence, non-maleficence and justice and the question of scope refers to the process of deciding about to whom and in what circumstances the particular moral obligations apply (Butler, 2000 p 243). This study embraces the practice-based connection and relevance of research, and therefore an ethics framework that speaks to research and professional practice is an obvious and logical choice.

This research involved work with children (i.e. students aged 7 to 12) and adults (i.e. parents and teachers) therefore the study required ethical approval (Appendices 3A: 'Cover letter to accompany ethical application form', 3B: 'Reply to ethics committee on follow up to questions' & 3C: 'Approval from employers and management of the school district) from the Ethics Committee at the University of Sussex. This was granted in May 2012. In this section I argue that many research studies with children and young people have neglected children's rights by gaining consent from adults (i.e. the child's guardian) and bypassing the child (Boddy, 2014). One of the main intentions of this research was to promote the young student's voice and

views. Research involving children has become increasingly popular in recent years (Einarsdottir, 2007; Formosinho & Barrosaraujo, 2006; Lewis, Delleit, Robinson, Fraser, & Ding, 2004). Listening to children represents a core value and practice activity for social work professionals. Children are social agents, who try to make sense of their lives, meaning that empowerment, as a theory and a value, has equal resonance for the social worker when working with children as it does with adults. Tangen (2008, p 158) argues that 'the idea of empowering the disempowered, although perhaps mostly concerned with adults, also adds to this movement of growing interest in children's experiences and perspectives', because children in general, and children who live with serious learning, developmental or other difficulties specifically, are perceived as 'disempowered'. I ensured all of the participants (including the students studied) had the right to give informed consent and the right to withdraw from the research without any consequences. For example some students or parents might have become sick during the course of the research or become distressed in some way as a result of the intervention. Students and parents might have wanted to opt out of the research or students might have not wanted to continue using the Biofeedback but would still have been encouraged to continue with FC. If this had arisen they would have been informed they were free to do so without consequence or prejudice. It was also agreed with the school counselors in the two schools that should any of the participants become distressed by their participation in the intervention then they could access support from them.

As I was to be the facilitator of Biofeedback and FC the issues of power between the students and I needed to be addressed carefully. To help students and parents consider participating in the research, it was important to provide clearly understandable information about the research to facilitate better understanding and to ensure that they, the participants, could make informed choices (see information sheet for example in Appendix 5). Moreover, prior to final consent I provided a verbal consultation to participants (student and parents) to provide further details and answer any queries. Additionally, when conducting research with children and adults, differentiated written and verbal language is essential, in order to be certain that the participants of all ages can access the information (Clark et al, 2013). Therefore, invitation letters and consent forms were designed that were suitable for the students and their parents (see Appendix 6). Similarly, the vignettes (Appendix 4) provided a child friendly research tool to maximise the opportunities for raising their views.

4.11.1 Confidentiality

While the participants were of course known to each other, due to the group-based nature of the intervention, for the purposes of my research data gathering participant confidentiality was maintained by the allocation of pseudonyms to each student. All participants were informed that confidentiality about their circumstances would only be broken if information came to light which suggested that the individual(s) (or someone else) was in serious harm or danger. All tapes of interviews, field notes of observations and transcripts of interview were scrutinised to ensure that any references strictly followed the above approach. Participants were reassured that the tape transcriptions were to be transcribed by the researcher and that all details related to the study were to be kept confidential. They were assured that all tapes, field notes and transcripts would be kept locked in a filing cabinet. Access to this information was limited to the researcher. In addition, none of the personal information was discussed with others in the FC and Biofeedback group, other than what they offered to say themselves in the session. Participants were also asked to respect the rule ‘what is said in the group, stays in the group’. It was made explicit that the working transcripts, tapes, questionnaires, scoring sheets and other relevant data would be kept until completion of the thesis and then destroyed. The participants were also informed that should anything concerning possible harm come to the attention of FC personnel we would be duty bound to refer them to other services such as social services and educational support. This is based on Swedish Law (Socialtjänstlagen:2001) in regards to children and the duty people have to refer suspicion of child abuse.

4.11.2 Potential power imbalance and conflict of interest

It is also noticeable that the voice of the child is often absent in research (Clark et al, 2013). I am aware that the partnerships between the participants in this research may not be equal. For instance, involving schools to gain access to the children and their parents in the research may have resulted in participants having given their consent because they were afraid that they may be adversely affected if they refused. Moreover, the teachers may give their consent because of the authority of, and/or pressure from, their employer. Throughout the research, I carefully addressed the power imbalance between participants and myself by

promoting a culture of openness and dialogue. As outlined at the beginning of this section the ethical practices in this research project were informed by Butler's (2002) framework, which proved to be a relevant and useful set of guidelines.

4.12 Conclusion

This chapter presented an insight to the process of integrating Biofeedback into FC. As shown, this was not something that happened instantly but instead involved a detailed approach in which approval was needed in both social work practice and research. After deciding on the appropriate Biofeedback device the item was purchased from a company in the USA. The challenges of maintaining fidelity to the research design were discussed and through self-awareness of these dynamics, a balance between my insider and outsider role was achieved. The change of my personal epistemology of social constructionism to pragmatism was discussed. It was argued that this change was necessary in order to provide a link between the various approaches in the mixed methods design. As such it felt as though the research could move forward on solid philosophical ground. As discussed above the pragmatic researcher will use all available methods to help answer the problem and find out what works, such as identifying an intervention for students with behavioural and concentration difficulties. The research design of single case study using a semi-experimental design was explained, as was the choice of the mixed methods used to gather the data (SDQ, Biofeedback, behavioural sheet and vignettes). In March 2012, a small-scale pilot (N=2) was carried out which yielded important practical information for the research design. The convenience sampling method was used to gather research participants and it was the class teacher who suggested the intervention to the parents, who then decided whether their children would participate. Of the thirteen students who completed the program, only one was a girl. All of the students were in the age bracket of 7 to 12 years. While the data gathering stage was carried on over the academic year, there were other significant phases of the research (e.g. ethical approval). The methods used to capture the data proved to be suitable and adaptable to my research needs (see Section 7.5.2 for further discussion on this point). The analysis of the data reflected the mixed nature of the methods used to capture the data (Bryman, 2007). A combination of using descriptive statistics and thematic analysis inspired by Braun & Clarke (2006) was used to provide the first step in the analysis of the data. This approach provided a clear framework that

connected my analysis to pre-constructed themes. As pointed out, the analysis was at a thematic level and did not go deeper into linguistic and discourse analysis. The final section used a framework outlined by Butler (2002) that focused on creating a code of conduct that sought to connect social work practice and social work research. The main argument focused on the student's voice as an important element in this thesis and in practice.

Chapter Five: Changes in Student's Concentration and Classroom Behaviour Performances

5.1 Introduction

This chapter examines how the intervention of Biofeedback and FC, facilitated by the author, in a school setting can assist the students with developing concentration and behaviour regulation. It analyses the changes in the parents' and teachers' perspectives and the students' concentration and behaviour performances between two time points-prior to and post the intervention. It begins by analysing data from the SDQ that established the concerns of the students from the perspective of the parents and teacher. Secondly, I draw upon data from the parents' and teachers' perspective on the subcategories of the SDQ, prior to and after the intervention. Thirdly, the data from the behavioural charts are presented from the start of the intervention and from the last day of the intervention. A decision was taken, with respect to the categories in the SDQ (i.e. attention/hyperactivity, conduct, emotional, pro social & peer relations) to present an accumulative score from the parents and the teachers, as in practice the SDQ encourages the survey to be completed by the parents and by the teacher and then the scores to be entered in the online system thereby generating a holistic report. With respect to the remaining feedback sections in the SDQ form, the teachers' and parents' views were kept separate, as these were not used to calculate the scores (i.e. Abnormal, Borderline, Normal levels) but it was relevant when getting the parents' and teachers' impressions of any change over the research period.

The data analysis and discussion in this chapter includes quantitative data from the Strengths and Difficulty Questionnaire (SDQ) completed by the teachers and parents at the point of the first week of intervention and four weeks after the intervention programme was completed. Additionally, behaviour charts were completed daily by the teachers during the intervention weeks. To complement the quantitative data a selection of qualitative data is presented, gathered through the interviews at the final week of the intervention. Following mixed methods discussions this chapter presents a holistic picture of the experiences of the participants but for this chapter quantitative data are given more weight (Onwueabuzie & Teddlie, 2003). The qualitative samples are used to support and challenge the quantitative data.

5.2 Initial concerns of the parents and teachers on students' concentration and behavioural difficulties

Lin et al (2009, p 1694) outline that having children with ADHD has 'a profound effect on the caregivers. Negative affects such as feelings of frustration, exhaustion, depression, feelings of guilt or self-blame can be experienced by the caregivers'. The majority of the parents in this research group at the introduction meeting stage also referred to difficulties they experienced in understanding and helping their child's behaviour. Children with behaviour and concentration problems can suffer in different ways as a result of their classroom difficulties. The problems with peers for children with ADHD are well documented (Barkley 1990), as are problems for classroom teachers on finding appropriate means of working with these behaviours (Kildea et al, 2011).

Table 5.1 presents the parents' and teachers' initial concerns on the students' behaviour and concentration difficulties from the SDQ before the intervention, collected at Time 1 and shows only a few (3 out of 13) of the parents think that the students have experienced behaviour and concentration difficulties for less than six months but many (9 of the 13) of the parents think the students have experienced the difficulties for over a year before the Biofeedback and FC intervention. The difficulties were linked to how the students were doing in school regarding classroom performances and social interactions. Two students from the thirteen studied were perceived to have problems from a period of only one to five months. One parent did not consider that their child had any problem as such but just needed extra support. That said, as per the table (Table 5.1) it is suggested that many of the sample (9 out of 13) were perceived to have problems for over a year. This establishes both a justification for the intervention and also a sense of the persistence of the problems. This picture also acts as a point of reference to observe possible change over 12 weeks of the intervention in the study.

Table 5.1 The length of time, as perceived by the parents and teachers, for which the students had difficulties with concentration and behaviour at the start of the intervention.

The length of time	The parents' perspective		The teachers' perspective	
	Number of the students	% of the students	Number of the students	% of the students
0 months *	1	7.6%	0	0%
1-5 months	2	15.4%	0	0%
6-12 months	1	7.6%	4	30.8%
Above 12 months	9	69.2%	9	69.2%
Total	13	100%	13	100%

*One parent did not perceive her child to have any problem; rather it was the teacher who held the concerns.

The teachers are important observers of the student's daily school life and play a significant role in the development and maturation of the student. They are in an ideal position to observe students, which is significant as some researchers argue that early identification is important for children who display ADHD type characteristics. Hong (2008) argues that if children's behavioural problems are overlooked from school age through teenage years, the condition may become more severe. In this research, as the table above (5.1) shows, the teachers perceived the problems to have existed for a considerable period of time, for instance few (4 out of 13) of students studied had difficulties for between six months and twelve months but many (9 out of 12) of them had difficulties for more than one year.

5.3 Hyperactivity and Attention SDQ results: at the start and four weeks after the intervention

In Swedish education policy, as in the United Kingdom, the principles of inclusion in mainstream education for students with diagnosed difficulties such as ADHD are predominant. As mentioned in previous sections of this thesis ADHD is 'considered to be a medical condition characterised by inattention (for example, difficulty in sustaining attentions

in tasks, easily distracted, seeming not to listen when spoken to), hyperactivity (for example, often fidgeting with hands or feet, talking excessively, difficulty in playing or engaging in leisure activities quietly and impulsivity (for example, often having difficulty awaiting their turn, often interrupting)'. Humphrey (2009, p 19) also supports this when he states that 'the primary behavioural characteristics that define attention/hyperactivity disorder in children and adolescents are impulsivity, hyperactivity and inattention (Shapiro, 1998, p 545)'. The constructive nature of the diagnosis, as discussed by Singh (2012) is also considered and the implications of this position are used as a part of the analytical framework in Chapter Three. Humphrey (2009) goes on to say that around three times more boys than girls receive a diagnosis of ADHD, although this ratio may be as high as 9:1. While the small sample size prohibits my research being made generalizable, the gender trend was also present with only 1 of the 13 students in this research being a girl.

Hyperactivity and attention are core areas of the ADHD diagnosis and are two of the main reasons that students are referred to the Family Class intervention. The table below (5.2) shows that the teachers and parents perceived many of the students to have borderline and abnormal levels of problems with hyperactivity and concentration difficulties. It implies, for those students, that they might not be able to sit still at their desk, not be able to stay task focused and be able to control their responses to stimulus.

Table 5.2 Perception by Teachers and Parents: Hyperactivity and Attention Difficulties: At the start and four weeks after the intervention

Range	Perception by Teachers and Parents: Hyperactivity and Attention Difficulties at the start of the intervention		Perception by Teachers and Parents: Hyperactivity and Attention Difficulties 4 weeks after the intervention	
	Number of the students	% of the students	Number of the students	% of the students
Normal	4	30.8%	8	61.5%
Borderline	5	38.5%	3	23.1%
Abnormal	4	30.8%	2	15.4%

At the time before the intervention, many students studied were viewed in the borderline and abnormal category in relation to hyperactivity and attention difficulties. Four weeks after the intervention, the borderline and abnormal categories were reduced to only a few, 3 and 2 out of 13 respectively and increased from 4 to 8 in the normal category. While these results are to be viewed with caution, the positive change could suggest that the view of the parents and the teachers have changed and/or the behaviours of the students have also changed. The results in this section are important because by addressing hyperactivity and attention a knock-on effect can be seen in the areas of attendance and peer acceptance (Lin et al, 2009).

5.4 Peer Interaction and pro-social behaviour SDQ results at the start and four weeks after the intervention, together with responses to vignettes 4 and 5.

It is not uncommon for children with ADHD and ADHD type symptoms to experience isolation in the classroom because of their behaviour. McIntyre et al. (2012, p 73) describe parents with ADHD children who recounted 'how attempts were made to keep their children away from other children' in the school setting. One mother in their research stated that

'He was behind a screen, they felt that he would be too stimulated by the classroom but again I felt that he was being isolated and...marginalised. We felt the teacher felt he was just in the way'.

Therefore how well the student with ADHD or ADHD type symptoms interacts with peers has a significant impact on their school experiences and outcomes. Table 5.3 shows the parents' and teachers' concerns on peer interaction and pro-social behaviour of children studied at the start of the intervention. From the perspective of parents and teachers, only some of the students (4 out of 13) may have had peer interaction difficulties. While it could be seen that this is not especially high, it also reflects the reality that not all the students were referred for very serious behavioural and concentration difficulties but with levels which interfered with them fulfilling their potential in the classroom. However, for those children who might have difficulties, perhaps related to a lack of friendships, or have limitations in their activities with friends, peer relations can be a risk factor (Wehmeyer et al, 2010). Moreover, this social system rejection is likely to have longer-term effects, as these children are more likely to 'affiliate with deviant

peer groups if social rejection continues into adolescence’ (Wehmeir et al, 2010, p.210). In order to facilitate the generalisation of social skills, Guevremont (1990) has recommended that natural therapy facilitators (e.g. peers and teachers) take part in this aspect of treatment. This connection of ‘natural therapy facilitators’ has a coherent tie with how the Family Class model functions.

In contrast, many students (9 out of 13) were considered by their parents and teachers to have problems with pro-social behaviour (see Table 5.3 below), such as not being sociable to peers (name calling, annoying, etc.) or stealing items from home or friends and becoming isolated in school because of their behaviour (see Buhrmester et al for discussion on this dynamic, 1991). There is an established link between ADHD, behaviour problems, aggression and pro social behaviour. Hay and his colleagues (2010, p. 494) suggest that ‘a proportion of the young children who show aggression at very high rates-those on the high trajectory toward conduct problems, are also at an elevated risk for associated symptoms of ADHD’. Moving this line of thinking further they argue that ‘it seems likely that children who show elevated levels of aggression with co-occurring symptoms of ADHD, even if they do not meet diagnostic criteria, are especially likely to have deficits in pro-social development’ (Hay et al, 2010 p. 494). The intra personal dynamic of low self-esteem, social rejection and anti social behaviour (which are more common in children with ADHD than in typical children) (Barkley, 1990) implies that these issues are intrinsically linked.

Table 5.3. Parents’ and Teachers’ perspectives on the student’s peer interaction and pro-social behaviour: at the start and four weeks after the intervention

Range	Peer Interaction and prosocial behaviour SDQ results: T1		Peer Interaction and prosocial behaviour SDQ results: T3	
	Peer interaction	Pro-social behaviour	Peer interaction	Pro-social behaviour
Normal	9 (69.2%)	4 (30.8%)	13 (100%)	9 (69.2%)
Borderline	3 (23.1%)	5 (38.5%)		4 (30.8%)
Abnormal	1 (7.7%)	4 (30.8%)		

At the start of the intervention 9 of the students were in the normal range of the SDQ for peer interaction. After the intervention, this had increased to all 13 being considered to fall in the normal range. It is difficult to say why teachers and parents perceived this change, but the underlying social atmosphere of the FC and group context may have lent some hand to this positive change².

The vignettes used in the research focused on different areas, such as hyperactivity and concentration. The areas of pro-social activity and peer interrelations were examined via two vignettes. It is feedback from these that are referred to in this section. However, unlike the evidence presented from the SDQ above the majority of the responses in respect to pro social behaviour and peer behaviour did not indicate any change from points before the intervention to the point at the end of the intervention. By this I refer to the students' responses to the vignettes and that the comments did not differ from Time point 1 to Time point 2. The students did however show awareness of appropriate actions in the situations described in the vignettes. For example before the intervention, one student (S#2) commented in response to Vignette 4 that one can make friends by *'just start playing with others.... then she can talk more with people'*. After the intervention the same student reiterates that *'she must ask.... she must not be shy'*. In response to Vignette 5 another student (S#3) commented before the intervention that *'he should say to them, stop bullying and that he should try and find other friends, it's not easy but he should say it to the teacher'*. The same student (S#3) says after the intervention something similar when he says *'he should not be with them, he could do something else, maybe if he stops being with them they will stop'*. A general theme of 'just doing it' ran through the responses to vignette 4 where students felt that a shy person should 'must train herself to ask' as there is 'nothing better than to ask'. Students also indicated that successful initial peer interaction could be dependent on presenting yourself as interesting- *'try to do something interesting which she hasn't done before, so she can ask someone if they could do it together'* or as another student stated *'first she can go to a place, and do some fun thing or nice thing and then the friends will be jealous or else do something nice to a friend and see if something happens...(S#4)'*. However, the quantitative data from the SDQ showed a change from 30.8% of the students in the borderline and abnormal sections prior to the intervention to

² This is supported by the students' comments in Theme 4- Feedback from Parents and Teachers, Q4.

100% of the students falling in the normal section four weeks after the intervention. Having differences in the data is not uncommon for mixed method approaches. However in this instance it is suggested that students already had the tacit knowledge of how to manage peers and be pro-social. The reinforcing aspect of FC helped them to score better in the eyes of the parents and teacher.

With respect to pro-social behaviour, four weeks after the intervention (Table 5.3) many of the students were in the normal category (9 out of 13) and 4 remained in the borderline range. This compares favourably with the 9 out of 13 who were considered to have problems with pro-social behaviour at the start of the program. It is difficult to be absolute as to why there is a difference between the quantitative and qualitative data. This could be as a result of participants giving a favourable bias on the SDQ or was a consequence of poor vignettes scenarios that may not have captured the imagination of the students and as a result did not provide data that allowed deeper exploration of the issues from a qualitative perspective.

Quite often, the areas of peer interaction and pro social behaviour become neglected when dealing with issues of individual behavioural problems. This is one of the reasons why their inclusion in this research is significant. Strong correlation between peer interaction and pro-social behaviour difficulties is evidenced by many such as Little & McLennan (2010) and Mikami & Lorenzi (2011). The latter argued that the social problems among children with ADHD are substantial. In their study more than half of children with ADHD were peer rejected, in comparison with the 10 to 15% of general population comparison. Anhalt et al (1998, p 67) agree with the need to address the secondary effects of ADHD and points out that 'therapeutic strategies for children with ADHD in school environments often neglect the need to improve peer relationships'. The combination of Biofeedback and FC can be seen as a strategy which has focused on building relationships within the group and amongst others in the students' network. In light of that argument, the results in this thesis showing significant improvement in peer interactions and pro-social behaviour offer encouraging indicators to the benefits of the combination of Biofeedback and FC for these students.

5.5 Conduct behaviour in SDQ results: at the start and four weeks after the intervention

Conduct problems are considered to have an incidence rate similar to ADHD. For instance, Lavigne et al (2009) found that conduct related behaviours were one of the more common sets of problems within similar age groups to that of this research. The incidence of conduct disorder was also supported by studies with an older age group (Oosterlaan et al, 1996). Conduct disorder is a severe, persistent and costly societal problem affecting between 2% and 6% of children and adolescents (Kazdin, 1997). It is understood as ‘a persistent pattern of antisocial behaviour whereby the individual repeatedly breaks social rules and carries out aggressive acts that disturb other people’ (Scott, 2005, p 522). Conduct disordered behaviours, such as consistent stealing, fighting, and non-compliance, represent the most frequent reason for referral to treatment services (Rones et al., 2000, p.223). Conduct problems can prove to be a strain on families and teachers alike with the focus on the child being often negative and adversarial.

The table below (5.4) represents the results from the SDQ survey in relation to conduct problems as perceived by parents and teachers before and after the intervention. Many (9 out of 13) of the students in the study were placed on the range from borderline to abnormal. This suggests that many of the students who were referred to the intervention have had behavioural problems within the class and home context. These data are significant for the overall research objectives and hypothesis as they present one of the key problem areas as identified by the teacher and parents and indeed the students themselves. Comorbid conduct problems affect half of children with ADHD and are associated with poor peer functioning in ADHD populations (Mikami & Lorenzi, 2000, p778). In Mikami & Lorenzi’s research they found that children with ADHD were impaired in their peer relationships relative to comparison children and that conduct problems predicted additional poor functioning on teachers’ reports of peer acceptance and rejection.

Table 5.4 Parents' and Teachers' perspectives on the students' conduct: at the start and four weeks after the intervention

Range	Conduct start of the intervention		Conduct at the end of the intervention	
	Number of Students	Percentage	Number of Students	Percentage
Normal	4	30.8%	7	53.8%
Borderline	4	30.8%	3	23.1%
Abnormal	5	38.5%	3	23.1%

As the Table 5.4 above indicates at the four week time point after the intervention there was a decrease in the number of students (2 less) in the 'Abnormal' theme and a increase in the number (3 students) that were categorized by the same teachers and parents in the 'Normal' range (7 students). This suggests that the level of conduct-associated problems had reduced from the start of the interventions to the point four weeks afterwards. The change was also perceived by some of the students themselves, for instance one gave their reflections at 4 week follow-up on how they felt Family Class has been for them when he comments that *'I have learnt to take it easy and calm myself down and I notice myself that I can take it easier in the actual classrooms'*. Previously this student had issues with anger management, which impacted on his ability to focus in the classroom and take direction from the teacher. Together with qualitative and quantitative data the change in the SDQ responses can be cautiously taken as a sign that the student's behaviour had changed.

The difficulties with conduct as a risk factor for a broad range of current and future mental health problems as well as being marginalised from work and other social arenas in adolescence and adulthood (Moffitt, 2006). The solving of problems in a group context, such as Family Class combined with Biofeedback, can yield 'a wider range of child management options. Large group discussion usually provided a wiser perspective on common child management difficulties'. In addition to this, Kjobli et al suggest that 'proposing solutions, formulating personal goals, and describing homework successes in a group may enhance parent commitment and adherence' (p 114, Kjobli et al, 2012). The results of Kjobli et al's research also support the positive change suggested by this research when they showed that 'the group-based treatment had a positive impact on parent ratings of the child externalising behaviour,

social competence, parental health and parenting practices’ (Kjobli et al, 2012, p. 119). They also suggest that ‘adding teacher interventions to parent training could improve child outcomes in the school and day-care settings’ (Kjobli et al, 2012, p. 119), an approach at the core of Biofeedback and FC.

5.6 Emotional Difficulties in SDQ results: at the start and four weeks after the intervention

Wehmeier et al (2012), using the SDQ as a measurement, suggest that children with ADHD have more emotional problems than children without ADHD. At the beginning of the intervention the parents and teachers rated only one student as having an abnormal level of emotional difficulty (see Table 5.5). This could include feelings of depression, self-harm and isolation. This, on the surface, does not correlate with the wider research (e.g. Lin et al. 2009) that shows a more significant connection between behaviour and concentration difficulties and emotional problems. The result could reflect on the limitation of conducting research with a small subject group. Nonetheless, from the perspective of the parents and teachers, the child who had emotional difficulties also had behaviour and concentration difficulties. Furthermore the research conducted by Christensen, again using the SDQ as a key measurement, showed that from 4968 students, just 5% were shown to have emotional difficulties.

Table 5.5 Emotional Difficulties in SDQ results: at the start and four weeks after the intervention

Range	Emotional difficulties at the start of the intervention		Emotional difficulties at the end of the intervention	
	Number of Students	Percentage	Number of Students	Percentage
Normal	12	92.3%	12	92.3%
Borderline	0		1	7.7%
Abnormal	1	7.7%	0	

Emotional difficulties often go hand in hand with ADHD type behaviour. However, this was not picked up by the SDQ with the sample used in this research. There was no change in the results when compared to the data point at the start of the intervention (see Table 5.5). This could

suggest that the sample did not present with problems that parents and teachers considered to be emotionally based and that this view continued through to the point after the research. It also suggests that the SDQ was not sensitive to capturing the emotional problems. However this has not been an issue for others when using the SDQ for purposes similar to this research (e.g. Di Riso et al, 2010). The data could also be as a result of the fact that most of the students did not have an ADHD diagnosis as ADHD often has comorbidity with other problems. The majority of students had problems with behaviour and concentration but may not necessarily meet the qualifications for an ADHD diagnosis. That considered, the data generated are comparable with other research that examined the epidemiology of pre-school goers' psychopathology. In that study the authors found from a sample of 796 4 year olds with depressive disorder were reported in less than 1% of the sample (Lavigne et al, 2009). Although a different age group this connects with the findings in this research project.

5.7 Impact on Relationship in SDQ results: at the start and four weeks after the intervention

In order to best understand the impact of behavioural and concentration problems, such as those experienced by the students in this study, it is important to acknowledge the bidirectional relationship between the children and their parents. The main caregivers of children often experience an emotional burden with managing ADHD (Lin et al, 2009). The 'family, specifically the parents, is the primary source of influence for the child's development' (McIntyre et al, 2012, p 66) and therefore the impact on the relationships between child and adults is very important. Indeed, a limited body of research has begun to consider the unique perspectives of parents of children with ADHD. However, there still appears to be an emphasis on exploring the management, treatment and cause of the disorder (McIntyre et al, 2012, p 67). The school world is a complex one and provides a lot of challenges for students with behavioural and concentration problems (DuPaul & Stoner, 2003). Findings from McIntyre et al, (2012, p 71) show that 'children with ADHD required so much attention that other children in the family barely got a look in. Parents reported that parental relations were also disrupted as a result of the child with ADHD's extreme need for attention'. Lin et al (2009) in their research found that mothers of children with ADHD experienced three basic types of burden: parenting burdens, emotional burdens and family conflicts. Relationships and

activities within the family can be impaired, and ‘in some cases family relationships can break down, bringing additional social and financial difficulties, causing children to feel sad or show oppositional or aggressive behaviour’ (Wehmeier et al, 2010, p210). Family stress is a significant issue and one that Family Class sought to address through engaging discussions on parenting experiences.

The pressure and ‘mess’ in families with children with ADHD is well documented (e.g. Kildea et al, 2011). Although the students in this research do not have an ADHD diagnosis one would expect that a certain impact on the family would be felt as a result of the problems the students were having in the classroom. The parents’ perception on the burden on the family at the start of the intervention is evenly mixed across the three options. In all, many of the parents (8 out of 13) felt that the child’s problems were, at some level, not such a burden on the family (Table 5.6). This could suggest that the problems may not have been as severe as they were for the children in the research quoted. Or it could support the view that ADHD symptoms are primarily a school-based issue making it less visible and problematic at home.

Table 5.6 Parents and teachers feeling burdened: at the start and four weeks after the intervention

Range	Parents and teachers feeling burdened on having the child at home/classroom at the start of the intervention		Parents and teachers feeling burdened on having the child at home/classroom at the end of the intervention	
	Parents	Teachers	Parents	Teachers
Not at all	5 (38.5%)	1 (7.7%)	8 (61.5%)	2 (15.4%)
Just a little	5 (38.5%)	2 (15.4%)	3 (7.7%)	5 (38.5%)
Quite a lot	3 (23.1%)	6 (46.2%)	2 (23.1%)	3 (30.8%)
Really a lot	0 *	4 (30.8%)		3 (23.1%)

* The teachers were more likely to perceived a problem in the classroom as the intervention was mainly targeted to classroom behaviour and concentration

In contrast, nearly all of the teachers (10 out of 13) considered that the problems the students exhibited were quite a burden on the class with 6 out of 13 students having been considered by the teachers to be burdensome 'quite a lot' and 4 out of 13 as 'really a lot' (see Table 5.6). The findings here outweigh the findings from parents who feel that the child was a burden on the family. This supports the justification that the intervention was addressing the right problems in the right context, which is to say that the school-based nature of the problem was at the forefront.

In order to assess whether the relationships between teacher/parent and student had changed in any way it is useful to ask the adults at a point after the intervention how they now view the presenting problems in terms of burden on the family life or the classroom. Table 5.6 indicated parents felt their child's problem had less of a burden on the family after the intervention when compared to the start of the intervention. At the start of the intervention 5 parents felt that the child was not a burden on the family in any way; this changed to 8 parents four weeks after the intervention. This was backed up by comments from the parents such as:

'We have also noticed a change at home, he is helping me more and telling his sisters and brother to do their chores. He takes more responsibility with his homework and I don't always have to be at him'.

At the start of the intervention the teachers felt that only one student was not a burden to the class; this rose to 2 students after the intervention (see Table 5.6). There was other positive movement as the 10 students who fell in the 'quite a lot- really a lot' range before the intervention, had, after the intervention, dropped to 6 of 13 students. It is important to note that no teacher felt as though the problem(s) were worse at the follow up period.

A further discussion with parents at the four-week follow up meeting was conducted and evidenced a strong sense of optimism, as the following quotes illustrate:

I think that xxx has discovered like, a kind of self-belief that he didn't have before he started the (family class and Biofeedback intervention). I also speak with him differently and I think that has been a big help. (Mother of 10 year old)

A student in the study echoed the parents' optimism at the meeting when he explained that,

'Family class and Biofeedback is better because we are only like 3 or 4 in the there and our parents can help. If we are in the classroom, the teacher is not able to help all of us. And it has been a great help to me in concentrating, to take it easy when I'm angry and stuff like that'.

5.8 Perceptions of the problem in SDQ: at the start and four weeks after the intervention

Feedback is one of the key components of evaluative work in school-based interventions (Flay & Collins, 2005) and of social work interventions in education (Peleg-Oren et al, 2007). In that respect, the parents and the teachers were asked *'in your opinion does the child have a problem in the following areas: emotions, concentration, behaviour or agreeing or socialising with other people?'* Prior to the intervention, many of the parents studied (9 out of 13) considered that the problems their child had could be categorized as 'minor difficulties' (see Table 5.7). Again, this can be contrasted with the majority of teachers who rated the students as having 'definite problems' (9 from 13). In reference to this difference, some commentators (e.g. Gray, 2013) see ADHD as a school adjustment problem and the DSM (mental health assessment tool) as a measure of success in a school setting. This argument states that the student's behaviour will become more visible in different contexts as was suggested in the previous section.

Table 5.7 Overall perceptions of parents and teachers: at the start and four weeks after the intervention

In the last month do you think your child has had difficulty in one or more of the following problems: with emotions, concentration, behavioural agreeing or socialising with other people?	Parents' and teachers' perceptions at the start of the intervention		Parents' and teachers' perceptions at the end of the intervention	
	Parents	Teachers	Parents*	Teachers
No	2 (15.4%)	0	7 (53.8%)	4 (30.8%)
Minor	9 (69.2%)	1 (7.7%)	5 (41.7%)	5 (38.5%)
Definite	1 (7.7%)	9 (69.2%)		3 (23.1%)
Severe	1 (7.7%)	3 (23.1%)		1 (7.7%)

* One parent did not fill in this answer on the SDQ form because they were absent from the follow up meeting and did not respond to one attempt to contact them

As mentioned above, the view of the teacher is very significant in defining the extent of the problem. Much of the work of Family Class is to highlight the positives and strengths of the student and encourage the teacher to have a new relationship with the student. In addition to this is the impact of the teacher forming better working relationships with the parents of some of the students. The teachers provide a daily insight to the functioning of students in the school setting. The teachers, prior to the intervention, considered that 9 out of the 13 students had 'definite problems' when it came to the standard questions posed. At four weeks after the intervention, the teachers felt that only 3 students now had 'definite difficulties' (Table 5.18). This improvement possibly represents a change in the relationship between teacher and student, an actual overall progress in the student's performance or indeed a combination of both. FC represents the belief in establishing good working relationships between families, teachers and students. This approach, supported by DuPaul et al (2011), is a particularly effective and feasible strategy to teach students with ADHD to monitor their own behaviours. They also note that 'developing positive partnerships among school professionals through collaboration can also increase the likelihood of treatment success' (p 39). In general terms, the adults were asked how they felt the problems had been since the end of FC; cumulating their

scores, the teachers and parents reported that 7 out of the 13 think they showed improvements since their participation in the intervention.

According to the parents prior to the intervention many (9 from 13) of the students had minor difficulties in the areas of emotions, concentration, behaviour or agreeing or socialising with other people. Four weeks after the intervention the parents felt that those minor difficulties had reduced to 5 out of the 13 students (see Table 5.6). Similar findings have been supported by Evan et al, (2012) when they compared two interventions that worked with students with ADHD problems in school settings. They pointed to the benefits of having parents involved in the intervention process.

5.9 Performance of the students on the behavioural charts: at the start and at the end of the intervention

To examine the progress of performance in behaviour of the children studied this section includes the data that were generated from the behavioural charts used on a daily basis in the classroom over a 12 week period. The use of behavioural charts can be classified under the realm of behaviour modification and has been discussed in Chapter Three and Four of this thesis. Research shows that they are common and popular amongst teachers and students (Inferantino & Little, 2005). As presented in Chapter Four, each student received on average four goals ranging from 'maintaining concentration for 15 minutes' to 'raising your hand when you want to ask a question'³. The scores were recorded on a special score sheet and the students brought them with them to FC every week. Then the goals were inputted by the author to an excel sheet that formulated average scores based on an excel calculation formula. As Table 5.8 shows, the mean score for all the students and their combined goals was 72.9% at the start of the intervention. The standard deviation score refers to dispersion of the scores across the thirteen participants and the proximity of each individual score to the mean.

³ As previously mentioned in the description of Family Class, each day a students received feedback on each class from their class teacher and each week each student received feedback from FC, from FC personnel and their parents

Table 5.8 Behaviour chart results: Average score of the students in FC and Biofeedback intervention

Average score of the student in FC and Biofeedback intervention group					
Scores related to goals	N	Minimum	Maximum	Mean	Std. Deviation
Start of intervention	13	23,60	98,30	72,90	19,26
End of the intervention	13	46,70	100,00	89,03	13,96

As the Table 5.8 shows, the overall increase to 89%, up from 72%, suggests that on average, the group increased their performances in relation to the goals determined at the start of the intervention process. This reflects on an overall average improved score to the sample group in relation to Family Class goals from the beginning of the intervention and at the end of the intervention. DuPaul et al (2011) found the use of behavioural charts as part of a treatment plan to be successful in helping students with ADHD and ADHD type symptoms in the classroom. The scores reflect a more positive experience for the students in classroom situations and fits with the changed scores from the teachers' perspective in terms of the student being less of a burden.

5.10 Conclusion

One of sub-goals of this research was the on-going improvement of the FC service offered to the students and the parents. That is one of the reasons why a multi-research method approach was taken and that feedback from parents, adults and students was sought. Underlining this approach is 'a simple but often overlooked truth: that merit and worth are not static values. By internalizing and institutionalizing self-evaluation processes and practices, a dynamic and responsive approach to evaluation can be developed to accommodate these shifts' (Fetterman, 1996, p 589). This ties with a pragmatic approach as discussed in Chapter Three in the sense that the motivation for research is for betterment of the students and the intervention on offer. The research model used was responsive in capturing the everyday reality of the students and teachers. The initial concern of parents and teachers prior to the

intervention showed that the majority of the students were considered to have problems for more than a year. This supported the argument for the intervention and also for the research in the sense that it was important to understand if the intervention of Biofeedback and FC could meet the needs of these students. The hyperactivity and attention section of the SDQ suggested that there may have been modest improvements with respect to these two areas where four students in the Normal category prior to the intervention increased to eight post intervention. The peer interaction and pro-social behaviour increased by four students and five students respectively. For the conduct focus, there was an increase from four students to seven students and a reduction from five to three student's in the Abnormal category. Only one student was recorded as having difficulties with emotional regulation. This student moved from the Abnormal category prior to the intervention to the Borderline category post the intervention. There were also slight improvements in the relationship section of SDQ survey. Here the teachers and parents appeared to be less burdened by the impact of the students difficulties when comparing the prior and post SDQ scores. The responses from the students, parents and the teachers at the follow up meeting also support the improved relationships with the students. The SDQ also suggested that the parents and teacher viewed the situation with the student's behaviour and concentration difficulties in a different light post intervention. From the parents' perspective seven students were now in the No level of burden when compared to two, prior intervention. The teachers also considered that the student's burden was not lessened with eight students now in the No-Minor levels when compared to one, prior intervention. The behaviour charts measured individual goals but for this chapter the scores were amalgamated. The mean score for the students in research group, at the start of the intervention, was 72.90%. This jumped to 89.03% at the final week of the intervention. The results suggest the intervention has helped the students manage behaviour and concentration issues. However, there could be other explanations for the improved behaviour and concentration of the students: the fact that parents were more involved in the everyday school world than they may have been previously; the will to please on the part of the students in terms of their responses to the researcher in the vignette interviews (more specifically related to Chapter Six) (Punch 2002); the students' own motivation for changes influenced by the intense presence of many adults around them (parents, teacher & FC personnel) (Deci et al, 1999); the extra attention given by the class teacher to the student because of the fact that a student was getting extra help; the possibility of the parents and teachers being involved in the

research and are then asked to report results in the SDQ could lead to possible 'response bias' (Furnham, 1986). In addition, this study is not replicating any other, as the combination of Biofeedback and FC is unique. Considering this fact together with the other possible contributors to the positive results, caution needs to be exercised when promoting the intervention as successful. In the next chapter I will explore the qualitative data with reference to the theoretical framework outlined in Chapter Three. The remaining quantitative data will also be integrated to the overall discussion.

Chapter Six: Student Empowerment: Developing students' capacity for self-regulation

6.1 Introduction

This chapter examines the results of the qualitative data gathered through the vignettes interviewing method outlined in the methodology section of this thesis. It also includes data from the biofeedback software. As discussed in the previous chapter, the integration of data from quantitative and qualitative perspectives is one way in which the results from a mixed methods study can be presented (Bronstein & Kovacs, 2013). One of the underpinning perspectives in this thesis is reflected by the adage: the best way of empowering students is to help them understand not only *what* to do but most importantly *how* to do it (Mead, 1945). This can certainly be transferable to the domains of behaviour and concentration. Therefore, this chapter presents data which is examined from the premise that the process of creation of the self is fluid and dynamic, influenced by external (such as teachers, rules and discipline) and internal (such as self-regulation and self-control) factors.

Key components of Foucault's and Dewey's theoretical arguments, as discussed in Chapter Three, are used to frame the discussion of the results gathered in this research. The voice of the student is given a significant position due its prominence as a social work value. Added to this, *The United Nations Convention on the Rights of the Child* (UNCRC) calls for state parties to 'assure to the child who is capable of forming his or her own views the right to express those views freely in all matters affecting the child, the views of the child being given due weight in accordance with the age and maturity of the child' (Article 12). This is also supported in academic literature, for example Porter (2009) who advocated engaging the child's voice in education. Capturing the student's voice gives access for the researcher to the power dynamics which exist between the teacher and the student. Consequently, this chapter presents discussion on data that is primarily sourced from the students.

The proceeding sections will present results from the thematic analysis and discuss the results in relation to the theoretical framework outlined in Chapter Three. As discussed in Chapter Four, the vignettes themes were taken from the SDQ. It was hoped that these themes would give a holistic perspective on the world of the students and facilitate an interconnection

between the methods used in the research. However what transpired was that some of the themes generated more responses than others, at both time points. The others, as mentioned in the previous chapter, did not generate any different feedback between the two time points. Therefore the themes of hyperactivity, behaviour and conduct are grouped together as one unit of discussion and concentration as another. As outlined, both these units are subjected to an examination via the theoretical framework informed by the theories of Foucault and Dewey.

6.2. Themes of Hyperactivity, Behaviour and Conduct- responses at the start and at the end of the intervention

As discussed in the previous chapter, hyperactivity, behaviour and conduct problems were suggested to have improved as a result of the combined intervention of Biofeedback and FC. Failure to help students with these problems can result in students not fulfilling their academic potential (Montague et al, 2000) and in teachers feeling frustrated with the student's behaviour (Greene et al, 2002). This section used some arguments put forward by Foucault to discuss the dynamics of power relations and the influence that external factors can have on the behaviour and thoughts of the student. Foucault sees the subjectification process exemplified when the student is shaped by the disciplinary measures of the school, such as by the teacher, the school rules and the expectations of what constitutes a '*good student*'. As discussed in Chapter Three, for Foucault, power can be viewed from three perspectives, namely 'Hierarchical', 'Normalizing Judgment' and 'The Examinations'. These disciplinary technologies help create the 'good student,' who embodies the '*right behaviour and actions*'.

In the data gathered in this research there are clear examples of the 'hierarchical' and 'normalizing judgment' perspectives in practice. For instance, a hierarchical perspective on power is evident when one student (S#2) commented in response to a vignette scenario, that '*adults must also say something to her and try to calm her down. Like, for example, maybe get her to sit with a friend and help her do things she doesn't really understand*'. Power relations for this student can be seen from a top down perspective, reinforcing the student's 'less empowered' position. The student's advice to the child in the vignette was located in the external world in the sense that outside agents are seen to facilitate the possible change rather than it coming from within. It is the argument of the thesis, built on educational theorys such as

McLaughlin (1977), who suggests that schools should focus more on building up the student's capacity for self direction and move away from the total reliance on external factors.

The data also showed examples of Foucault's 'normalizing judgments' category. The 'normalizing judgments' are manifested in statements, which suggest the ways in which people *'should behave'* and *'should be'* like the comments from one student (S#10) who stated that *'she needs to calm down and take it easy, she should stop throwing things'*. What this thesis is not saying is whether the advice given by the student is correct or not, but it aims to understand the possible thinking behind the words. Within the hierarchical and normalizing judgment also lies the panoptic condition, where by the subject 'inscribes in himself the power relation in which he simultaneously plays both roles; he becomes the principle of his own subjection' (Foucault, 1991, p 120). Foucault used Bentham's style of prison as a way to illustrate the use of discipline as a function of power. This describes the surveillance and control elements of institutions, such as prisons and hospitals. In schools the students are observed, monitored and controlled both by the teacher and the students themselves leading to 'no copying, no noise, no chatter, no waste of time' (Foucault, 1991, p. 143). One student (S#9) articulated this, when in response to a vignette scenario he commented that perhaps *'she could have someone who watches her and says to her when something is not right'*. This image is a potent one in that it suggests the portrayal of dependence by the child on an adult managing the child's behaviour and suggests that the student's view of his own resources were not considered. The adult is viewed as a restricting and powerful force that can control and punish, exemplified by one student when he commented: *'Talk with her.... or say to her that she will not get any break if she does not sit still'* (S#8). Most of the students gave some indication that they knew how the students *'should'* behave and all but one was able to suggest strategies to help, such as *'say to her or stop her, you can try and ground her in some way'* (S#8).

Foucault considered that the subjectification process included a degree of internalization, which results in the self-reflecting on his or her actions. Many of the students recognised that they too are also like the students in the vignettes. Some students were able to articulate their own difficulties such as the student (S#6) who commented that, *'I start think different things in my head and I come into another world in my head...I think about things, like something I saw on TV or something I have done'*. In one statement a student pleads with his teacher saying that *'I have said it to my teacher, I try to do all that I can, I try...if you see me go around and run,*

don't see that as something I do because it is fun, it is because I have sat still and I have it hard to focus for the most part' (S#13).

Another student stated, almost in desperation *'I have tried to sit still and I have tried to relax'* (S#4). It is clear from these two statements that there is more to these students experiences than a passive acceptance of power relations and a lack of motivation to change. In some cases these students do not believe they have the skills to manage these difficulties. These statements also give an insight to the struggles that many students face daily in school settings. Despite his earlier work on influence of power relations on the subjectification process, Foucault's later thinking appears to appreciate the possibility of the self: *'from the idea that the self is not given to us, I think there is only one practical consequence: we have to create ourselves as a work of art'* (Foucault, 1983, p 237). This opening given by Foucault allows for the introduction of the theories of John Dewey to help explain the changes in the student's responses to the same vignette questions at the end of the intervention, this time with more emphasis on the capacity of the self for empowered action.

Dewey's relevance to this thesis was discussed in Chapter Three. As a reminder it is useful to point out that his approach allows us to look for situations in which the students have learnt about themselves as individuals and are using that knowledge to act positively in the school setting. For Dewey there should be little distinction between knowing and action in a school context. The examination of the data in this chapter points to the increased referencing of self-regulation, by the students, in their responses to the characters in the vignettes. In addition, the increased action by students in managing their own hyperactivity, behaviour and conduct is evidenced by their responses. For instance, one student suggested that the child in the vignette could,

'Say (to the teacher) can I go the toilet and (then) run two laps of the school and then come in and sit' (S#4).

This thinking suggests that the student has developed an understanding that behaviour can be improved by taking action to remove oneself from a situation, taking some time to calm down and then coming back. Another student had a similar suggestion when he stated that she could,

'Take it easy and if she is angry with someone, she can just go out and take a walk and then come to back (to class).... just go out and breathe, air and stuff!' (S#10)

On questioning the student further regarding his own ability to sit still, he comments that it is *'better than before, before I'd just go and run around to my friends'* (S#11). At the end of the intervention the student's own self-perception is that he has started to *'sit still in the classroom more'* (S#11). On further questioning, such as *'if you were to put it on a scale, from 1 to 10, and 10 means you are sitting still all the time, where would you put yourself now?* The student replied that he was at 9. Reflecting back the student felt that he was at a *'2 or a 3' before the intervention'* (S#11). This theme, of going outside and running around the school yard so as to release energy, is a strategy that encourages students to take control of their behaviour when they have recognised they have lost concentration. Another student (S#6) echoed this when he stated that,

'What I would have done, I would have gone to her (teacher) and asked, can I go out and spring a couple of laps around the school because I have got too much energy in my body. So I would run like 2 laps around the schoolyard, so then, if we had like a group room where she could sit in peace because she is throwing things at her friends and stuff, I would ask could I sit a little outside because I am disturbing my friends when I throwing my eraser and stuff...So because after you don't have that feeling in your legs and you are quite calm'.

In this situation it is the student who is regulating his own behaviour rather than the teacher telling him what to do. However not all students referred to physical movement. Some suggested that the individual could think differently. For instance, one student stated that he *'think(s) about (his) goal sheet'* (S#3). Some of the techniques discussed in the thesis, i.e. breathing correctly and thinking positively, were referred to in many of the post intervention replies. For example, one student (S#5) commented that the child in the vignette should,

'Just take it easy, maybe just think about not being angry because it will just make you stressed. You can ask if she wants to join in a game or something, so she stops being angry.... if I was angry, I would do like this (breathes in and out)'.

On further questioning the student states *'that is when I am angry I can do it and I can stop being angry and I can manage it...you must to think also if you want to calm down and stuff'.*

The external motivations, as suggested in Section 6.2, are of course still present. For example, another student (S#1) comments that as a way of helping the vignettes child to calm down, that

'If she is able to be finished with everything really fast, in that case that she can get to choose something she wants to do...don't mean what she wants but maybe she can draw or something'.

In addition to the external focus the student also referred to the internal,

'She should try to calm herself, and think about herself, and I don't know what else. She could try and sit down and think about something else... when she thinks, she can think about herself and that a lot can happen if she does not concentrate...She could go to the teacher and speak with her and if she has a little problem with concentrating in the classroom. She can ask if she could go to little room, and be on her own...Maybe she wouldn't be so angry then... even if she is still angry maybe she can get over it'.

This student had also felt that over course of the intervention, he has learnt *'to control my angry, first I try and not think about what happened, I think about other things, then I breath in and out'*. The data suggests that these students had formulated different response to the problems poised in the vignettes and have also put into practice some of the techniques themselves.

6.3 Theme of Concentration responses at the start and end of the intervention

As in the above section 6.2, the majority of the students perceived the teacher as the main source of assistance and did not indicate that they felt as if they had the potential to manage and regulate their own decisions, actions and behaviours. In saying that, some students were aware that they and others responded well to incentives and rewards. One student (S#8) commented that the child in the vignette can *'work so that he can maybe get something from his parents, if I get good results in 6th class then I will get a computer (from my parents)'*. Another student (S#10) echoed this:

'I think about things which I did yesterday, or if something...if we get 5 points a week then we get to have an ice cream. I think about that we lost one time, we got a 4'.

Concentration is a difficult term to define but for the purpose of this research it was explained to mean the ability to stay on task for the required period of time. Many students and adults struggle with maintaining concentration and it can be a slippery challenge for students to stay focused when there are many things in the classroom to distract them. One student (S#3) offered the image of an operation table when he explained how he managed his concentration. In this image, he *'is a doctor and he is working on a patient whose body is all-open. If he moves or something then the patient will die'*. This image highlights the tenuous permanence of concentration for some students and ties in with Foucault's notions of docility and passivity in the sense that the anxiety and fear the student holds in not being able to manage concentration levels. As discussed by Bailey & Thompson (2009, p 582), docility is seen as *'rendering bodies still and/or silent, invoking passivity'*. In this example the student sees that body needs to be passive, almost paralysed by fear of losing concentration. This tight and rigid approach suggests the student, at week one of the intervention, is more motivated from fear rather than from a place of empowerment.

The analysis of the data suggested that external forces (teachers, parents etc.) could be used to influence concentration. The power relationship in this dynamic leaned heavily on the institutional and the disciplinary practices of the adults in the students' lives. As mentioned previously, this is not to cast judgment on power as either positive or negative, but to describe how it manifests in a classroom setting. In that vein, it is clear that some students see the teacher as a resource and use her to help them regulate their concentration level. One student (S#11) states that *'I usually call the teacher and I think that he could also do, just put up his hand and ask her to come help him and the teacher will help him sit still and quiet'*. When the students did not have any practical tips or did not connect the story with their own experiences they often made comments such as that *'he should just do it...and that....he should he sit still, read and do what he is supposed to do...not talk with friends...That he should not talk, that he should look straight ahead'* (S#11). This, again, can be understood from the perspective of the *'normalizing judgment'*. It suggests that the students were aware of *what* proper behaviour and action were on one level but did not understand *how* to elicit change on another. One student (S#5) did have good insight to his concentration difficulties when he stated,

'You know those like carpenters and such, have headphones, we have them also in the classroom, so when we need them to calm us, we take them, so we go out to the group room, but there is also noisy because 3rd class are also there and scream the whole time...so when you need to calm down or relax have one of those (headphones) and pull the curtains across the window and like, there I like to really try and say I am going to do this, and we have an hour class and I like sit for 30 minutes and I am, like I cant sit any more, and then I am finished. I try and do like the last 10 questions and then there is only 1 minute left and I have 7 left to do and it is like crazy trying to get it all done'.

Nonetheless, the above quote indicated that even when many approaches are taken to eliminate external distractions this student could still have difficulty maintaining concentration. It also deepens our understanding that students can have real dilemmas in trying to complete tasks and handle their own challenges regarding their concentration. The students studied at the beginning of the intervention have not suggested that they knew how to balance these dilemmas on a regular basis. This reality is also supported by the view of the parents and teachers in the Chapter Five.

As discussed in the previous chapter, concentration plays a major part in students' success in the classroom. One of the questions of this research was to examine if the students learnt self-regulation knowledge and put this into practice through their behaviour. The quantitative and qualitative data suggests that the majority of them did so. As stated above, Dewey hoped that schools would help students move from impulsive action to intelligent habits. In this research the formation of intelligent habits is evident in the way the students responded to the vignettes at the end of the intervention. For instance, one student (S#1) stated that,

'He can take a big breath.... in Math class I usually talk, and then I breathe and I work and then I talk again, (I usually work for) like 15 minutes'.

The same student was asked to rate how they perceived their concentration levels now in comparison to before the intervention. He scored himself at an 8 while he was a 3 before the FC and Biofeedback intervention. This student was also able to articulate a deeper understanding of his own concentration process when he said, *'I think about things when I*

concentrate, like, so I can get scores on the goal sheet ...breath in, breath out and think about positive stuff'. A number of students commented on using the breathing technique as a means to regulate concentration. These replies show the interplay between the external factors, which were common to the replies at the start of the intervention, with the internal self-regulation students expressed at the end of the intervention.

The theme of walking out, getting air and coming back to the class was common for many of the respondents:

'(She needs to) Take it easy and if she is angry or something with someone, she can just go out and take a walk and then come to back.... just go out and breath, air and stuff' (S#6).

It is not unreasonable to suggest that the thought process behind this action is based on removing oneself from a situation in order to calm the body and mind down. This student also considered that they moved from a '2 or 3' before the intervention to a 9 after the intervention on the concentration scale and again echoed the earlier statement, when they recognised that,

'I just think about my goal sheet.... and to make my dad happy just take it easy, make just think about don't be angry because it will just make you stressed'.

The preceding statement supports the suggestion that whilst students, on an intellectual level, consider that it may help, putting the goal sheet into practice on a practical level can be more difficult. For instance, a student (S#2) talked about his suggestion for the child in the vignette when saying: *'he could have headphones so he doesn't hear anything'*. In response to *'does it feel that you have it hard to concentrate?'* he stated that *'Hmm, it's nothing that can be fixed...I started in FC to help with that and I have not managed it'*. Dewey would applaud this self-awareness and while the intervention outcomes for this student were not what were wished for, further help was sourced for him.

Developing self-regulation through self-knowledge is a position that ties Foucault's later work with that of Dewey's. This was exemplified by one student (S#4) who explained the improved levels of his concentration were due to the fact that *'(I) learnt more about myself'*. This self-

awareness can help the student identify what works for them. For instance, one student (S#12) felt,

'Maybe if he is looking out the window, my tips would be that, look at something which makes him feel calm, like that tree, and then turn back and start working again....so that he feels calm and that he is not going to be easily distracted.... I feel really calm when I look at that tree (outside his classroom).'

Another student (S#5) showed further insight by referring to the goals, which he had for FC and Biofeedback as being significant and meaningful for him. Dewey would suggest that the practice of 'psychologizing', through creating relevant goals, with the student and thereby getting into their world experience, is an effective way of reaching and connecting with them. Added to this, is the determination and focus the student has on receiving positive feedback for classroom behaviour:

'When I try to concentrate...I try to think about the goals I have. That is what I have done in Social Studies and group work and so on... Sometimes when I work, you see, some of them come and will want to talk and I say to them I must think about my goals, can you stop disturbing me, and they say 'well, when we talk it is us who get bad marks right? I say that I could also get in trouble...at times they stop, at times they continue, or I just think screw them and continue with my work'

Another student (S#6) indicated that he applied the knowledge gained during the intervention when he advised the student in the vignette that *'he can concentrate for like, max 10 minutes, and take a breath, then talk with the others then he can work again, for another 10 minutes'*. The student had developed an increased ability to be aware of his actions and to self-regulate accordingly when he claimed that he *'usually looks at the clock in the classroom'*. His self-awareness stretched to recognising that he was aware when he loses concentration *'when I talk, when I have spoken for too long... Sometimes they (the teachers) say it to me, sometimes I know myself'*. This process of becoming an empowered student is an on-going process, as indicated by Dewey when he stated: 'the self is not something ready-made, but something in continuous formation through choice of action' (Dewey, 1916, p. 408). This combination of self-

awareness and having the teacher helping him is a balance to aim for when helping students develop self-regulation techniques. At times, the students need to be reminded; other times they were able to remind themselves. The impact of a student changing his behaviour can have an effect on those around them. For example one student (S#1) commented that he felt that his behaviour has changed those around him:

'The class has gotten better...I sit besides someone who is calmer. My friend who was messing before has become calm'.

Dewey understood the role that each student played in the reality of those around him or her and the effect of influencing the entire education system. The ultimate aim in educating the student is to prepare functional citizens who play their part in 'grand' democracy (Dewey, 1929) and in turn help create good study situations for those around them.

6.4 Biofeedback self-regulation data at the start and at the end of the intervention

One of the original features of this research project is the addition of Biofeedback technology in an educational setting for students with behavioural and concentration difficulties. Therefore it is of interest to evaluate the student's use of the Biofeedback technology within the Family Class context. As mentioned previously, Biofeedback measures physiological changes in the body and feeds this information back to the user. In this research each student sat with a Biofeedback program for 15-20 minutes each day in Family Class. However at some points the students sat slightly less than the 15 minutes as they themselves found it hard to concentrate or were distracted by something else happening in the classroom. I have chosen to present the biofeedback data in this chapter, as the focus of the method is on individual self-regulation. While the data presented are quantitative in nature, the experience of using the technology is personal and as such has a natural link to the words the students have used to describe their experiences and thoughts. In addition, the reporting of the data in this research follows a mixed method approach of integrating the results from quantitative and qualitative traditions in the reporting phase.

The table below (6.1) presents the average percentage of time spent by students as a group in the bottom level of the computer Biofeedback program over the 12-week research period. Three colours indicated the students' successes with Biofeedback: red (low), blue (middle) &

green (high). The levels were calculated by the software and reflected the various stages of what is known as ‘physiological coherence’. Although the student aims to get into the green and blue, which indicate better levels of physiological coherence, I have chosen to present the time spent at the red level as a means of expressing the change from the start of the intervention to when the intervention finished at Week 12. At the first session the students scored, on average 73.76% of the time in the red zone. The theory behind the repeated practice is that the student develops the skills required in order to,

1. Do well in the computer game
2. Learn transferable skills. Cobb & Evans (1981, p 251) support the idea of learning transferable skills when they argue their findings show that ‘children can learn voluntary control over a variety of physiological processes.

Table 6.1 Feedback from Biofeedback at the start of the intervention

Time spent in the red zone	Mean	Std deviation
Start of the intervention	73.76	26.37
End of the intervention	57.61	19.71

The goal behind the Biofeedback intervention is that students learn new skills in how to manage their own behaviour. Other authors suggest that managing stress; worry and negative emotions are some of the goals behind Biofeedback training. Other programs, which carry a similar message as Family Class, have also shown positive results. The Coping with Kids Program, as discussed by Rones et al (2000, p 225), indicated that the 65-student sample showed ‘higher locus of control, self concept and use of appropriate coping strategies than students in a no-treatment control group’. The decreased time spent in the red zone in this research project at the end of the intervention (19,15% decrease in the time spent by the students in the red level) suggests that, on average, the students, as a group, were able to regulate their breathing and heart rates to a greater extent by the end of their participation in the program (see Table 6.1). The students improved their scores by focusing on the techniques of self-regulation, such as focusing and controlling breathing and awareness of what thoughts were in their mind at that point in time. Singh (2011, p 895) interviewed 150 children with ADHD in England and found that ‘the child’s self-regulation is associated with cognitive skills,

behavioural capabilities and moral behaviour, which are intimately linked to relational obligations'. This view supports the importance of empowering children's self-regulation in school settings and connects with the overall results in the self-regulation training aspect of this intervention.

6.5 Conclusion

This chapter presented an integration of the interview responses from the students with selected parts of the quantitative analysis, namely the biofeedback data. This reporting style follows a mixed method approach proposed by Bronstein & Kovacs (2013). This format also brings the data on the individual students, that is their thoughts on the vignettes and own situations and self-regulations practices into one narrative location. The data from the vignettes based interviews were subjected to a thematic analysis (Braun & Clarke, 2006) and the biofeedback data were run through the statistical package, SPSS. The ensuing examination of the analysis suggested that when it came to the biofeedback scores the data showed an improved ability on the part of the participants in FC to deepen their ability to perform in self-regulation computer-based challenges. The responses from the interviews also support the student changes in both thoughts and actions. The areas of hyperactivity, behaviour, conduct and concentration show different responses from the students at the two time points: before and after the intervention. Foucault's and Dewey's contention that the self is an on-going project under constant change and construction is translated into the changing perspectives of the students who approach their own behaviour and concentration difficulties with a deepened sense of self regulation. The chapter argued that through further examination of the data, the contention that the students were to learn self-regulation techniques and practices during the intervention builds on the idea that a combination of external powers relations together with internal managed responses can achieve positive outcomes for students with behaviour and concentration difficulties. The integration of Dewey's theories with Foucault's proved useful in managing to link empowerment theory in a social work context to the students and the intervention in question.

Chapter Seven: Key Findings, Conclusions and Implications for Social Work Interventions and Social Work Research

7.1 Introduction

This thesis evolved in a situation where I was beginning a new journey on a professional and personal level. Being new to Sweden, both culturally and in language, I sought ways to be creative and innovate in my new practice setting. I understood these changes with the help of Foucault's idea of 'askesis' explored in Chapter One of this thesis. This idea argues for an understanding that the self is a work in progress and is never complete. This made sense on a personal level but also in terms of the students with whom I worked, thereby fuelling my motivation to provide a service which was evidenced informed. The potential of a combined Biofeedback and FC intervention sparked my interest and I went on to explore the feasibility of this in the CAS. From that in-depth literature review, I was certain that this approach warranted investigation and could be of possible benefit to the students I worked with. It also had appeal in that it connected with a view of empowerment that felt realistic and possible. On a national level, educational policy in Sweden aims to promote inclusive practice for students with disabilities and difficulties. The current comparatively poor international educational performances by Sweden in the last few years (e.g. the OCED PISA report, 2012) and the general elections set for September 2014 has education at the centre of discussion.

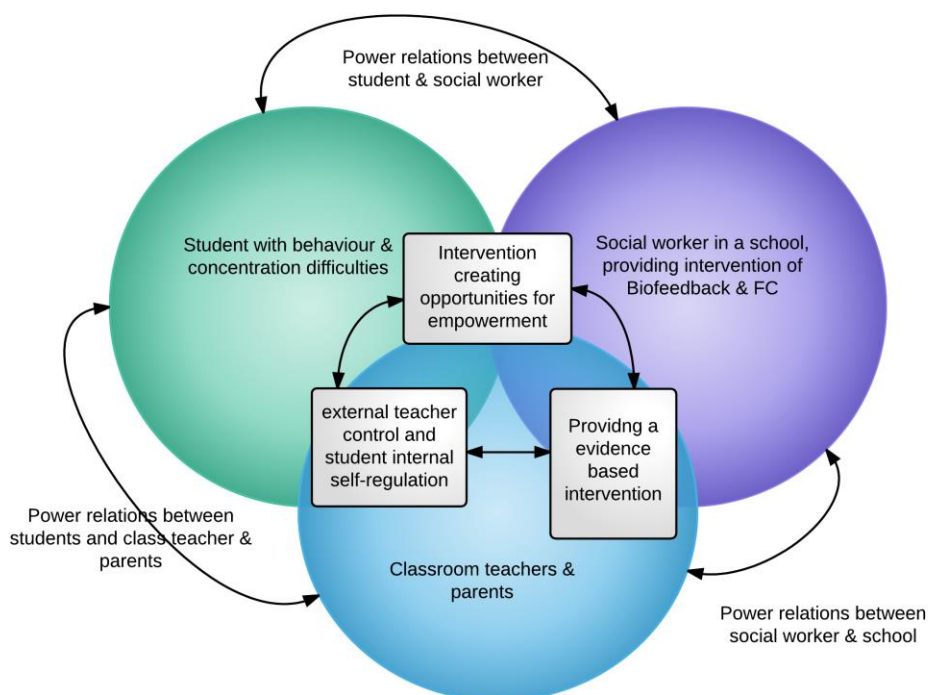
This thesis aimed to tell the story of the thirteen students who participated in the intervention and research of Biofeedback and FC. As the reader has now hopefully appreciated there were multiple layers in this story. One layer rested on the theory of empowerment and how social work practitioners value this approach on a professional and research level. The story of these students was also told in the context of the ADHD literature although having this diagnosis was not a requisite for participation in the research. The students had behavioural and concentration difficulties which were considered serious enough to impact on their classroom experiences. The literature review pointed to feasibility of combining Biofeedback with FC as other studies suggested the effectiveness of combining Biofeedback with other interventions, or indeed as a standalone intervention.

7.2 Revisiting the study

The research aimed to investigate empowerment through self-regulation by children with behavioural and concentration difficulties. To do so, the study explored a combination of Biofeedback and FC, as an example of an innovative social work intervention for students, aged 7 to 12, who have behavioural and concentration difficulties in the classroom. This study explored two key questions:

- What were the outcomes for students who partook in the intervention of Biofeedback and FC?
- Was there evidence to suggest that the students have learnt self-regulation techniques as a consequence of the intervention of Biofeedback and FC?

Figure 7.1 Overview of research process and context



The above figure (7.1) shows an overview of the research process and is a non-linear representation of the power relations between the student/teacher (focus of the research) and the relations between the social worker & researcher/student/teacher & parent involved in the research. It also shows the connection between all these parties in terms of the research

outcomes and context. The overlapping section, where all three circles intersect, represents the site of the research, both in theoretical and practical terms. The overarching theoretical framework discussed in Chapter Three sets the focus for the intervention and social worker position. This approach developed out of post-structural analysis that firstly focused on a critical reading of empowerment theory in an effort to appraise the concept in the context of power and control. A second aspect shone a light on power relations in the classroom between the students and the technologies of normalisation that surround them. The intention here was to highlight the normalizing and controlling potential of adult/child relationships. It was also presented that by viewing the power relationships in this regard negated the potential for the individual (i.e. the student) to exert personal control over their situation in the classroom. Once this position was laid out, the introduction of John Dewey's theories argued for the use of empowerment in promoting the potential of the student to understand and manage their own concentration and behaviour, in combination with the pre-existing power dynamics.

Running through the arguments presented in Chapter Three was that power is understood as an aspect of all human interactions. These power relations are influenced by external and internal factors, such as adult encouragement and self-regulatory behaviour. The theoretical insights offered by Michel Foucault helps us understand power relations in the classroom, which, in this research sample, at pre-intervention stage, were heavily influenced by external factors. I have used a Foucauldian approach to examine the qualitative data that was gathered at the beginning of the intervention and made the argument that the students looked mainly outside themselves for help to deal with issues that they perceived as difficult for them. It was argued that the self internalizes power relations and this is an important aspect in understanding the process of normalization, in the sense the students know what the '*good student*' should do. While Foucault provided a useful tool to assess pre-intervention issues of power and control, his discussion on practices of freedom and ethics suggest that change is motivated by public shame and disapproval. As a consequence it was suggested that his approach was incompatible with empowerment theory that was put forward as means of analysis in Chapter Three. Instead, social work embraces the potential of the individual and the community to break free from habits and structures that deny self-determination. The theoretical framework shifted stances away from Foucault and towards an approach which it was argued, was a better fit in understanding changes in self-regulation behaviour. It was

argued that this position, while acknowledging the commonalities with a Foucauldian approach, has more in common with social work values in the sense that it allows for the belief that the students can exercise empowerment through self-regulation techniques. Therefore, Dewey was presented in Chapter Three and subsequently used in Chapter Six, to examine the change in the responses of the students at the end of the intervention. His approach is a pragmatic and practical one, which emphasizes 'what works'. His core value in education was for the educator to work from a philosophy that tries to understand the lived experience of the student's world. This view shares a link with social work and his valuing of the 'action of an idea,' was one of the reasons for my move from Foucault to Dewey. The latter's approach captures the dynamic nature of learning new skills such as those used to manage issues of power on an individual and external level.

In reference to the above figure (7.1) the area of interaction between the social worker and the teacher focused on the need for evaluation of the intervention and the developing of evidence based practice. The thesis acknowledged that evaluation is a contested term but as explained in Chapter Three, Section 3.2, the focus of this thesis was to understand how the intervention of Biofeedback and FC impacted in the areas of hyperactivity & attention, peer interaction & pro-social behaviour, conduct behaviour, emotional difficulties and relationships. These specific areas become the focus for framing an evaluation in this thesis, as they were identified by Barkley (1997) as significant to children with ADHD and were reflected in the structure of the Strength and Difficulty Questionnaire, the questionnaire discussed in Chapter Two and part of the research design, presented in Chapter Three. Furthermore, in Chapter Three I argued that empowerment is a widely used and challenging term. For the purpose of this thesis, I presented empowerment as self-regulation, which is based on an individualistic perspective. For example, Zimmerman provides a model, which argues that the use of cyclical feedback loops help people set and achieve self-determined goals. Equally varied are the theories of self-regulation but an effort to integrate, such as Barkley (1997a, 1998 b) promotes self-regulation behaviour in an effort to manage the symptoms of ADHD.

As shown in the diagram above, the focus of interaction between the student and teacher looked at developing a balancing of external and internal controls. A core focus of this thesis was trying to understand the reality of the students and look for ways to help them. Freire was

referred to in the effort to advance an empowered style of education in which the student is liberated from his or her own habits of behaviour. Empowerment is often understood on a group and organizational level but in this instance the focus was on the individual (the students) in the form of their understanding and action of their own behaviour.

7.3 Drawing conclusions from the research findings

The key finding gathered in this triangulated approach design suggests that the majority of the sample (with the majority having difficulties for more than a year) have learnt self-regulation skills and understood self-regulation ideas. This was backed up by feedback from the parents and teachers on the changes in relation to the following categories: hyperactivity and attention, peer interaction and pro-social behaviour, conduct behaviour, emotional difficulties, impact on relationships and perceptions of the problem.

As shown throughout this thesis, hyperactivity and attention played a key role in referring behavior of the students referred to the FC. These difficulties are also reflected in the literature presented in Chapter Two of this thesis. Therefore, it was significant to see from the SDQ results that there was an increase in the number of students who were placed in the 'Normal' category with respect to hyperactivity and attention after the intervention. This was also backed up from statements from the students during the course of the final interviews such as *'hmm, I usually can concentrate a little better than I did before...I am not so angry, I mean before I was angry in the classroom but not such any more'* (S#4).

In Chapter Two and Five I have presented arguments and evidence that peer interaction and pro-social behaviour are also linked to behaviour and concentration difficulties. Research conducted by Mikami & Lorenzi (2011) also supports this, so it was encouraging to see that there were changes to these scores four weeks after the end of the intervention. However this was not backed up the vignettes responses, which, I have argued, can be attributed to the storyline of the vignette and the fact that the topic of peer interaction and pro-social behaviour is often discussed in school as part of education programs, thereby eliciting responses from the students that were part of common parlance.

Conduct disorder behaviour shown in the research sample was also represented in the general population of students with ADHD (Mikami & Lorenzi, 2011). The results in this research showed that the number of students in the abnormal level had dropped by the end of the

intervention. Parents and teachers also reported a general decrease on the burden the students placed on the home life and the classroom respectively. The Biofeedback data, discussed in Chapter Six, suggested that as a group the students had improved in their ability to manage physiological responses. Suggested changes in behaviour and concentration were supported by the data from week one when compared to the final week of the intervention in the behavioural charts. The key findings discussed are similar to some of the findings of others such as Slutsker et al (2010), Lloyd et al (2010), Bradley et al (2010) and Ducharme et al (2012) (See Chapter Two). The commonalities found in their research and in this one showed that self-regulations skills were improved, a combination of Biofeedback and another type of intervention had positive results, and changes in behaviour and/or attention were noted.

Chapter Six highlighted the impact of external forces on the students' understanding of power relations in the classroom, more specifically the role the teacher played in helping the students regulate their behaviour. I argued that this was expressed through the students explaining that the teacher (or another adult) was the one who would help them or other students to manage difficulties. They also communicated how they felt they *should* behave with the idea of what constitutes a 'good student' present in most of the post-intervention comments. Post-intervention interviews added another dimension to the responses to the same vignettes. In these sets of interviews, the students had suggested that they recognised their own ability to manage issues of behaviour and concentration. This was expressed through their reference to the fact that they themselves had the ability to manage behaviour and concentration and they gave comments to that effect. The data were analysed using a combination of Foucault and Dewey as a framework and the results suggested that the students in the study had developed the realization that combined with external influences they could regulate themselves.

The key findings, outlined in this section and taken as a whole, suggest that the students had moved from a position of reliance on teachers and other adults when managing behaviour and concentration difficulties to a position that encouraged a balance between the students' self - understanding on how to manage classroom challenges and the role the teacher can play in this. The findings also suggest other positive changes such as improved family relations, improved peer interaction and pro -social behaviour.

The design of this research implies a focus on taking measurements at different points so as to make some comparisons between variables before the intervention and variables after the intervention. For the most part the six areas of the SDQ mentioned above have shown changes in the responses given by the parents and the teachers. The students have also indicated a self-awareness that something has changed in their behaviour and concentration. For instance, some of the students made comments such as *'hmm, I usually can concentrate a little better than I did before...I am not so angry, I mean before, I was angry in the classroom but not so much any more'*. Another student (S#2) responded to the question, Can you remember what it was like for you before Family Class?' by saying

'I wouldn't listen and I was speaking the whole time, it feel good, because I don't have to stress so much now. It is hard to push the whole time and get the high scores, but I will still do it....I mean I will still be doing it, just as good as I am doing it now'.

Another student (S#9) stated that *'I got to skip class (laughs), to have calm and peace when I work....hmm, I learnt too, to concentrate more'*. These comments could suggest that the students are experiencing school in a more positive manner and that they, themselves, recognise that they are doing things differently. Overall, the data suggest that the students benefited from participating in FC and Biofeedback. The improvements were evidenced in all areas except emotional difficulties. Positive change to areas like hyperactivity and concentration are integral factors in helping students achieve their potential in school setting. The change in pro-social activity is also an important ingredient in helping the students to socialize and develop emotional intelligence. In addition, the relationships with families and teachers are critical barometers on how the student will feel about himself or herself.

7.4 Limitations of the research

While every effort was made to be transparent in this research there are some limitations that need to be raised. It is not uncommon to have limitations in a study and highlighting these limitations adds to the credibility of the findings presented. In that respect, the main limitations of this study impacting on the external validity are two fold: namely the

small sample size and the lack of a separate control group. It can also be argued that the follow up period of four weeks is too short. Given other research conditions it would have been interesting to compare results over a further 8 and 12 week follow up. Therefore the results have to be taken with caution and are not presented in this instance as a reflection of the general population. The study was challenging considering the researcher was working through a newly learnt second language. Therefore in more challenging linguistic situations, understanding was achieved through non-verbal cues, e.g. head shaking, movement of hand. In addition, the fact that I was the social worker and the researcher naturally brings the question of bias into focus. The results, one could say, may have reflected badly on my practice so it could be argued that I was driven to ensure the research only highlighted positive results. However, the fact the research made use of mixed methods and thereby gathered data from different angles means I went as far as possible to ensure that my influence on proceedings was contained and accounted for.

7.5. The key implications of social work intervention and social work research

School social work is a relatively new area of social work practice in Sweden where the research has been carried out and England where the Doctorate in Social Work course is based. By law each student in Sweden is entitled to support from a counsellor whilst in school. However the area of early intervention is still fairly new and as a result the research field is underdeveloped. Add the fact that this research is practitioner-based and it is clear that the process, the intervention and the results are all innovative in their own right. In this section I will present the key implications for social work practice and for social work practice research, focusing on the original contribution this research makes.

7.5.1 The key implication of the social work intervention

The combination of this type of Biofeedback and FC is an innovative intervention for students with behaviour and concentration difficulties. It builds on the argument of Finger et al (2002) and Matuszek et al (2003) who argued that Biofeedback can be a useful therapeutic tool for school based social workers. The use of Biofeedback provides a novel way to engage

students in understanding how their body works and how this can impact their mind. Through my experience in this research I have found the computer-based Biofeedback to be a stimulating and engaging piece of software, which the students were quick to engage with. The combination of this approach with a behavioural modification intervention creates an atmosphere of balance. One can argue that behaviour modification is driven by externally motivating factors, such as rewards and positive feedback, with the focus on Biofeedback being on greater self-awareness and self-control. Certainly an element of feedback is inbuilt in the Biofeedback system but the feedback is to be seen as a means to an end rather than the end itself, which can be a criticism, levied against stand-alone behavioural modification approaches.

As much of the research highlighted in Chapter Two shows, Biofeedback proves to be a comfortable fit with other interventions, such as cognitive behaviour therapy (e.g. Cohen, 2010, Shockey et al, 2013) and as a standalone intervention (e.g. Steiner et al, 2011). Building on this previous research I can put forward that the combination of Biofeedback and a behaviour modification program, in this research known as Family Class, can be an effective, engaging and empowering intervention for students with behaviour and concentration difficulties aged 7 to 12. The family approach means that parents are involved in the intervention, which has the knock on effect of improving relationships between schools and families. Improving such relationships has shown to be beneficial for the students, especially those who are experiencing difficulties in schools and outside (Henggeler, 1997).

7.5.2. The key implication for social work research

The literature review in Chapter Two identified that most social work based research conducted in schools is in case study format and is qualitatively focused. However, even within this tradition there are not many studies which give equal value to the students' voice by making that voice a key element of the research design.

The methodological approach taken in this research has resulted in a wide range of data. The approach - the use of SDQ, Biofeedback software, behavioural charts and the use of vignettes - was created with a practitioner viewpoint at the forefront and therefore provided a manageable combination that can be easily used in another similar research or practice setting. The results, while they are tentative and not generalizable, point to positive change for the

majority of the students in this research program. The combination of Biofeedback and behavioural modification in school settings is unique, judging from the existing literature, and this research shows the potential in having this approach on a larger scale. In addition, the mixed methods approach adapted by a practice-based researcher is a significant contribution to social work research methods development. This section will focus on the key implications for social work research.

The use of mixed methods gave a wider picture of the students' situation and experiences within the classroom. It also provided a tangible language for interested parties (the school principals and the social work management) in that parents' and teachers' opinion were given numerical expression through the use of a questionnaire. That survey (SDQ) proved to be user friendly, easy to process and calculate and had the added benefit of being in multiple languages. The SDQ gave a relatable picture of the student's situation and was useful in identifying behaviours prior and post-intervention. The experience of using evaluative measures also gave Biofeedback and FC a sense of accountability with teachers and parents, evidenced by the informal comments indicating they appreciated the effort to evaluate effectiveness. The behaviour charts also proved to be useful instruments in capturing the daily life of classroom behaviour of the students according to the agreed goals. While they required extra effort on the part of the teacher they allowed the student to get timely and regular feedback on their behaviour and concentration. The discussion between the student and the teacher was an important element in the FC process and time was spent with teachers following up on this task. They were also a useful tool to present information to the parents whilst in FC and gave them an overview on how the week was for their child. The percentage calculated at the end of each week was given to the student and discussed in the group meeting. This was another useful way of generating group dynamics and encouraged trust through sharing.

The Biofeedback data were gathered easily and is a clear visual representation of bodily action that was understandable for the students. They provided another vocabulary through which to engage the students. The ease of the Biofeedback system meant that social workers in school could incorporate it in research design. As highlighted at the start of the section, the views of the students were given equal weight to the quantitative data. These views were ascertained through the use of the vignettes methods. For the most part this was again a useful tool to

open the discussion on topics which the students were not used to speaking about (i.e. behaviour and concentration). The vignettes allowed for a quick engagement with the student, establishment of the rapport and for a comparable follow up at the end of the intervention. On reflection, some of the scenarios (vignette 4 and 5) did not reveal anything new or surprising, so care is needed in deciding the construction of the vignettes.

7.6 Suggestions for future research and practice

At the end of this research process I have come to the conclusion that the combined intervention of Biofeedback and FC has potential to help many students with behaviour and concentration difficulties. As a result I have initiated development talks with a number of schools in other jurisdictions, with the plan to spread the model into a number of schools over the next year. This will give the opportunity for further evaluation, together with fine-tuning of the model and the opportunity to take into consideration two other factors: different practitioner and different cultural contexts. My intention will be to offer a three-day training course for new facilitators and offer weekly Skype-based supervision for each group facilitator. This will ensure fidelity with the model and make it possible to conduct valid evaluation of the Biofeedback and FC on a wider scale. The action learning set approach (Pedler & Abbott, 2013) offers an interesting framework through which to develop this further research.

FC and Biofeedback is still very much in operation in Malmö, Sweden and ongoing evaluation is now inbuilt in the model, with the SDQ, Biofeedback software and behaviour charts gathering regular information. This is used to feed back to the political level where decisions on resources are made. The school principals also require ongoing information on the progress of the model. Not least, the parents and students deserve an intervention that is open, transparent and based on evidence. In that context it would be worthwhile repeating the study with different designs and methods (Carpenter, 2005) such as a randomized control design whereby the students would receive another type of intervention or (subject to ethical considerations) no intervention. This would potentially improve attribution reliability and enable one to analyse whether the data had a greater degree of generalizability. Equally, one could have a waiting list

design, which would allow one to compare pre and post scores with greater confidence in external reliability than offered in this study. It would also be interesting to separate the Biofeedback and FC intervention and offer them as separate interventions. This could provide an insight to whether Biofeedback or FC had greatest impact on the students. The empowerment position put forward in this thesis fits in with an action learning set approach and as has been shown, a pragmatic epistemology can cater for the use of mixed methods in research with students with behavioural and concentration difficulties.

The students who participated in this research are our future, they represent our solidarity and our community, therefore it is important that we meet them with hope not despair, optimism not pessimism, so that they grip their own present and move forward with confidence into their future.

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Appendices

Appendix 1- Overview of literature review search results

Initial Search results according to search engine, in 2014.

Search terms	Bio& Social work	Bio & intervention schools	ADHD, behaviour modification & Biofeedback	Mixed methods research& interventions school	Mindfulness, ADHD & school based intervention	ADHD & Bio
Scopus	49	75	8	216 (majority 2013)	1	130
PsycINFO	69	403	10	(Search terms change to ADHD instead of Interventions in school, plus adding 6 to 12 years old as research group, as 1 st search was too large) 79	1	43
Science direct	51(Limited to ADHD)	Limited to behaviour research and therapy, clinical psychology review, progress in behaviour modification, patient education and counselling, 220	136	56,424, then checked within results with ADHD 2,255, then limiting the search to 'child' 93	153	With limit to Journal and child 131

Appendix 2: Results from the Literature Review (2013)

Citation	Purpose of research	Design of research	Intervention & Time scale	Participants	Results
Amon & Campbell (2008)	Can Children with ADHD learn relaxation and breathing techniques through Biofeedback video games?	Experimental versus control group Testing of over the counter intervention tool Strength and Difficulties Questionnaire. AD/HD questionnaire (authors' own)	Heart Math device Choice for participants for frequency of attendance (once, twice or thrice a week over a 12 week period); Product called 'The Journey to Wild Divine'	N=24 (mean age 9.5) in experimental group. N=12 (mean age 8.75) in control group	Biofeedback showing potential in teaching breathing /relaxation. No significant differences shown between frequency of sessions
Bradley et al. 2010	Testing of classroom based intervention to help with test performance, HRV, and socioemotional function.	Quasi-experimental; HRV readings; Test Edge program; Survey of students opinion	One semester (2 lessons a week)	N 136 Mean age of 15	Experimental group increased self regulation skills

Cohen (2010)	A model of Group Cognitive Behavioural Intervention combined with Bio-feedback in Oncology Settings	Quantitative sample; Small sample; In-depth; description of application of Biofeedback device. Manual based; 4 meetings	Use of a manualised model of combining Biofeedback and a therapy Computerized device that involved using games to increase learning of bodily functions	Adults (20-75) Did not specify how many	Model used seems plausible for adoption by social workers.
Ducharme et al, 2012	Integration of CBT and Biofeedback	Single case study; Semi experimental; State trait Anger; expression Inventory-Child and Adolescent (STAXI-CA) plus the Revised Session; Reactions Scale;	5 Consecutive days consisting of 30-45 mins of CBT followed by 15 min of Biofeedback (RAGE-Control)	N 1 Age 16	Increased ability to self regulation (comparison of pre and post scores) Improved scores on STAXI-CA and on Revised Session Reactions Scale.
Finger et al (2002)	Exploring the effectiveness of a computer based HRV Biofeedback program	Literature review	Looked at different relaxation approaches incl. Biofeedback.	N/A	Theoretical link with Biofeedback and social work. Call for social workers to carry out practice based research.

Henriques et al (2011)	Exploring the effectiveness of a computer based HRV Biofeedback program	Initial Pilot study, followed by larger study- Immediate versus delayed treatment. Mood and Anxiety Symptom Questionnaire (MASQ) State Trait Anxiety Inventory	Heart math technology Stand alone intervention, just received basic instruction. 4 week program (20 mins daily, 5 days a week)	Pilot (N=9) Main study (N=35) College students.	Pilot study showed changes in behaviours after intervention but main study the expected changes in psychophysiological coherence were not observed.
Kleen & Reitsma (2011)	Appliance of HRV Biofeedback in 'Acceptance and Commitment Therapy'	Combined methodologies (effect of interaction between client trainer interaction). Questionnaire; HRV scores	MBCT-manual based approach; HRV as a biological marker	Adults subjects (N=7)	Heart Rate Variability training is effective in training ability to increase HRV.
Lloyd et al (2010)	Coherence Training in Children with ADHD: Cognitive Functions and Behavioural Changes	Control versus Experimental Testing of off-the-shelf product; Randomized Control Trial; Cognitive Drug Research system, SDQ.	Heart Math 6 weeks, daily for 20 mins for both groups.	N=39 9-13 years	Biofeedback offers unique intervention for building psychophysiological resilience.

Matuszek et al (2003)	Using Biofeedback to Enhance interventions in Schools	Literature Review	N/A	N/A	Biofeedback is congruent with a strength based perspective
McHugh et al (2010)	'Hearts on their Sleeves': The use of Systemic Biofeedback in School Settings.	Literature review & 3 short case studies.	Use of systemic perspective to combine Biofeedback and family therapy; Heart rate monitor in the form of a belt, which establishes a threshold; Does not indicate the frequency of use or sessions.	3 Subject (Aged 10, 12, 15)	Changes in behaviour reported. Larger scale study planned
Mendelson et al (2010)	Feasibility and Preliminary Outcomes of a School-Based Mindfulness Intervention for Urban Youth	Randomized controlled pilot study; Feasibility study; 12-week; intervention; Responses to Stress Questionnaire; (RSQ) Involuntary Engagement Coping Scale; The Short Mood and Feelings	Mindfulness/Yoga to school based mindfulness intervention for youth 4 days a week for 12 weeks with each session lasting 45 minutes.	N=97 Mean age 10.6	Attractive to users and staff and had positive impact on problematic responses to stress including intrusive thoughts and emotional arousal.

		Questionnaire-child version; Relations with Peers and School-self reporting.			
Steiner et al (2011)	Evaluating computer based attention training for children with ADHD.	Comparision of Neurofeedback and standard computer; attention game; Experimental design	Neurofeedback 4 month, 45 minute sessions twice a week	N 41 Aged 7 -10	Parents notice improvements while teachers did not Preliminary results point to suitability of using computer based interventions.
Slutsker et al (2010)	Cognitive Behavioural Therapy and Biofeedback training in the case of Cyclic Vomiting Syndrome	Literature Review & Case study of one client, outcome success was measured by frequency of symptoms.	Biofeedback in conjunction with CBT,Heart Math emWave product.	13 year old	Changes in behaviour after, leading to further research by the authors.
Shockey et al, 2013	Evaluation of a combined Biofeedback and relaxation program with children with cancer	Feasibility study with 1-group; nonrandomized; repeat measures design; Hearth Math (emWave)	4 sessions (60 mins per session)	N 12 Mean age 11	Biofeedback complimented the relaxation approach.

Singh et al (2010)	Mindfulness Training for Parents and their Children with ADHD increase the Children's Compliance	Experimental group only; Off the shelf evaluation; Located in the field; Use of Palm PDA technology to measure child compliance on a daily basis; 12 session program Measurements SSIMC (Satisfaction with self in interactions with my child) Scale 0-5 SUHMC (Subjective Units of Happiness with my child) Scale 0-100 Interviews (informal)	Multisystemic- results positive Presented as alternative to medication. Manual based training. 12 session for parents followed by 12 sessions for the child.	4 subjects- 2 mothers 2 children	Mindfulness training more than a strategy but a personal transformation. Improved child compliance
Tyron et al (2006)	Reducing Hyperactivity with a feedback Actigraph:	Literature Review; Small scale; quantitative design	Behavioural modification plus Reinforcement feedback to reduce activity	N=9 aged 8-9	Statistically significant changes recorded. Effective methods for reducing a core

	Initial Findings	measurement of behaviour; Classroom context Use of a biomotomer which calculate movements	Beeper and actigraphy technology called BuzzBee, 30 mins sessions		component-hyperactivity- of ADHD in children.
Wenck et al (1996)	Evaluating the Efficacy of a Biofeedback Intervention to Reduce Children's Anxiety	On site; Quantitative; Biofeedback group and no intervention; group training; Use of IPAT anxiety scales pre intervention; Use of Spielberger State -Trait Anxiety Inventory after final session;	Behaviour and biology connection; 12 sessions; Biofeedback group received 6 sessions of thermal training (skin temp) and 6 sessions of electromyographic (muscle tension);	N=150	Biofeedback as a viable intervention to reduce anxiety in children Further research to long term reduced anxiety levels.

Appendix 3

3 A: Cover letter to accompany ethical application form.

18th June 2012

Malmö

Sweden.

Dear members of the ethic committee,

Please accept my ethical approval application for the proposed research entitled '*An innovative approach in social work intervention with school children who experience behavioural and concentration difficulties - Integrating a Biofeedback and Behaviour modification intervention in a Family Class program in Sweden to promote empowerment and self-regulation in children*'.

The research will explore self-regulation and empowerment in children aged 7 to 12 in respect of the intervention and at the same time evaluates the effectiveness of that intervention from the perspectives of the parents and teachers of research sample. The research will be conducted in Malmö, Sweden where I have been based since 2009 and currently work as a school social worker across three different primary schools. As you will read in the application I am proposing a single case study method in a semi-experimental setting. Participations are referred via their parents and/or teachers and come voluntarily to the service. The intervention is based on 12 weeks (students may start at different times) and following successful ethical approval I would aim to have my sample completed by next summer.

As this research is with children aged 7 to 12 I am aware that it falls in the high-risk category. Both my supervisors have approved my research proposal and my main supervisor has approved the ethical application.

Just to note that there are some pictures and images in the letters of information to the children. The purpose of this is to facilitate an understanding of what the research is about and what the Biofeedback equipment looks like. Unfortunately the format of the application does

not allow one to add images. If you would like to see these images I can arrange for them to be made available to you. The same is also true for scanned documents. Naturally these too can also be made available to you if required. References and any other materials you require can be made available on request.

I would like to take this opportunity to thank you for your attention to this application, especially considering it is the summer holiday period.

I look forward to hearing from you

Michael Lynch

3. B. Reply to ethics committee

2 August 2012.

Re: Ethical Approval for research entitled **'An innovative approach in social work intervention with school children who experience behavioural and concentration difficulties - Integrating a Biofeedback and Behaviour modification intervention in a Family Class program in Sweden to promote empowerment and self-regulation in children'**

Dear Members of the Ethics Committee,

Thank you very much for your recent review of my ethical approval application. Your comments are very appreciated and encouraging. In this letter I hope I have fully responded to your questions as I outline each point of concern you had and then offer my response.

Point 1-**'There is nothing about the self-reflecting diaries in the children's letter. That needs to be explicit'**.

- With respect to information on children's diary entries in the children's information letter I have included the following sentences,

There is also a little homework to do in Family Class-not much but a little! We would like you to fill in a diary sheet at home, writing and drawing about the stuff you have learnt, the things you like or the things you don't like about Family Class and about times where you practiced the things we talk about in Family Class.

Point 2- **'Explicit agreement to having interviews taped is required in the 'adult' consent sheet'**

- With respect to consent on the recording of the children I have included the following sentences in the adult consent form,

In addition, the interviews with your child will be recorded by dictaphone and transcribed. Your child will not be identifiable in this transcription. Following this process the audio recording will be destroyed.

Point 3- There appears to be no reference to any interviews with child, parent or teacher to ask their views on how this experimental intervention works for them. Please can the applicant confirm that this is the case. (The reviewers are clear about the 4 methods outlined for capturing data in this case study but only the child's self-reflecting diaries seem to potentially address this aspect)

- With respect to the interviewing of participants you are correct in identifying that diary method gives a space for examining how the intervention works for the child's perspective. In addition I aim to use the vignettes as a method in opening up the discussion to include the child's thoughts on how the process of Biofeedback and family class was for them. I have not included interviewing teachers and parents in the formal research design because of time and resources constraints. However as I will be with the parents over the course of the 12 weeks and meeting the teachers at regular intervals I will have no doubt be in a position to ascertain/record their thoughts informally.

I have included with this letter, as an attachment, the instructions for students when completing the diary sheets. My intention is that each student will have one week to complete each sheet and will receive a new sheet for the week after and so forth for the 12 weeks of the intervention.

Point 4- Clarification point on Biofeedback technology and application

- Biofeedback uses technology to measure physiological reactions. The Biofeedback equipment in use for this research makes use of the science behind a term known as Heart Rate Variability (HRV). This refers to the time between each heartbeat. Cardio based research indicates that HRV is impacted by the central nervous system, which is impacted by our emotional and psychological states. For example a person (on a HRV reading) who is stressed or experiencing anger will have a very jagged pattern and a person who is experiencing a positive emotion will have a more smooth sine wave like pattern. In essence Biofeedback is a means to describe and influence the interconnectedness between body and mind.

I have introduced Biofeedback gradually in to the Family Class processes over the last few months, both to test the reaction by the children/adults and also the applicability. This is very much a new intervention for this client grouping. Biofeedback is popular in sports science and is developing very quickly but the application in the social work sector is unique but not without precedent (as indicated by the research referred to in the ethical application). The equipment

works by measuring the heart rate via the earpiece and the HRV is calculated by software, which is downloaded from the company who sell the device.

The user sits attached to the computer via the earpiece. A series of computer games, which come with the equipment, allows the user to train techniques (breathing, focuses on the region around the heart, experiencing a positive emotion) that regulate their emotional states and concentration abilities. When the user is in a sustained period of emotional stability and concentration this is referred to as physiological coherence. This is signified on the computer software as the green colour (high coherence). The user moves between green, blue (middle coherence) and red (low coherence). When the user is in high coherence they have a greater synchrony between physiological systems giving better opportunity for psychological performance.

The software allows the user to record the time spent in the different each session and to view them retrospectively. Therefore it is possible to show the progress from week 1 to week 12.

In this reply I hope I had provided enough information to answer your questions. Naturally I can provide more if you have further points of concern.

Again, thank you for encouraging words and I look forward to ethical approval confirmation.

Kind regards

Michael Lynch

3.C :Reply from ethics committee

Research Ethics – Social Sciences

Resubmitted Application for Ethical Review

Please note the reviewers' comments below and provide your response on the final page. Then return this form to:

c-recss@sussex.ac.uk

(You can do this as soon as you are ready – no need to wait until the next deadline.)

GENERAL COMMENTS FROM REVIEWERS

This is a really excellent application, carefully and conscientiously put together with an impressive amount of helpful detail and explanation of how a number of important ethical issues will be addressed (particularly the procedures for obtaining informed consent from schoolchildren compared to parents and teachers, power relations between an adult researcher/social worker in the school and vulnerable children who are under his care). Although this is a multi-method and multi-sited project that will be quite large and complex, the reviewers are satisfied that this researcher is sufficiently experienced through the nature of his job to be able to handle the ethical matters that may arise competently.

Point for clarification

What exactly does the biofeedback procedure involve, and how will it be administered and the data collected? The reviewers were unclear whether this was a technique that is already being used in the classrooms, which the researcher is simply going to evaluate, or whether it is a method that he is going to administer himself as a new intervention. The applicant writes in section C3 (under 'Method'),

"The proposed research will use biofeedback quantitative data from students. The biofeedback software records all the time that is spent in Coherence . In every session time spent in coherence is calculated and recorded. Logically, one would think that an increase in self-regulation as perceived by others would also be reflected in an increase in time spent in Coherence (Henriques et al, 2011)"

It is not clear what this means. What is 'Coherence' - is this a specific task or classroom activity? What exactly is the biofeedback data that is to be collected here, and how? There is mention of an earpiece, but please explain how this works.

Biofeedback needs to be explained in lay terms (both for the reviewers and the participants).

Required

These points must be addressed before approval can be granted.

- There is nothing about the self-reflecting diaries in the children's letter. That needs to be explicit.
- Explicit agreement to having interviews taped is required in the 'adult' consent sheet.
- There appears to be no reference to any interviews with child, parent or teacher to ask their views on how this experimental intervention works for them. Please can the applicant confirm that this is the case. (The reviewers are clear about the 4 methods outlined for capturing data in this case study but only the child's self-reflecting diaries seem to potentially address this aspect)

3 D: Approval from employers and management of the school district



Malmö stad
Husie Stadsdelsförvaltning

2011-10-31

Ethical approval of research

The research carried out by Michael Lynch for his doctoral thesis "*Biofeedback and Behavioural Modification Group Work in School Based Interventions: Can Biofeedback, in combination with a behavioural modification program, have an impact on childrens (aged 8 to 12) self regulation techniques and practices*" in Husie school district is approved and supported by Husie city district, Malmö Stad.

The purpose of the study and the methods of research, i.e. the use of the technique of biofeedback software for children and parents, have been thoroughly explained to us as heads of the four Family Classes where the research will be carried out.

Roberto Citterio
Child- and youth director
Husie city district childcare and schools
Malmö Stad

Lisa Jonasson
Unit manager
Husie city district social services
Malmö Stad

Appendix 4: Vignettes scenarios

Vignette 1: Conduct problems

Karolina spends most of her day running around the classroom. She cannot sit still and gets in trouble a lot. Sometimes she gets very angry and throws things at people in the class. What would you say to Karolina?

Vignette 2: Hyperactivity/inattention

Johan finds it very hard to concentrate. When he sits down to do his work in school his head is very distracted. He cannot concentrate for more than 2 minutes. Noises around him or when something passes outside the window usually distract him. What would you say to John?

Vignette 3: Emotional symptoms

Axel finds it hard to sleep. He is worried a lot about schoolwork and also about his parents who are getting divorced. Do you have any suggestions for Paul about what he could do when he is stressed?

Vignette 4: Peer relationship problem

Julia finds that it's hard to make friends and often plays in different groups and with different ages. She is often alone and finds it hard to talk to people. Have you any tips for her?

Vignette 5: Pro-social behaviour

Simon has started to be in gangs that bully other kids in the classroom. Simon feels strong when he is in the gang but does not feel very good when they bully others. He doesn't feel he can stop being in the gang. What should he do?

Appendix 5- Information sheet for parents and students

Title of research study

Biofeedback and behavioural modification group work in a school based intervention: Can Biofeedback, in combination with a behavioural modification program (Family Class) have a positive impact on children's (aged 7 to 12) self regulation techniques and practices?

What is the purpose of this study?

The aim of the study is to explore whether if Biofeedback, in conjunction with Family Class, is more effective in helping children use practices of self-regulation when compared to a sole intervention of Family Class. All groups will be accessed to see if any of the interventions help with the referring behaviour.

The use of Biofeedback will be measured over two time scales, 6 weeks and 12 weeks to ascertain if having Biofeedback is more effective.

The thoughts of the students using the software will also be ascertained so as to understand how they perceive the technology and if it helps them with managing stress, concentration and so forth.

What will be done if you take part in this study?

As parent you will be asked to fill in a questionnaire at three various points. These points are just at the start of Family Class, the end of Family Class and after 3 months follow up.

What are the possible discomforts and risks?

There is no risk with Biofeedback. On occasion students say that the sensor clip on the ear can feel tight but this quickly disappears. This is no discomfort experienced by the parents.

What are the possible benefits to you or to others?

The research is looking at the benefits of children learning about how to recognise what is happening inside their body and see how this impacts how they feel and think. This, for example, may help children to calm themselves in stressful situations, to improve concentration in class settings and develop more awareness how their actions are connected to what is around them.

Will you receive compensation for your participation in this study?

No.

If you do not want to take part in this study, what other options are available to you?

You can continue in family class without using Biofeedback as per initially agreed. One can continue in Family Class even if others in the same class are using Biofeedback. Biofeedback work will be done on an individual basis with each student and parent.

Appendix 6- Consent letters to parents and students

Dear Parent,

I warmly welcome you to Family Class here in Husie, Malmo. As explained to you, your child, together with an adult member of your family will be attending for 12 sessions. During this time he will get the opportunity to work closely with you, learn from other students and have a safe and positive atmosphere to learn how to address the goals he agreed with you and his teacher. As part of my professional development I have been undertaking a doctorate in Social Work at the University of Sussex in the United Kingdom. Part of this course requires researching something of interest to the profession and to the organisation which one works. Therefore I am researching, broadly speaking, how Family Class works. More specifically I am researching the use of technology called Biofeedback. Please refer to the information sheet for more information on specifically what I will be doing and how you will be involved.

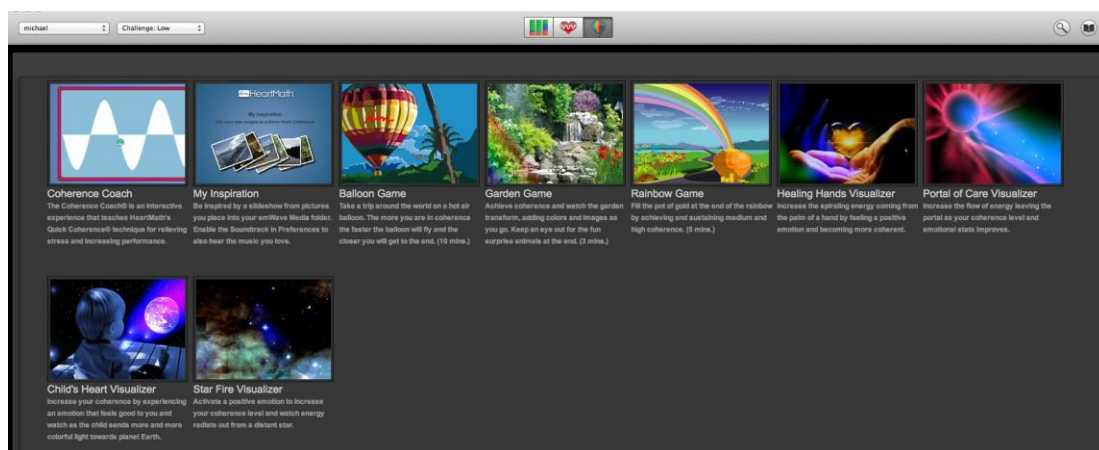
If, after reading the information sheet, you are happy for you and your child to participate in the research then please sign below.

Thanks for your time

Student consent form (for groups in Biofeedback)

Welcome to Family Class! I hope you are going to enjoy yourself here ☺

We would also like you to try something really cool, called Biofeedback. Here a picture of the different games you can play with it! Playing these games can help you concentrate and help you understand how your body works



After you use this thing and are finished in Family Class we would like to tell you some stories and for you to tell us what you think about these stories!

If you're not ok with trying this stuff then just say so and we don't have to do it, no problem

Michael