An examination of Hellison's (2003) Teaching Personal and Social Responsibility model, its validity and effectiveness for primary school aged children in New Zealand.

A thesis in partial fulfilment of the requirements for the degree of

Doctor of Philosophy

in

Psychology

At Massey University, Albany,

New Zealand.

Michael Hayes Smith

2014

Abstract

The Hellison (2003) model was developed with a goal to enable any participant in its application to develop their personal and social responsibility. The literature demonstrates that the model has been typically made available for youth, as an after-school programme option, in which participation is voluntary.

This thesis examined a longitudinal intervention over one scholastic year of an application of Hellison's (2003) model as part of the curriculum in a New Zealand primary school. Within the model, the five levels of personal and social responsibility, 1) *Respect,* 2) *Participation,* 3) *Self-direction,* 4) *Caring,* and 5) *Outside the training venue*, are already translated into five operationalised goals; 1) *Self-control and respect,* 2) *Self-motivation,* 3) *On-task independence,* 4) *Sensitivity and responsiveness,* and 5) *Trying these ideas in other areas of life*. The intervention, a forty week training programme using a ten lesson plan format, repeated four times, utilised the goal structure of the model to formulate the individual lesson plans. The lesson plans, to convey the five social goals of the model in accordance with Hellison's (2003) guidelines, included a karate skill set as the physical activity component of the training sessions. Two cohorts were recruited into the study, from two scholastically equivalent schools, one to receive the intervention (n = 36), and one to act as control (n = 49). The control group completed the measures only and did not receive the intervention.

Each goal of the model was empirically assessed to determine change over time whilst participating in the current application of the model. A time series empirical approach was used and psychometrically reliable and valid instruments were

administered at six equal-distant intervals. At each of the six intervals, four self-reporting measures were completed by the child participants. *Rosenberg's Self-Efficacy Scale* (S-ES), *Dishman's Self-Motivation Inventory for Children* (SMI-C9), *Muris's Self-Efficacy Questionnaire for Children* (SEQ-C), and Caprara and Pastorelli's *Prosocial Behavior Scale*. A separate measure, Polit's *Positive Behavior Scale*, was completed each by the participant's parent, and the participant's class teacher, at each of the six intervals.

Statistical analysis using regression model fitting on the data obtained from the empirical measures demonstrated that scores increased for the intervention participants on each measure over the course of the current study. A linear model was evident from the analysis. Multivariate repeated analysis of the four child self-reporting measures demonstrated that the mean positive change, on goals 1 - 4, was greatest for the intervention group. Equality of means analysis also confirmed that the intervention group had the highest level of improvement in positive behaviour, as reported by the parents and teachers, on goal 5.

Secondary analysis using Guttman (1947, 1950) scaling enabled a detailed examination of the model's stage-like progression premise. The intention of the analysis was to determine if any participant could progress through the five stages, each in succession, as the model posits that they should. Scalograms were constructed at each of the six intervals to produce a Coefficient of Reproducibility, one each for the intervention and control groups. From the twelve coefficients, a mean Coefficient of Reproducibility ≥ .90 was acceptable evidence of temporal reliability of the scalograms in the current study.

Guttman (1950) Scalogram Analysis demonstrated that a four-item scalogram, for the child self-reporting measures, and a five-item quasi-scalogram, combining the child self-reporting measures with a mean score of the parent and teacher measure, was found in the current study. In a research first, the Teaching Personal and Social Responsibility model was demonstrated to possess stage progression in its goal structure.

Further, participants in the intervention group demonstrated that they progressed along a single continuum, one stage after another, as the Hellison (2003) model claimed. However, the goals in the current study developed in a differing order than those proposed by the Hellison (2003) model. Specifically, the stage sequence discovered was firstly goal 2) *Self-motivation*, followed by goal 3) *On-task independence*, before goal 1) *Self-control and respect,* which was third. Goal *4) Sensitivity and responsiveness,* and 5) *Trying these ideas in other areas of life*, emerged in the sequence as the model predicted. A repeated, between groups, analysis demonstrated that a significant difference between the intervention group and control group existed from sixteen weeks and beyond.

The findings from the current study make a significant contribution to the literature. A detailed, empirical protocol, a research first of its type, was demonstrated to be reliable for the assessment of participant development whilst engaged in an application of the model. A revised Hellison (2003) model was valid, and effective, for the intervention participants as the model posits. A wider application of the Hellison model is warranted and continued research is recommended. A replication of the current study, as well as research of a school-wide application, of the revised Hellison (2003) model is suggested.

Acknowledgements

Firstly, I would like to thank the research participants that took part in this study. Conducting research centred on children is a sensitive undertaking. Without the participation of the two schools, their principals, teachers, support staff and most particularly, the students themselves, this study would not have been possible. Also to the parents of the students, a particular mention here. Without the unequivocal support from the parents of the students, equally this study could not have been conducted. In being allowed the privilege of delivering this study, I was solemnly aware that I was equally responsible for their pride and joy whilst participating, namely their children. In many respects, a collaborated effort was achieved, for which my mere thanks seem insufficient. To each of them however, your efforts sincerely appreciated, thank you.

I would like to acknowledge my supervision team who have diligently watched over my career through this study, it has been a long and challenging process. Thank you to Dr. Richard Fletcher for his ongoing commitment to my efforts, particularly in his guidance in establishing this study and keeping it focused at each step along the way. Thank you to Professor Stuart Carr whom reawakened not only my passion for learning, but most importantly reminding me the benefits of remaining objective, to 'hold everything up to the light'. To each of them both, your scholarly direction and professional expertise provided, I shall remain forever grateful. I also make a special mention to the Office of the Assistant Vice Chancellor (Māori and Pasifika), Massey University, for the Pūrehuroa Awards for which I was a most grateful recipient.

I would like to express my gratitude to Professor Don Hellison for his Teaching Personal and Social Responsibility model. I also like to thank him, Dr. Paul Wright, and Dr. David Walsh for their initial correspondence and encouragement when I was first formulating ideas about this project. I am also grateful to the Morris Rosenberg Foundation, Dr. Rod Dishman, Professor Peter Muris, Professor Gian Vittorio Caprara, and Dr. Sylvia Epps for their permissions for the use of their respective measures in the current study. From all of these sources that enabled my research, without which I could not have undertaken this work, my thanks to you all.

Last but certainly not least, I must thank my family who have provided their support and assistance over these years of my career. To my mother Kaye, my eternal gratitude, who has lived alongside this study, every step of the way. To my father David, a retired police officer who sadly passed away during this time, thank you most especially for all the esoteric discussions that influenced my thinking around child welfare and crime prevention. It will be my hope that I continue to be the person they have always hoped me to be. I also take this opportunity to thank the many friends and extended family who have given their ongoing understanding and support, despite my prolonged absence from their lives. Finally to Katie, if ever any one individual has invested so much for so little, I look forward to now being able to return her kindness, love, and support.

Table of Contents

List of Tables

List of Figures

Chapter One

Thesis Question and Critical Literature Review

Thesis question

The study seeks to determine the validity and effectiveness of the Teaching Personal and Social Responsibility model (Hellison, 2003) for primary school aged children in New Zealand. The goal of the model is to enable any participant in its application to develop their personal and social responsibility, through physical activity and social interaction. Although the model is known and cited by many authors in school based education and in physical activity research, there remains a shortage of empirical evidence that either questions or supports its validity (Gould & Carson, 2008).

Being able to address the needs of the developing child, whilst meeting educational expectations, is a multi-faceted task with ongoing challenges requiring proven tools and resources to enable success. The Teaching Personal and Social Responsibility model is Hellison's (2003) attempt to provide one potential option for doing so. The aim of this thesis is to examine the *validity of the model empirically*, in the context of physical education within the primary school curriculum in New Zealand.

One focus of The New Zealand Curriculum's (Ministry of Education, 2007) "educational standards" is to provide children with the means and resources to become a personally and socially responsible member of society, matching the goals that Hellison's (2003) Teaching Personal and Social Responsibility model sets out to achieve. The New Zealand Curriculum (Ministry of Education, 2007) claims to

represent a progressive change from the traditional approaches to this area of education for school aged children. Whilst maintaining traditional academic achievement targets, the change includes the requirement for the development of social skills and the desire for every student to become socially and personally responsible. There thus remains a gap in the New Zealand Curriculum for a programme to contribute to the Ministry of Education's (2007) requirement for personally and socially responsible students graduating from New Zealand schooling.

An empirical investigation of the Hellison (2003) model in the New Zealand educational setting is required for both theory *and* contemporary educational practice. There are two questions asked by the current study a) is the model valid, and if so, b) does participation in an application based on the model effectively elicit a progressively more personally and socially responsible child over time, in the New Zealand educational context, as the model predicts should happen?

'How' does the model predict that a child will become progressively more personally and socially responsible?

The Teaching Personal and Social Responsibility model was initially structured around exposing high school aged participants to physical activity and developing their awareness of social interactions between each other. The proposed 'levels' of responsibility stem from a physical activity lesson plan in which several conceptually distinct social 'levels' are progressively taught to the participants during training sessions. Hellison (2003) states that as participants pass through their continued work and exposure to the model (for example, by applying the lessons learnt during

class time), their individual awareness of their ability to initiate personal responsibility, and take on greater responsibility, should each increase over time.

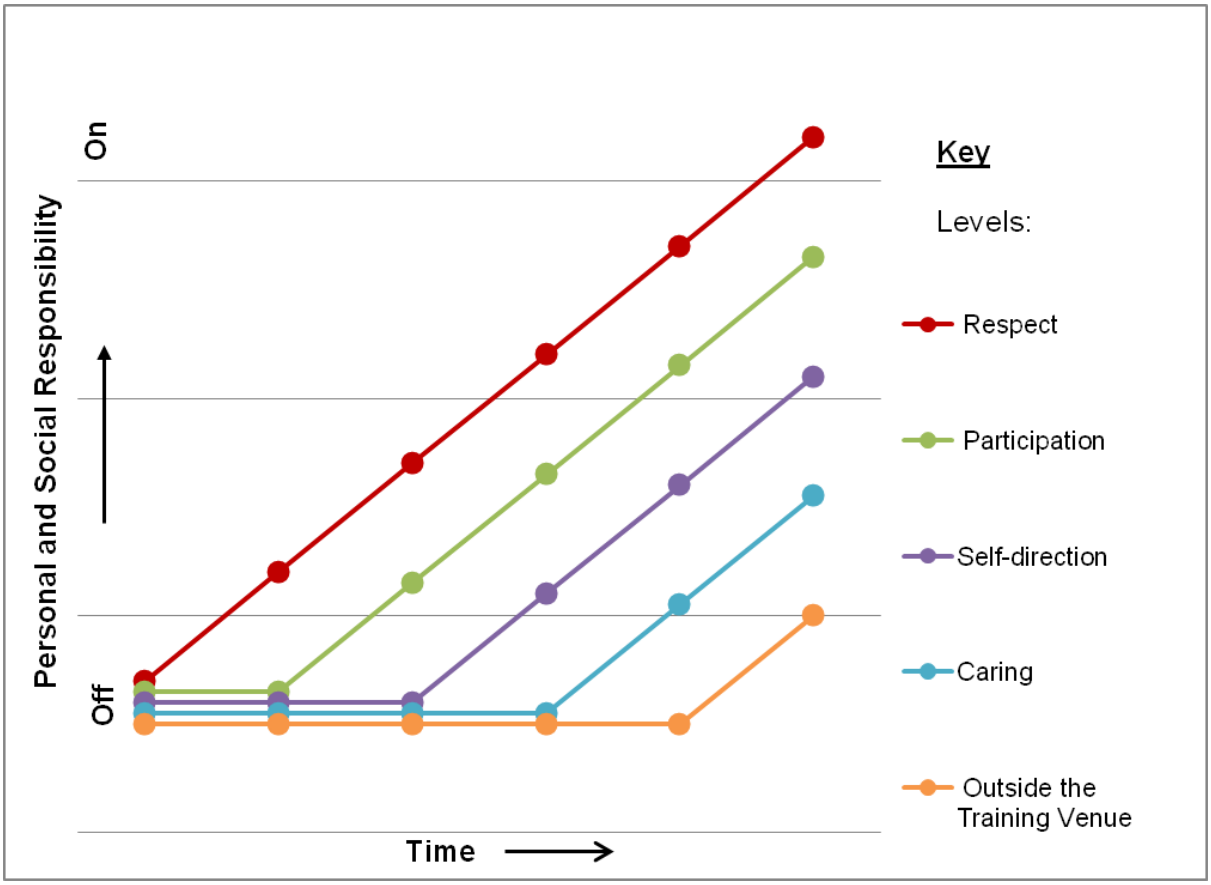


Figure 1: A model of 'How' Hellison's model should work.

Figure 1 is an illustration specifically constructed by the present author for the current study, in order to graphically represent the 'levels' in Hellison's (2003) model. Theoretically, according to Hellison (2003), each 'level' of responsibility is a precursor to the next step. Hence, the model should possess what Guttman (1947) might refer to as scalability, or having a 'ladder sequence', with one rung having to be progressed through before a participant can advance to the next step (in personal then social responsibility). Figure 1 is representative of this theoretical sequence. Over time, the five incremental 'levels' of personal and social responsibility build upon each proceeding 'level'. Thus, respect climbs from the model's outset;

participation takes a little longer to commence; self-direction a little longer still, and so on. In this way, if the model is valid, a set sequence of developmental stages should be evident in any given application of the model.

Details of the five levels in the model

From Figure 1, Hellison (2003) set out five 'levels' of his model. From Hellison (2003), briefly these are: (1) *Respect*. Participants at 'level' 1 of the model may demonstrate minimal social responsibility in following societal rules, but no personal responsibility (perhaps electing not to complete school homework, for example). 'Level' 1 of the model also acknowledges that whilst a participant can elect to not take part in any activity, the participant respects the rights of others to do so, without interference from them, for example. For Hellison (1983, 2003), the respect for others and the self are expressions of social respect at 'level' 1 of the model.

(2) *Participation*. The children at 'level' 2 of the model are able to demonstrate respect for their peers, others, and themselves. The children are also engaging with the training lessons, but only under supervision from the facilitator. Components of 'level' 2 also include the children actively engaging, choosing to be involved, in the assigned physical activities from the training sessions, and making personal effort.

(3) *Self-direction*. 'Level' 3 of the model recognises that participants are not only respectful of themselves, but also of others. They also elect to take part in the intervention, and are motivated to achieve the activity tasks set by the intervention as well as exploring personal goals of interest to the participant. Participants working at this 'level' are thus capable of making independent choices for personal goals, at

their own discretion, from the training sessions (making time to practice a physical skill activity for example), and following it through.

(4) *Caring*. Performing at 'level' 4 of the model is illustrated when a participant elects to help others when asked to do so. Actively co-operating with others, willingly working with peers, and doing so without expectations of extrinsic rewards are indications of a participant working at 'level' 4 of the model. A participant at this 'level' is also considered as operating at 'Level' 4 when making a positive contribution during the training session, for example by leading a group activity such as a stretch warm-up prior to physical activity.

(5) *Outside the Training Venue*. At the final 'level', 'level' 5, participants have understood and put into practice the previous four 'levels' of the model. They are applying what they have learned to other areas in their lives. To quote Hellison (2003), "level 5 ultimately means being a role model for others" (p.36). Participants can elect to extend their personal responsibility for their well-being and that of others to the class room, sport team, and at home, for example.

From levels to goals

For the purposes of clarity in the current study, the Hellison (2003) model has five sequential 'levels' of responsibility. The 'levels' of the model are latent, theoretical constructs. Hellison translated them into operational, everyday behavioural terms, as 'goals' with one or more components that could be evaluated. The set of goals are a 'learning progression' where each goal is, in theory, progressed through in a stage-like manner.

Hellison (2003) puts forward these ‘classroom goals’, displayed in Table 1. Put simply, Hellison’s model contains five ‘levels’ of personal and social responsibility (Figure 1). For each level of personal and social responsibility, Hellison has set a goal to be ‘achieved’ before moving on to the next level of personal and social responsibility (Table 1). The goal structure provided by the model also serves as a guide for the construction of training sessions in the application of the model.

Table 1

Hellison’s Teaching Personal and Social Responsibility levels as Goals.

Level 1: Respect
Goal 1: Self-control and respect
Level 2: Participation
Goal 2: Self-motivation
Level 3: Self-direction
Goal 3: On-task independence
Level 4: Caring
Goal 4: Sensitivity and responsiveness
Level 5: Outside the Training Venue
Goal 5: Trying these ideas in other areas of life

According to Table 1, respect is outwardly evident whenever the participant respects the rights and feelings of others. The first indication of progress here however, for

participants in the model, is a degree of participant *Self-control.* Self-control is essential for respecting the rights and feelings of others, for example not controlling their own behaviour or interfering with other students (Hellison, 2003). Participants at goal one may not participate in any training session, or show much mastery or improvement in set tasks from the training session, but they are in theory able to control their behaviour sufficiently that they do not interfere with the other students' right to learn, or the facilitator's right to deliver the model. Participants are also able to achieve session tasks (for example, practicing a skill), without prompting by the facilitator to stay on task, and without ongoing supervision from the facilitator.

The first goal in Table 1 (Self-control) acknowledges that all participants have the right to be included in activities and that should any interpersonal disagreement arise, then an amicable solution will be found between the participants, within the safety of the training environment. In terms of respect, participants may start out with little respect or value for others, or arguably themselves. At the other end of the continuum, participants may develop self-respect fully. Hellison (2003) believes that participants normally oscillate between these two extremes, gradually progressing more towards a greater degree of respect for self and others. Hence, in multiple ways, the first goal of Hellison's (2003) model can be said to entail, in psychological terms, self-control, self-respect, self-worth, and respect for others.

The next operational goal of Hellison's, in Table 1, is *Self-motivation* (in the training session). Self-motivation influences personal choices and aspirations, in terms of wants and needs, and shapes goal-directed behaviour to the achievement of them (Wentzel, 1991). In the model itself, participants are encouraged by the facilitator to explore new activity tasks and potential challenges of the particular training session,

a karate technique never attempted before for example, as they are presented by the facilitator. According to Hellison, it is here that participants may discover their first challenges with the tasks assigned to them. For example, as new physical activities are given, and coupled with a limited understanding of what it means to be personally and socially responsible, the participants may find themselves wanting to no longer be involved or simply feel overwhelmed.

To counter this issue for self-motivation, these participants are then initially actively directed by the facilitator to seek out their personal courage to persist, to stay focused on their assigned activities, and to continue to achieve the task at hand. Participant self-motivation is the overreaching attribute required here. The participants working through this goal, according to the model, not only show respect but also willingly engage in the activities with others in the group, accepting the various challenges that may arise. Having come to terms with the second goal in Table 1, the participants supposedly, in theory, begin to engage in physical activities independently of others. They begin to understand their role, working alongside and in conjunction with others, whilst achieving their tasks successfully. In short, participants progress through, from Table 1, the goal of Participation.

On-task independence of the participants is the next Hellison goal in Table 1. Completing activity tasks without input from others entails the goal of *On-task independence*. Participants at this level, theoretically, not only show respect and involve themselves fully in the task at hand but they are also able to work, with other participants, or on their own, without direct supervision. They can, supposedly, identify their own needs and begin to plan and carry out their own aspirations and actively contribute to the model both as individuals and as part of the learning

environment with others. In so doing, those operating at this third level have their first exposure to goal setting achievement and a sense of independence.

It is here that the greatest potential deterrent to participant achievement in the model is identified by Hellison, that being dealing successfully with peer expectations, such as fulfilling the demands of others, rather than focusing on their own goals (Hellison, 2003). Hellison believes that it is essential for participants who are taking personal responsibility for their own actions and making independent choices, to not rely on others. In taking on a greater degree of personal responsibility, participants are also becoming socially aware of, and sensitive to, others and that they also have personal goals to accomplish. Being able to put into practice these two aspects, namely resisting peer pressure and respecting others, are what is required to achieve the third goal of the model outlined in Table 1 (*On-task independence*).

The fourth goal from Hellison in Table 1 is leadership roles and helping others. The goal here is teaching and learning *Sensitivity and responsiveness* in the group setting. It includes working towards the helping of others when asked. Caring and compassion are viewed by Hellison (2003) as being core attributes of the participants for the fourth goal. Individual self-control occurs before outwardly focused caring for others. For this fourth goal in the model, participants are already self-directed and goal orientated but now are motivated to extend their sense of responsibility beyond themselves, by cooperating with, and leading, those around them. By giving support when asked to do so by others, showing concern when appropriate, and helping in any way that may be required, participants are able to achieve the fourth goal from Table 1.

Working independently from one another, and from the facilitator, allows the participants to freely apply themselves to the task at hand. Participants should also be able to engage with other participants, work together if they choose, and to assist one another in working with *Sensitivity and responsiveness* (Table 1) through the physical activity that has been assigned. For example, in accomplishing a physical activity task amongst themselves, each must exercise care and patience with one another as each participant may have differing proficiencies, may require assistance, or simply require additional time to complete the physical activity task.

The final Hellison goal for participants in the model is seen as the most advanced goal of the Teaching Personal and Social Responsibility model outlined in Figure 1 and Table 1. The focus of the last goal is extending past the previous goal achievements that are on a personal level, to a community level in exterior environments outside of the model setting itself. The participants are encouraged to extend their own responsibility by *Trying these ideas in other areas of life* (Table 1). By evaluating firsthand how goal setting can work for them, the child is able to determine the effectiveness of the model personally, and implement it in their own lives accordingly, in their own way, at their discretion. Finally, being a role model for others and leading by example is the focus of the final goal (Table 1). To develop the final goal of the model in the current study, participants were actively encouraged to embrace what they had learned from the in-class training sessions and to apply them externally from the training venue. For example, by setting and completing a goal for themselves at home, in the playground, or perhaps in a sports team.

Context and the Teaching Personal and Social Responsibility model

The Hellison model has been developed with the aim of improving participant levels of personal and social responsibility. The model, structured around a sequence of five progressive goals, was developed in the United States of America with high school aged participants. The environment was predominantly of the lower socioeconomic setting, providing adolescents with an optional after school extension class, within existing school facilities. Further, a pervading question of the model's legitimacy remains as the majority of academic research has focused on the model's ability to generalise from the training environment to other settings, which has yet to be conclusively empirically demonstrated. These are all contextually related factors, i.e. a) Country, b) Socioeconomic, c) Beyond sport, d) Beyond school, and e) Age, that may have a bearing on the current study.

a) *Country.* During 1970, Hellison began working with high school students in Portland, Oregon, in an attempt to develop a youth model in the form of an after school activity that actively addressed their social needs. At the time, place, and for the age-group, these were deemed to be respect for one another, caring for others, and cooperative skills (Hellison, 1985). What was initially developed out of a desire to meet unfulfilled social and educational needs for youth in the United States of America became The Teaching Personal and Social Responsibility model (Hellison, 1985). A question therefore arises, as the model originally was developed in America, will the model generalise to a New Zealand context.

b) *Socioeconomic.* Hellison (2003) associates lower socioeconomic settings to include elevated risks of such issues as disruptive behaviour, intolerance, vandalism,

and poor psychosocial development. Hellison (2003) sought to provide a resource to counter such issues with a constructive goal orientated model that could be delivered within the familiarity of a school setting.

Of particular interest to special need groups and in specialised educational settings, Martinek and Schilling (2003) contributed to the academic literature with a nine year after-school sport and skills programme, focusing on the development of youth leadership. Their case study found from participant interviews that the Hellison model could serve a place in teaching values to specific groups, specifically children and adolescents in minority or low socioeconomic backgrounds. A comparative case study (two implementations of the Hellison (2003) model were evaluated simultaneously) by Pascual and associates (2011) found, from non-participant observations and interviews, that participation in the Hellison (2003) model can encourage children to put more effort into their school work. The participants of Pascual and associates' (2011) research were children of lower socioeconomic groups, typically found in decile one schools.

In New Zealand, the decile rating a school is given relates to the economic and social factors of the community immediately surrounding it. A decile is a statistical term, meaning that a group or population has been divided into ten equally sized groups, giving ten deciles. Hence 10% of schools are grouped within each decile; for example there are approximately 10% of New Zealand schools grouped in the decile one category and so on. Schools in decile one have the highest proportion of students from low socioeconomic communities (Ministry of Education, 2007).

Research contributed by Martinek and Schilling (2003), and Pascual and associates (2011), adds academic support for the choice of environment in which the current study was conducted, as the current study would be implemented in decile one, associated with lower socioeconomic conditions, educational settings in New Zealand. It is feasible to speculate therefore, that an application of the model may likewise demonstrate similar findings.

c) *Beyond sport.* There are alternative programmes that aim to promote personal development from sports participation within the educational setting. For example, Siedentop (1994) provided the Sport Education Model with the aim to promote competent sports minded individuals for youth. However, Siedentop's model (1994) is contained within the practice and experience of sport itself, not to the classroom and not outside of the sporting context which is the aim of the Hellison (2003) model. Hellison (2003) says that his model, whilst using any physical or sporting activity, can be a positive means for enabling youth development in personal and social responsibility. However, the evidence from academic research is inconclusive.

Wright and Li (2009) evaluated Hellison's (2003) claim conducting a cross sectional, single administration of youth development assessment measures. Their findings of minor positive correlations across four scales: affective context, support for youth development, opportunities to engage youth as resources, and belonging, could be called into question as their participants made a personal decision to be part of their programme at the outset. Participants electing to participate are operating with a sense of respect, wanting to participate, and independently choose to become involved in the programme. It could be argued then that these participants were already functioning at level 3 of the model (Figure 1) prior to commencement. The

current study therefore seeks to address student self-selecting participation, by implementing the model for all students, during schooling hours, effectively removing the potential for any self-selection bias suggested from the Wright and Li (2009) study.

Hartmann (2003), in a review of social intervention initiatives, identified 621 existing sporting and recreational programmes in the United States of America. The majority of which were within school evaluations where single administration test studies were conducted without control groups. Hartmann's (2003) review revealed that these evaluations were performed for funding and in-school development purposes, as opposed to a systematic appraisal of the programmes or their participants. With specific reference to the Teaching Personal and Social Responsibility model, Hartmann (2003) does note it as an example of a 'scholarly social intervention initiative', but goes on to say that the model has little evidence of empirical change in its participants.

Hartmann (2003), in an attempt to be inclusive of intervention programmes utilising sport, arguably overlooked that the Teaching Personal and Social Responsibility model uses not sport but physical education as a mechanism for intervention delivery. Physical activity, for motor skill development for example, is potentially different from engaging in competitive team sports, purely for enjoyment for example. In essence, it has not been conclusively demonstrated that physical activity has the ability to change personal and social responsibility. Whilst making that distinction, Hartmann's (2003) review does put into perspective a long standing issue addressing the existing research. Contexts taken into account, it is not that existing

sport and recreational programmes do not work; it is that there is insufficient conclusive empirical evidence in the literature to claim that they do.

d) *Beyond school.* There is case study literature by Walsh (2008), and Walsh, Ozaeta, and Wright (2010), where the model was utilised in interschool sport, and in after hour extension classes, conducted within the school environment. These two studies investigated their respective interventions, and positive themes from participant interviews were apparent, but were unable to verify two significant issues: (1) that participation in an application of the Teaching Personal and Social Responsibility model had any direct relation with increased personal and social responsibility and (2), that the results did not confirm that what had been learned by the participants, whilst engaged in the model, was demonstrated outside of the school setting. Hence, the current study shall empirically test each progressive goal for change and also investigate if participants are able to generalise the final goal of the Hellison (2003) model outside of the school environment.

e) *Age.* Hellison (2003) describes the model as a set of ideas that can foster personal and social responsibility in 'child' participants (implying pre-adolescence perhaps), even though he developed it with high school youth. He asserts, on the basis of personal observation and anecdote, that what began as his approach to handling the attitudes, values and behaviours of disadvantaged youth has evolved into a key set of ideas used to develop, in any students, responsibility for their own development and well being and contributing to the well being of others. However this proposal has yet to be tested empirically with students of a different age group, in particular the younger primary school age as distinct from a secondary (high) school.

There is theoretical scope for the Hellison (2003) model to be implemented with younger persons. For example, Kellam, Ling, Merisca, Brown, and Ialongo (1998) in their study of aggressive and disruptive behaviour found that the youngest participants among the sample of adolescents benefitted more from a school based intervention based on classroom team-based behaviour management than did older students. Examining their results for aggression and disruptive class behaviours specifically, a typical child of twelve years of age was postulated as being significantly less likely to engage in such disruptive behaviour if they had participated in an intervention targeting good behaviours whilst promoting self-esteem at primary school age. Accordingly, the sample in the current study is a younger participant demographic. To the best of the author's knowledge, the Hellison (2003) model has not been specifically tested with younger, primary school aged participants. The thesis related point is that we can examine if younger persons will benefit from the Hellison (2003) model, which also focuses on self-control and respect for self and others (refer Table 1) and do so before the onset of adolescence, as Kellam and associates (1998) indicate.

The evolution of physical education, and an opportunity for the current study

Research studies by Laker (2000), and Loland (2006), hypothesised that there are specific needs of children that school based education are expected to address. If they are left unattended or not provided, educational aspirations for a socially responsible, educated, and productive member of society are unlikely to be met. Laker (2000) presented an analytical framework for a revision of the role of traditional physical educators in main stream schooling, where sports skills coaching and *exercise* is replaced with an increased focus on physical *education* contributing

to desirable social and interpersonal skills. Loland (2006) also contends that physical *education* is capable of more than just physical *exercise*, that physical education is an additional opportunity to socially interact and develop interpersonal skills, but the opportunity is rarely implemented. Hence, the current study aims to test whether Hellison's (2003) model may arguably fulfil the role for physical education envisaged by Laker and Loland. The current study will therefore be delivered as part of the physical education curriculum during regular school hours.

Hellison (1983, 2003) believed that the Teaching Personal and Social Responsibly model, using physical education, has a place in the school curriculum, in the everyday classroom environment. Appropriate implementation of the model may assist not only in the development of students, but also in managing negative aspects of traditional classroom behaviour, such as students disrupting others or not sharing equipment or resources for example. Hence, it could be expected that the model will lead to changes in the way teachers evaluate their students in regular classes. More specifically, it is predicted that participant behaviour and choices found in the current study will be perceptible by respective classroom teachers. In so doing, results will provide empirical evidence that may support utilisation of the Hellison (2003) model in mainstream primary schooling in New Zealand.

Research evidence on the Hellison (2003) model

Table 2 is a brief summary of model based intervention research conducted on the Hellison (2003) model. The summary presents nine studies that were conducted in the United States of America, two that were conducted in Spain, and one conducted in New Zealand.

Table 2

Summarised research conducted on the Teaching Personal and Social Responsibility (2003) model.

Source	Location of Study	Measurements	Outcomes
Wright, White, & Gaebler-Spira (2004) (*n* = 5)	United States	Field observations. Parent / physician / therapist interviews.	Attributions of positive participant achievement generally tied to increases in physical ability, as opposed to realising the models' goals.
Hammond-Diedrich & Walsh (2006) (*n* = 8)	United States	Participant interviews. Field observations.	A supportive theme for leadership development reported.
Martinek, Schilling, & Hellison (2006) (*n* = 4)	United States	Participant interviews. Field observations.	Authors introduce 'stage concepts' to describe level development in the model. Individual case summaries support goals 1-4 of the model.
Walsh (2008) (*n* = 12)	United States	Participant & instructor interviews. Field observations. Participant weekly journals.	Supportive themes of the goals reported. Researchers recognised the inability to distinguish results as being strictly due to the intervention or the existing programme.

Wright & Burton (2008) (*n* = 23)	United States	School principal / instructor/ participant interviews. Field observations Participant session journals and evaluation.	Investigated themes from interviews provided limited support for the model, but were confined to implications for future research due to reported difficulties with number of participants, motivation, engagement, and cultural differences between instructors and participants.
Lee & Martinek (2009) (*n* = 5)	United States	Participant interviews. Field observations.	The goal of self-direction was reported. Recommendations for continued research in cross-cultural contexts contributed. Goal 5 of the model did not occur.
Wright & Li (2009) (*n* = 87)	United States	Single administration – Cross section. Four scales from Catalano & associates (1998): Affective Context. Support for Youth Development. Opportunities to Engage Youth as Resources. Belonging.	Minor correlations between the scales reported. Psychometric value of the employed scales was acknowledged by the authors as limited, results therefore may not generalise outside of the study. Goal 5 of the model did not occur.

Walsh, Ozaeta, & Wright (2010) (*n* = 13)	United States	Participant / teacher interviews. Field observations. Participant session journals.	Generalisation of goals 1-4 of the model reported by child participants. Teachers reported an inability to distinguish results as being strictly due to the intervention or the existing programme.
Wright, Li, Ding, & Pickering (2010) (*n* = Intervention 62 / Control 122)	United States	Field observations. Focus groups. Child participant evaluation of the intervention. Pre-Post – Educational variables: Conduct ratings - positive and negative behaviours. Absence. Tardiness. Grades.	Instructors reported each of the five goals of the model were apparent for the child participants. Majority of child participants reported that their behaviour improved, although less than half of the child participants believed the model helped them improve in their school which may contradict the instructors report for goal 5 of the model. Minor increase in positive behaviours. Minor decrease in negative behaviours, absence, and tardiness. Authors acknowledge minor academic grade improvement *may* be connected to participation in the model.

Escartí, Gutiérrez, Pascual, and Llopis (2010) (*n* = Intervention 21 / Control 21)	Spain	Teacher Interview. Pre-Post: Multidimensional Scales of Perceived Self-Efficacy (MSPSE).	Supportive themes for the goals of the model reported in interviews. Minor improvement in self-regulatory efficacy. Non-significant change social self-efficacy. Non-significant change assertive self-efficacy. Goal 5 of the model did not occur.
Pascual and associates (2011) (*n* = 22 in Case 1 / 25 in Case 2)	Spain	Teacher Interviews. Field observations.	Support for goals 1-3 of the model only reported for Case 1.
Gordon (2010) (*n* = Intervention 57 / Control 36)	New Zealand	Field Observations. Teacher / student interviews. Repeated data sources: Participant reflection. Goal setting. School detentions.	Supportive themes recognised goals 1-4 of the model. Student participants reported a positive impact on behavioural choices from participation. Variation in occurrence of school detentions inconclusive between the study groups. Goal 5 of the model did not occur.

From Table 2, in terms of outcome, none of these studies found conclusive evidence for goal 5 of the model (Figure 1), which may call into doubt the validity of the final goal of the Hellison (2003) model. However, six of these studies reported supportive themes for goals 1 - 4 of the model from interviews and field observations. In addition, three of these studies reported positive benefits from participation, including increases in physical ability or an increased sense of belonging. Whilst these results are encouraging; they are not directly tied to the goals of the Hellison (2003) model.

Two studies from Table 2 report successful applications of the Hellison (2003) model, yet their results are open to interpretation. One study conducted by Wright, Li, Ding, and Pickering (2010) investigated an implementation of the model using educational outcomes, field observations, and feedback from their child participants and programme instructors as measurement of change in their behaviour and in their school grades. From a pre-post evaluation, they found support for each of the five goals of the model from the instructors. However, less than half of the child participants believed that the programme assisted them in any other aspect of their school experience, apart from meeting the requirements of the programme itself. Wright and associates (2010) did report an improvement in mean rates of absence, behavioural conduct ratings, and tardiness. However, the differences between reported mean scores for the intervention and control groups were small. They also acknowledge that the result for grade point average, which decreased during the intervention but at a lesser rate than did the control, may be tied to participation in their implementation of the model, but this was inconclusive.

The current study improves on Wright and associates' (2010) design by increasing the frequency of measurement, to address influences such as maturational change

over time for example, assessing the goals of the model (Table 1) individually and progressively, and examining outcomes against the level structure of Hellison's (2003) model (Figure 1). Additionally, Walsh and associates (2010) conducted a study of 13 participants and from interviews, found support from the participants for goals 1 - 4 of the Hellison (2003) model. For example, supportive statements also included that the model could be used in addressing everyday classroom learning concerns, according the teachers interviewed, and be able to be applied to social situations outside of the educational environment, such as interschool events and in the home. However, teachers in the Walsh and associates' (2010) study also reported an inability to distinguish between the intervention and the existing programme in determining which contributed to the increase in positive behaviours that they had observed.

Both Wright and associates' (2010), and Walsh and associates' (2010) studies reported conflicting interpretations of the implementation, from participant's perspectives, when compared to those obtained from teachers and instructors. In both investigations, caution should be exercised regarding any claim made that participation in an application of the model was effective. Multiple developmental and maturational influences may well have been present for the participants. For example, learning styles, peer socialisation, and parenting, may have impacted upon, and potentially confounded, their investigations. Further, there was no specific evidence given that goals 4 or 5 of the model where exhibited by any participant in their studies. Specifically, neither *caring* for other participants or, a demonstration of the model *Outside of the training environment*, was conclusively evident (Table 1).

The thesis related point here is that a rigorous empirical investigation is required before substantive claims as to the model's effectiveness can be made.

From Table 2, Wright and Li's (2009) experimental evaluation of the model did use a single administration of four youth development scales. Whilst their study demonstrated correlations between respective measure scores, they did not find conclusive evidence for the effectiveness of the Hellison (2003) model or that any participant displayed development from the intervention *Outside of the training environment* (Table 1). It may be that the Hellison model is unsuited to being examined using empirical methods, that the administration of psychological measures during training sessions is impractical, for example. A valid point is made by Martinek (2000) that interrupting an application of the model, having children complete questionnaires during training sessions for example, may detract from, and detrimentally restrict, the training lesson if conducted concurrently. The current study would administer measures at a time separate from the training sessions, so that the participants did not have their sessions interrupted, and that the application of the model progressed unhindered.

An issue identified throughout the research of Hellison's (2003) Teaching Personal and Social Responsibility model is the want of visible external validity of the models' goals *Outside of the training environment* where they were first learnt. With reference to the current study and Table 1, the final goal of the model has been a predominant focus of research. Effectiveness of an application of the Hellison (2003) model for participants has largely hinged on reaching the final goal (Table 1) and hence, successfully participated in the programme. Confirmation of the final goal, according to theory, requires that the participant, having progressed through the previous four

goals, is then able to exhibit the four goals in a new context, for example, outside of the initial training venue, at home or at school. For the current study, external validity of the final goal could come from the application of an external measure, completed by the participant's parent and teacher, on emergent observable behaviours of the participant.

The research highlighted from Table 2 has not explored the possibility for a test of the Hellison (2003) model in terms of stage development. Martinek, Schilling, and Hellison (2006) have previously described the goals of the model as being likened to 'stage concepts'. Figure 1 implies that participants should develop increased levels of personal and social responsibility through active involvement over time. However this assertion has never been put to a conclusive independent test. The question is whether students step through a set of progressive goals in sequence; or, whether a more continuous smooth improvement is evident. The current study offers a fresh perspective here as each goal of the model is empirically assessed using established measures, both independently and as an indicator, of change over time in terms of participant progress.

Steps versus Curves: A theoretical reappraisal of the Hellison (2003) model

Having seen that the research on Hellison's (2003) model leaves at least two major questions unanswered, we can ask 'how' a validation could be operationalised. A theoretical core of Hellison's (2003) model is that each goal cannot be reached until a predecessor has been achieved. For example, the emergence of self-motivation depends on pre-established self-control and respect (from Table 1). As we have seen, for the governing stage theory to be correct, the model would be expected to

demonstrate that any participant in the model would progressively move through the goals in Table 1.

Perhaps the best-known exemplar of a stage theory, in the area of personal development, is Maslow's needs hierarchy (Crain, 2011). Maslow (1968) believed that people who are hungry can only focus on food; that participation depends on first building self-esteem. Similarly perhaps, rational goal-directed work from Table 1 may only be achieved after a child has first discovered personal insight. According to how well a provided education is supportive of inner growth potential, child development is conditional upon gains made from their experience and understanding the external world. Whilst Maslow (1968) did not consider his work in terms of stage development per se, his ideas of a progressive and cumulative ascension may have broad relevance to teaching personal and social responsibility.

A key difference between the models of Maslow and Hellison is timeframe. The Hellison model for intervention is relatively short, focusing on childhood and adolescence. Maslow referred to the development of the individual over the period of a lifetime. Nonetheless Maslow's hierarchy was put to the test in a management study of attitudes by Haire, Ghiselli, and Porter (1966), and this test may contain clues as to how to test Hellison's (2003) model. Their rationale was that levels of satisfaction with each need should follow a set pattern. Mean scores for satisfaction at a lower level, physiological needs for example, should reliably be higher than satisfaction with higher-order needs, such as self-esteem. Put simply, group mean for security needs satisfaction should always be higher satiated than the mean for self-actualisation, since the latter should never be satisfied before the former, according to theory.

Haire and associates (1966), based on this logic of descending means, operationalised a *concurrent* test of the ladder hypothesis. At any given point in time, as in Figure 1, the mean score for a stage one construct should always be higher, on the average, than the mean score for a stage two construct; and so on. Hence, for the current study, the first goal of self-control and respect should occur before that of self-motivation. Hence the mean scores for self-control and respect should tend to be higher than for self-motivation.

In a single administration of a survey of male managers from 14 countries, Haire and associates (1966) found that the mean factor Maslowian scores ascended hierarchically, for example no country had self-esteem 'on' (versus 'off') high with personal security 'off' (versus 'on'), satisfying one lower-order need, on average, ahead of its higher-order need.

However, the path to self-actualisation was not exactly as predicted in every country sampled. On average across 14 countries, 'esteem' scores tended to be higher than, i.e. satiated before, the first two levels of the theory, suggesting that esteem was a precursor to, rather than a consequence of, security and social needs and therefore against Maslow's order. For the current study, Haire and associates' research (1966) poses a critical question: Although there was a recognised order in each country group, 'European' countries responded as predicted, 'Non-European' countries each differed in their needs ranking. The result suggests a need to test whether Hellison's (2003) stage-like model is also consistent across contexts. A question arises for stage development and the Hellison (2003) model; does the model generalise to New Zealand primary school children (in low decile schools), but also not only in terms of context, but also in the specified order of stages. For example, at any given

point in time, would self-control and respect be greater than self-motivation in the current study.

The thesis goes further than the research contributed by Haire and associates (1966). The current study would apply a repeated measure longitudinal design so that the reliability of stage ordering could be assessed over time (validity) as well as progress over time up the hierarchy (effectiveness). In collecting longitudinal data, it is possible to measure change over time that the model predicts, as well as being able to determine which sequence of goals is in effect at any given time point, as well as over time. Whilst it is conceivable that a sequence may be evident in one 'snapshot', but not over time, the essence of the Hellison stage-like model is to move up a ladder sequence rather than just position on one. We could expect to see the order of the goals occurring in sequence, beginning with respect through to outside the training venue, as set out in Table 1.

A role for stage change in the development of personal and social responsibility

Perhaps the leading contributor in psychology of stage developmental thought and research is Jean Piaget (Crain, 2011). Piaget refers to development as being a spontaneous course of action that comes specifically from the child who is an active agent in their own learning. Piaget (1969) stated that for children to truly develop, they must be given opportunities to discover concepts on their own terms. Similarly perhaps, Hellison (2003) points out that for the model to be valid, a divergence from a traditional instructional approach to facilitating interest and challenge for the participant allowing them to solve problems on their own is required. Hence a

comparison between the two approaches might be broadly informative for developing a test of the latter one.

Piaget himself believed that argument and disagreement between children is a necessary progression in the promotion of cognitive development (Berk & Winsler, 1995). Conversely, they may develop independently of their social context. Shayer and Beasley (1987) reported from a pre-post investigation over a two year period that 12 year old school children moved from the initial concrete operational period (the capacity to think systemically in relation to objects and activities), and its phase of generalisation to formal operational thinking (the capacity to think systemically in abstract and hypothetical terms). What was less clear however is whether they did so in maturational steps, a product of natural biological maturity perhaps or more smoothly over time, from personal experience and academic and social learning. In essence for the current study, would the Hellison (2003) model present as Figure 1, or, would the model appear as Piaget might have believed it may, as represented by Figure 2.

In the author's view, (Figure 2) child participants might conceivably begin from a start point where, in theory according to Hellison (2003), they are not demonstrating any goal of the model. From that initial point, it may be contended that the difficulties of the goals moderate their acquisition, and that through maturational development, each goal should occur in progressive stages and each subsequent goal should increase at a rate less than the goal before it. Hence, Figure 2 demonstrates that each goal begins to develop from intervention commencement, yet the goals increase as a reflection of difficulty, i.e. respect should develop faster than any other

goal, yet each goal is still advancing, but at a slower rate for each subsequent goal in turn.

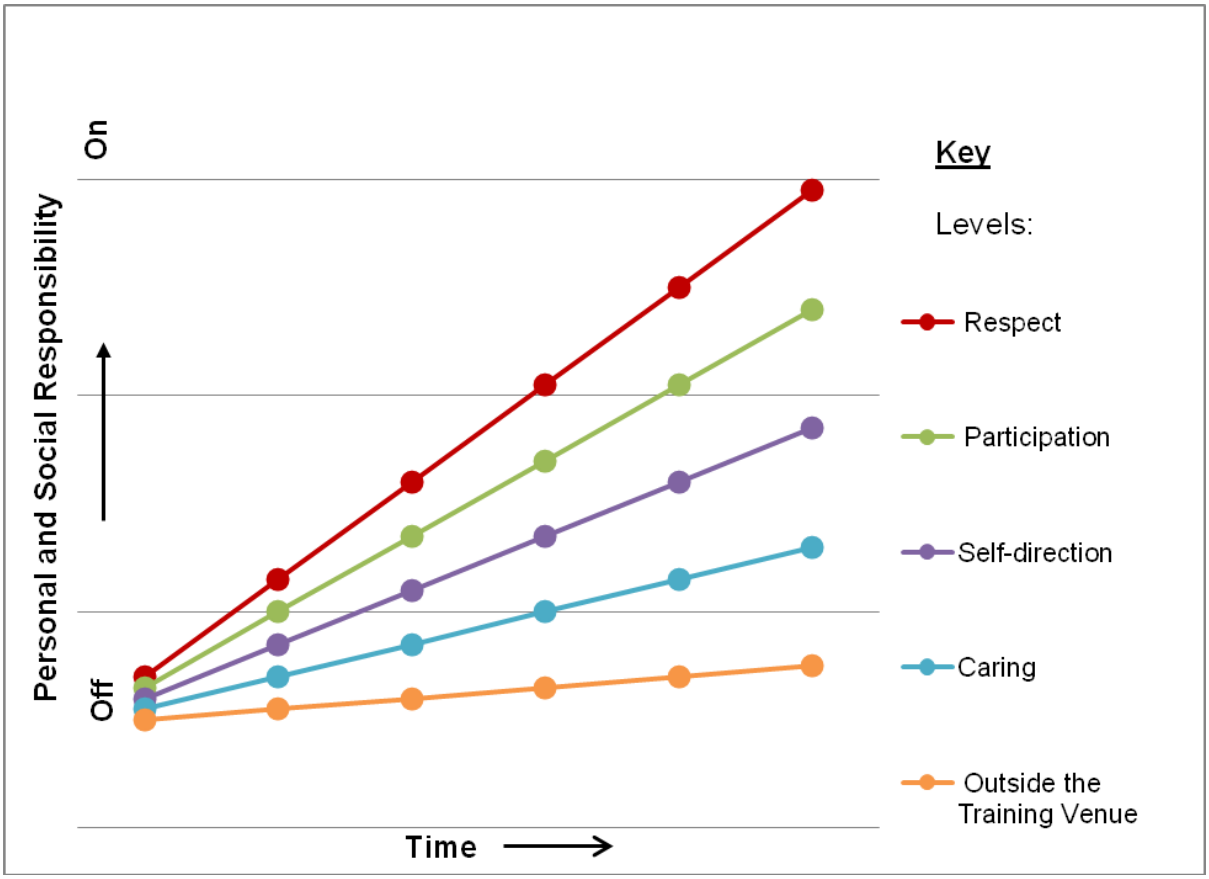


Figure 2: A schemata of independently developing personal and social responsibility skills of varying difficulty.

Hellison's (2003) model has moral developmental undertones. Kohlberg (1981) developed his own model of six moral stages of development incorporating and expanding upon Piaget's earlier work. Whilst Kohlberg's model postdates and arguably supersedes Piaget's in terms of scope and classification for moral thinking, the principals of stage-related attainment are similar to those of Piaget's. It is noteworthy that both the Piaget and Kohlberg models address moral thought but are less directed towards actual acts of moral behaviour. Additionally, Kohlberg's six

stage theory does not predict that children would typically move past the first two or three levels of moral development until teenage years, effectively removing the higher levels from consideration when dealing with younger children (Colby, 1987). Likewise for the Teaching Personal and Social responsibility model, Hellison (2003) expects that the later goals of his model may not be reached by everyone, especially so perhaps, by younger children (versus adolescents).

Referring back to Table 1, goals four and five are unlikely to be achieved by younger participants, although no specific age range is given by Hellison (2003). In the current study, it may be discovered, as these stage theorists suggest, children do not progress into higher levels of a developmental model until later in life. In Figure 1, this would be represented by a tapering and flattening of trajectory lines, ostensibly from goal 3 of the model, and goal 4 and 5 may not be apparent for younger participants at all.

Montessori's (1936) theory of stage development introduces the concept of 'sensitive periods' of developmental change. These run throughout childhood. Montessori differs from other developmentalists however in that her primary focus was, like Hellison, the teaching of children, rather than like Piaget and Kohlberg. Her aspirations of development for children also resemble the goal structure of the Teaching Personal and Social Responsibility model. Montessori (1948) sought to embrace and allow a child's spontaneous tendencies to direct their own learning just as Hellison (2003) has. Both theorists also embrace the aspiration for model participants to become independent, to seek out new challenges, and to develop their personal goals, however only Hellison aspires for them to *take them into the community* beyond the school, in the final goals of his model (Table 1). To the best

of the author's knowledge, this kind of proposition about 'transfer of training' has never been directly empirically tested before. Figure 1 offers an opportunity, and structured model of goals (Table 1), to do so by investigating changes in perception of participant behaviours from the perspectives of their teachers and parents.

An argument for maturational change and the development of personal and social responsibility

In antithesis to the Hellison and other general stage models, Albert Bandura (1986) argues that the whole idea of stage development is false, and that stage development is an abstraction invented by those that lack the ability to accurately define and differentiate child thinking. For Bandura, a general stage concept does not acknowledge individual developmental differences or explain particular thinking skills such as reading or writing, for example. In his view, stage concepts do not allow for gradual and continuous development of specific thinking skills. Bandura's (2001) position then would counter the stage progression notion of the Hellison (2003) model outlined in Figure 1, stating instead that a child naturally acquires knowledge and skills through interaction with others in a timeframe unique to each individual (Figure 3). Therefore, all social skills, no matter how difficult, are learnable by social learning.

In Figure 3, we would expect to see, according to Bandura, a gradual increase over each of the constructs for all participants. On average there would be no lock step progression of any individual goal as the Hellison (2003) model predicts. For example, self-control, or 'self-regulation' as Bandura (1986) refers to it, is directly tied to achievement and the development of personal standards. Children generally elect

to follow the evaluative standards of peers as opposed to those aspired for by parents and teachers according to Bandura's (1977) observational learning premise. In effect, Bandura's premise would arguably appear as Figure 3.

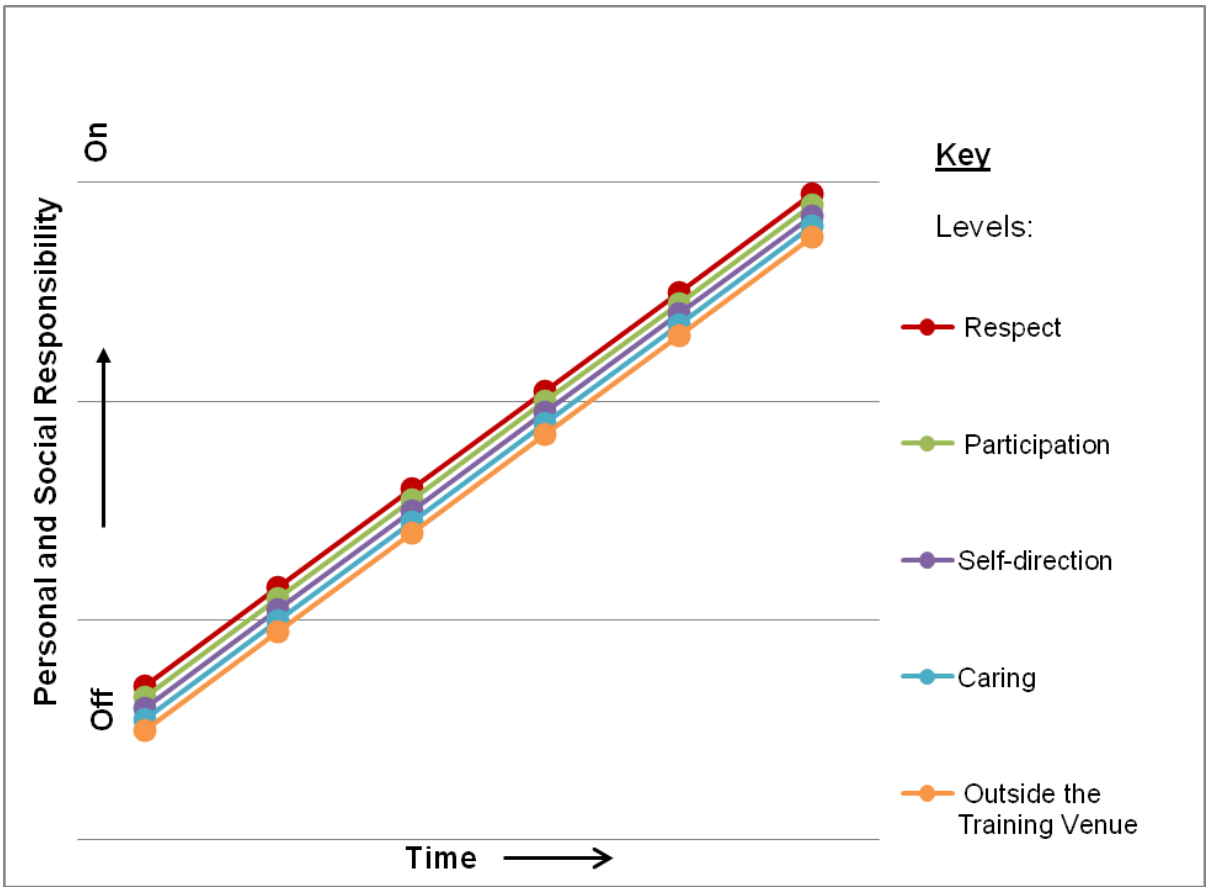


Figure 3: A schemata of concurrently developing personal and social responsibility skills of equal difficulty.

An acid test for choosing between Figures 1, 2, and 3.

To explore, empirically and systematically, which Figure may be the best fit to match the current study outcomes, *Scalogram Analysis* is suggested. Stage model scalability, for the purposes of the current study, simply implies that any participant demonstrably progresses through the goals, first one then the next, of the ladder, in

this case with the rungs presupposed by the Teaching Personal and Social Responsibility model.

The concept of Scalogram Analysis was developed by Guttman (1944), and his final version of it was published in Stouffer and associates (1950). Guttman devised ‘Scalogram’ from ‘scalo’ and ‘gram’ meaning scale, written to form a record (gram). A scalogram provides a record of how many steps, i.e., stages, in a sequence, a given individual, or group, has managed to ascend. Guttman developed the idea of a scalable interpretation of attitudes whilst investigating morale and other issues of the United States Army during the Second World War. Essentially, Guttman (1944) proposed that in responding to a set of items, any given individual who answers a question in the affirmative is also agreeing to all other items preceding it. In effect, a respondents’ subsequent scale score is an accurate and reliable representation of all items that were endorsed (versus not), and is as such, a definition of the respondent’s attitude spectrum. Hence, it is perfect for the current study, which seeks to explore if there is a ladder, and whether a programme of intervention is able to move individuals progressively up it. In so doing, the current study would be able to empirically qualify the premise for the stage-like theory of the Hellison (2003) model and the order of progression for participants through it.

As a model of scaling, the Guttman approach was developed as a critical alternative to that of the Likert or Thurstone technique. The prediction of a total score is contingent with establishing that a series of items fit a unidimensional continuum. In establishing that any item constitutes a component of a single dimension, the scale aims to predict responses to all of its items based upon cut scores. In accepting that each value is representative of an underlying single dimension, each quantitative

value is scalable and can be determined by scalogram analysis (Guttman, 1944, 1947, 1950). Put simply, the Guttman approach allows different scales, like a measure for self-motivation and a measure for on-task independence in the current study for example, to be scaled together.

The current study would be able to construct multiple scalograms of the goals in Table 1 at each concurrent time point and across time. A comparison of the resulting scalograms should provide a clear indicator of which is the closest fit to the hypothesised figures of 1, 2, or 3. Thus the demonstration of a scalogram, at each time point, would confirm the stage validity theory for the Hellison (2003) model. In turn, participants progressing upward through the stages would show evidence of the models' effectiveness.

Summary

The primary aim of the current study was the robust examination of the Teaching Personal and Social Responsibility (Hellison 2003) model. The current study was conducted in a school setting during school hours, and recruited entire class cohorts to participate as part of an everyday educational syllabus activity, not all of whom would otherwise have self-selected into the model. A structured plan for intervention delivery, in this case by the lesson plan format provided by Hellison (2003), was followed. Hence, a strong methodological design that incorporates a matched control group from a second school, statistically reliable measures, and catering to potential favourable self-reporting bias by utilising objective assessment from multiple sources, would provide for a robust empirical examination of Hellison's (2003)

Teaching Personal and Social Responsibility model. Hence, two specific hypotheses are to be evaluated in the current study.

Hypotheses

Following an intervention model based closely on Hellison's training guidelines (Hellison, 2003); in an economically deprived New Zealand primary school utilising physical education during school hours:

1) Independently of point in time, the children's responses on Hellison's goals will form a consistent scalogram, meaning that,

2) Over time, participants in an intervention group will progress upwards through the stages in 1.

Chapter Two

Methodology

The current research is a longitudinal study conducted over a scholastic year with the aim of testing the Hellison (2003) Teaching Social and Personal Responsibility model. The study was administered within two primary schools situated in Auckland, New Zealand. The in-school intervention was facilitated by the study's author under supervision by the participating schools and Massey University. Ethical approval for the study was granted on 30 March 2009 by the Northern Human Ethics Committee which is accredited by the HRC (Ethics committee reference number MUHECN 09/004).

Participants and environment

Participants were two groups of year five and year six primary school students from two separate schools, rated decile one by the Ministry of Education, from geographically separate locations in Auckland (refer Table 3). The total number of participants in the study was 85 students between 8 and 10 years of age, with a mean of 9.61 years for the intervention group and 9.80 years for the control group. Table 3 illustrates the group demographic characteristics.

As the participants were two intact groups, the two participating schools were randomly assigned as the intervention school and the control school for the purposes of assigning which school was to be the site for intervention delivery. The study was

made available to all students of the participating schools in the year five and year six band, the difference in the size of each group is the class size in each school.

Table 3

Demographic characteristics of participants.

Group	*n*	Age (M / SD)	Gender
Intervention	**36**	**9.61 years / 0.88**	**18m / 18f**
Control	**49**	**9.80 years / 0.69**	**21m / 28f**

The study included, as opposed to attempting to match group size for exact numerical equivalency, all students in this way to circumvent any issues concerning segregation or alienation of any student by being excluded from the larger control group. The intervention group consisted of 36 students and the control group 49 students. The number of participants in each group may give rise to an initial concern for statistical power and for any significance gained from assessment in the current study (Cohen, 1988). However, Fairweather (1991) demonstrated that a sample of 30 participants is sufficient to meet the requirements for statistical power and for the subsequent interpretation of significance with four variables. In addition, following previous research in the area of sport and decision-making specifically, the number of participants in the current study is also sufficient for a longitudinal design (Glass, 1997; Gratton & Jones 2004). Peterman and Bradford (1987), and Fairweather (1991) also discuss the advantage of such longer multiple testing designs, as opposed to a pre-post type approach, as these have a higher statistical power for detecting change over time due to the number of replications of

measurement and the greater amount of physical time over which the study is conducted.

A longitudinal design was chosen for the current study, a key strength of the current design was to provide six waves of data collection, adding strength to statistical power when examining the Teaching Personal and Social Responsibility model. The longitudinal design also provided the opportunity to collect data from multiple sources to examine any change that occurred over time for the intervention group, throughout the course of the study. The control school would complete only the test assessment phases of the study and not receive the intervention.

Recruitment

An ongoing consultation with both participating schools was conducted to familiarise the school staff with the study and the roles they would play in it. A full overview of the study, how the in-school intervention would be delivered, and how testing of the intervention would be conducted was fully disclosed with teaching staff. In addition, separate information letters were issued to teaching staff also requesting their consent and for their participation in the current study (refer Appendices A and B).

In accordance with school policies and in adherence with rules as set out by the Northern Human Ethics Committee, every identified student and participant in the research study was given the right to opt out of the study which also included a right to do so at any time during the study. Individual information sheets were issued to every participant in the study and individual consents were issued and obtained (refer Appendices C-F). A further letter from each participating school was issued to

every participant's parent or guardian outlining the study and should they wish, gave the choice to not participate by opting out of the study by returning a letter signed to that effect. There was only one request made for a student to be excluded from the study. The student was individually catered for by their school during any activities connected to the current study. Lastly, an individual confidentiality agreement was issued to all participating teaching staff, in both schools (refer Appendix G).

Procedure

The author was the intervention facilitator for the current study. The author invested four months prior to commencement, to study the Hellison (2003) model and plan intervention delivery. Becoming fully conversant with the model would address the historical concern expressed in the literature where ill prepared or unfamiliar facilitations of the model have met with a lack of success due to incorrect delivery (Mrugala, 2002). Some provisos then were taken into account for delivering the current study. Specifically, these provisos were: (1) being clear and consistent with all participants the expectations of every activity session, and (2) being clear and concise with all participants the importance for accuracy and honesty during the six testing administrations, at every test occasion.

In order to examine the model in a scholastic environment, the Teaching Personal and Social Responsibility model was introduced in one primary school as part of their weekly physical education session allocation over one calendar year as the intervention. The control group did not receive the intervention. Two sessions were conducted for the students every week in the school. Prior to commencing the current study, training and familiarisation for the classroom teachers and senior

school staff of the implementation school was conducted to explain the model and the study intentions. This ensured that the school staff supported the implementation of the Teaching Personal and Social Responsibility model. In addition, familiarisation for the intervention students was also conducted. Prior to commencement, two in-class discussions familiarising the students with the Teaching Personal and Social Responsibility model were carried out. Using the Teaching Personal and Social Responsibility goal progression as a visual cue (refer Introduction, Table 1), the students were given an explanation of the model and how it would be put to use in their physical education sessions. Finally for the participants, an open question and answer session was made available to the students to address any issues or concerns.

The application of the Teaching Personal and Social Responsibility model was administered using the prescribed lesson plan as set out by Hellison (2003).

The Lesson Plan

For Teaching Personal and Social Responsibility to be successful it was essential that the facilitator was consistent to the day-to-day session delivery in the school training environment. Establishing a lesson format that is clear and made explicit to students was the strategy utilised in this intervention. To support the Teaching Personal and Social Responsibility framework, Hellison (2003) suggests a standard lesson format which was utilised in this study. It is comprised of five elements and these are outlined here, taken directly from the Teaching Personal and Social Responsibility model of Hellison (2003):

The first element covered in the lesson plan is Counselling Time. Connecting one-to-one with students was attempted in each session. Each student must know they have strengths, are unique, can make a contribution and feel that they are valued. A positive comment to each individual each lesson is recommended.

An Awareness Talk is the second element. The Awareness Talk was done at the beginning of each session, was kept brief and it is here where understanding of the five goals of responsibility begins, and beginning gradually and progressing through the goals as the intervention was delivered. Following initial coaching, the Awareness Talk was used as an opportunity to remind participants of their responsibilities to themselves and to others.

Introducing Teaching Personal and Social Responsibility into the class activity is the third element. Here it is important to use the model's instructional tools to integrate teaching responsibility with teaching the physical activity tasks. Developing the model's tools that promote participants' awareness of others was required. Individual empowerment and group empowerment were also developed allowing for the participants to take on greater responsibility for meeting lesson objectives.

Conducting a Group Meeting at the end of the session is the fourth element. The meeting provided opportunities for students to share their ideas and thoughts on the lesson and the intervention as a whole. They were invited to discuss problems, even comment on the delivery from the instructor, raise issues and suggest possible solutions and changes.

The final element of the lesson plan is Reflection Time. Here an opportunity is provided for each student to evaluate their own attitudes, intentions and behaviour in relation to the five goals of responsibility. In the current study, every student was provided their own journal to record these details at the end of every session. Each

student also rated their behaviour with an overall corresponding number between 1 – 5, representative of which goal they had performed at most during the training session.

A further detailed explanation of Hellison's prescribed lesson plan can be viewed in the Teaching Responsibility through Physical Education (Hellison, 2003).

Activities as the basis of the Lesson Plan

In the current implementation of the Teaching Personal and Social Responsibility model, the students were progressively exposed to the responsibility goals, moving through the goals as the primary focus of the sessions. Each session followed the lesson plan format and a routine structure to each session of the intervention was established. In order to deliver the lesson plan, a choice of physical activity in which the students can participate is required. Hellison (2003) states that the choices of physical activity used in the intervention are to be made by the facilitator. Any choice of physical activity that the intervention facilitator is confident to instruct participants in, fulfils the physical requirements of the Teaching Personal and Social Responsibility model. For the current study, the author elected to utilise his formal martial arts qualification in, and the techniques of, Go-Kan-Ryu karate as the basis of the physical activity component of the intervention for the participants. The author gained permission from Go-Kan-Ryu New Zealand management to utilise their karate skill set in the current study (refer Appendix H).

The choice of a karate skill set to be used as the basis of the chosen activity allowed for a progressive design of planned physical activity instructional teaching. The karate exercises were easily replicated by the participants over time and with

practice, and followed a predictable pattern in terms of how each session was conducted. Put simply, in order to deliver the Teaching Personal and Social Responsibility model successfully, Hellison (2003) suggests that participants be challenged but at the same time structuring the activity choice so that every participant is able to experience success in the task at hand. Acknowledging these factors, the karate skill set was kept simple whilst assuming that participants had no previous experience of karate skills.

A ten lesson teaching plan was developed for the physical activity sessions in which the karate skills were taught. The ten lesson plan was repeated four times over the scholastic year, allowing for school holiday break periods, providing 40 weeks of sessions in total for participants. An in-class check list of the repeating ten lesson plan, referred to as sessions 1–10 as employed in the current study, outlining the Teaching Personal and Social Responsibility theme of each session, is included as Appendix I. The ten lesson plan additionally highlights the specific goal of the Hellison (2003) model being focused on for that session, the karate skills taught, and the lesson awareness for each session. A typical training session, utilising the first lesson of the ten lesson plan format of the current study, is detailed in Figure 4.

Session Structure	***Lesson Plan Example***
Counselling Time	Goal focus of the session – Respect: • Greeting each student in person, by name, as they enter the gym session. Inviting every participant to group together in preparation for the awareness talk for the session ahead.
Awareness Talk	Awareness Talk – Discussing Respect: • To open the lesson, today's class is about the basic karate formalities, the basic punch, and the first block. • An opportunity to talk with students about their responsibilities for the session. Discussing respect for others, self-respect, and control of what is said and how we speak with others. Discussing respectful verbal exchanges, the right to be included in activities, treating one another as equals.
Activity	Activity – Learning a new karate skill set: • Bow (Rei) • Standing Stance (Heiko Dachi) • Stomach Punch (Chudan Tsuki) • Head Punch (Jodan Tsuki) • Head Block (Age Uke) • Partner Drills – Standing in front of a partner, mirroring each other going through each of these activities in the skill set. Talking quietly with one another improving their physical karate technique together, as prompted by the facilitator whom used verbal improvement cues.

Activity Continued	• Group Drills – Using the same activity set, groups of four or five were formed and the activities were repeated. Each participant in turn calling out the activity set performed. Only those participants calling the activity set are speaking at that time. • Single Drills – In their own time and space, each participant practices the entire skill set twice independently from other participants.
Group Meeting	Group Meeting – Discussing Respect: • An opportunity to talk with students about the challenge of learning new ideas. Discussing how well they applied themselves to the new skills. Discussing how drill work felt with a partner, in a group, and individually. • An opportunity for students to share their thoughts and feelings about giving, and receiving, feedback from their peers. Discussing how and where they may put these new ideas and thoughts into practice.
Reflection Time	Reflection Time – Journal writing: • Recording personal thoughts and aspirations, anything relevant to the participant from the session. Included here were aspects such as how well they thought they applied the goal focus during the session, how well they could relate to giving respect, and if and how they felt to have respect returned - using the 1-5 scale, 1 being 'not very well' to 5 being 'very well' at their discretion. • Recording a personal self evaluation, setting an achievement goal.

Figure 4: An exemplar of the lesson plan for Respect.

Matching the Lesson Pan to the Teaching Personal and Social Responsibility model

A typical lesson of the current study would be one of the lesson plans taken from the ten lesson plan format. The ten lesson plan format (refer Appendix I) was constructed utilising the five respective goals of the Hellison (2003) Teaching Personal and Social Responsibility model. The ten lesson plan illustrates the respective goals of the intervention which are denoted as 'theme' for each lesson. Each theme of the lessons delivered in the current study was taken directly from the Hellison (2003) model. Each of the five themed lessons was repeated twice, in succession, giving ten lessons in total. The ten lesson plan sequence directly follows the progressive responsibility goals of the Hellison (2003) model. For simplification, Table 4 outlines the lesson format structure with respective responsibility goal and goal focus of the Hellison (2003) model.

In structuring the 10 lesson plan, particular attention was given to what Hellison (2003) refers to as a graduated exposure to the model. Hellison explains his model as a progressive series of goals delivered differently than traditional subjects of main stream schooling. As such, participants will initially be unfamiliar and perhaps hesitant to engage with the model. Essentially, the model has one predicted outcome, increased personal and social responsibility in participants. The outcome is arrived at by working through the themes of the model, focusing on accomplishing one goal before being able to progress to the next. Two sessions were conducted at the intervention school per week, keeping the same lesson theme for that week. The twice weekly sessions allowed the participants to gain a clear understanding of each respective theme without being overwhelmed. As subsequent weeks ensued and progressive exposure to the model and its themes were delivered, participants were

gradually able to work through the new tasks and themes without undue difficulty. Repeating the ten lesson plan format thus provided familiarity whilst increasingly exposing the participants to the Teaching Personal and Social Responsibility model (Hellison, 2003). Structuring the intervention in such a manner provided interest and challenge for participants, whilst adhering to the requirements of the Hellison (2003) model that forecasts a successful outcome through participation.

Table 4

Mapping the lesson plan to the goals of the Hellison (2003) model.

Responsibility	**Lesson Format**	**Lesson Theme**	**Responsibility Goal**
Goal 1	Lesson One / Two	Respect	Self-control and respect
Goal 2	Lesson Three / Four	Participation	Self-motivation
Goal 3	Lesson Five / Six	Self Direction	On-task independence
Goal 4	Lesson Seven / Eight	Caring	Sensitivity and responsiveness
Goal 5	Lesson Nine / Ten	Outside the Training Venue	Trying these ideas in other areas of life.

In formulating the activity component of the intervention in the current study, the progressive nature of the Hellison (2003) model was also put into practice. There is a stage structure to the model from an initial involvement, the progression through it, and on to achieving greater personal and social responsibility. As can be observed in the ten lesson plan (refer Appendix I, and Figure 4), the activity component is also a series of progressive stages matching the goals of responsibility of the Hellison (2003) model. Each lesson is structured, beginning with an introduction from the facilitator demonstrating what is to be performed for the physical activity. Progressively through the activity component, the participants take on the responsibility for conducting the activity format themselves, with the facilitator available if required.

As the participants practice and work through the physical activity tasks set by the session theme, the individual participants are personally and independently responsible for working through the physical activity tasks themselves. The development of independence for the participants in the Hellison (2003) model is the bridge between self-esteem and then personal motivation, and the subsequent onset of prosocial behaviour, leading to positive behaviour outside of the training venue hall based activity sessions. For clarification, the structure of a typical lesson is now outlined.

Overview of a typical lesson in the current study

Beginning the session with all student participants present, the focus of the personal and social responsibility behaviours were explained, in order to create awareness in the participants of their respective role in the session. The session's focus was

always related to one of the goals, with which the students were familiar and which were posted using cue cards on the walls of the gym hall for visual reference.

Following the introduction, the session's physical activities and guidelines were explained to the participants. The aim of the activity was for the students to both practice responsibility and conduct themselves in accordance with the session theme. The activity component of the session forms the greatest time segment and is where the Teaching Personal and Social Responsibility goals are put into practice by the participants. The physical activities were designed according to the goals set out in the Teaching Personal and Social Responsibility model (Hellison, 2003). The variety of karate skills that were provided ensured that the level of difficulty did not exceed the capacities of the students, so that they all had a chance to experience success.

In every session, the karate activity skill set was initially demonstrated by the facilitator so that participants had a brief exposure to the skill set. Participants would then perform the same skill set, replicating the karate skills as demonstrated by the facilitator whom performed the skill set with the participants. After the initial run through, participants then paired up with a partner of their choosing, and again the same activity set was conducted whilst facing one another. The facilitator only then verbally conducted the same karate activity skill set whilst the participants executed the skill set. The partnered pairs where then asked to provide quiet feedback between themselves, assisting one another in correcting their initial techniques. The partner drill was then repeated once more, the participants again giving quiet feedback between the pair at completion of the sequence.

Following the partner drill work, the next feature of the activity component of the session was group interactivity. Here the participants gathered themselves into groups of four and between themselves chose one group member to be the group leader. The participant group leader would then verbally conduct, and physically perform, the karate skill set with the group whilst the other group members performed the skill set at the group leader's direction. Once the skill set was completed, the group leader changed to the next person in the group, and so on, until each member had a turn in leading the group through the skill set. Each group conducted the same skill set exercise in their own time. The facilitator remained within proximity to the groups as they worked through their skills sets and was available to all participants if questions arose or clarification was required. Assistance or direction was only given by the facilitator if invited to do so by the participants.

For the final part of the activity component, all of the participants were given the opportunity to practice the skill set independently. Working on their own, each participant practiced the skill set in their own time to their own standard. Again, the facilitator was on hand should questions or queries arise from participants. Participants were able to signal for attention from the facilitator by simply raising a hand.

Having completed the activity section of the session, a group meeting was always held in the last ten minutes of the session. The participants sat together with the author and discussed what the session meant for them and this gave the opportunity to share opinions, feelings and ideas about the intervention in general and the session in particular. Every participant had the opportunity to speak. Participants

were encouraged to think of their contribution and efforts during the session in relation to the goals of the Teaching Personal and Social Responsibility model. Particular attention was given to reactions and thoughts relating to the goal focus of the session and how the goal focus could be put into practice outside of the session in other aspects of their lives.

The final part of the session allowed for self-evaluation. Remaining seated as they were during the meeting, participant journals were individually distributed. The daily session concluded with an evaluation by each student of his or her own behaviour during the session in relation to the goal being worked on during that session, their interactions with their peers, and of the author himself. The participants gave a self evaluation in terms of personal and social responsibility from goal one to five, five being the highest, reflecting their contribution and level of functioning during the session as a whole. Participants were additionally encouraged to think about setting a personal goal for themselves that they thought they could achieve for the coming week and record it for their future reference. The final five minutes of the session was allocated for the journal activity.

The final activity session of the current study

In the last week of the current study, a single grading class to assess the practical karate skills of the participants was conducted where all participants were awarded an achievement certificate. The grading class is not a prerequisite of the Hellison (2003) model and was conducted solely for the benefit of the participants. In addition, the grading class was conducted in December and after the final test

administration was completed as to not influence any participant when completing their final measures.

Measures used in the current study

To evaluate the operational constructs of the Teaching Personal and Social Responsibility model as described by Hellison (2003), measures were chosen to assess each of the progressive responsibility goals as set out in the introduction section of the current study (refer Table 5).

Table 5

Measures used to assess the constructs of the responsibility goals.

Responsibility	Construct	Measure
Goal 1	**Self-Esteem**	**Self-Esteem Scale**
Goal 2	**Self-Motivation**	**Self-Motivation Inventory-C9**
Goal 3	**Self-Efficacy**	**Self-Efficacy Questionnaire-C**
Goal 4	**Prosocial Behaviour**	**Prosocial Behaviour Scale**
Goal 5	**Positive Behaviour**	**Positive Behavior Scale**

Each measure was administrated simultaneously during the model delivery. One baseline measure was given prior to intervention commencement and five additional administrations were conducted, approximately at eight week intervals, including a final battery at study conclusion. An outline of each measure, and the rationale for the respective choice of measure, is now presented.

Rosenberg's Self-Esteem Scale (S-ES)

As multiple attributes are evident for the 1st goal of the model, goal 1 could be measured with a single prevailing construct. An option is provided by Hellison (1991, 1995) where one of the earliest ambitions for participants in his model was the development of self-esteem. In considering the Rosenberg Self-Esteem Scale for use in the current study to measure participant's self-esteem, a number of other potential psychometric measures were discounted. In a comparative review of self-esteem measures, Blascovich and Tomaka (1991) demonstrated that the Rosenberg Self-Esteem Scale has consistently high reliability in terms of internal reliability and test-retest correlations, more so than any other measure focusing solely on self-esteem. Further in their review, they point out that the Rosenberg Self-Esteem Scale is the standard next to which new measures examining self-esteem are compared and measured, and is quick to administer.

As an established measure of self-esteem, the Rosenberg Self-Esteem Scale has demonstrated favourable properties including high internal reliability (α = .90) and validity in general populations (Schmitt & Allik, 2005). The Rosenberg Self-Esteem Scale has consistently demonstrated its utility for younger populations, positive construct and convergent validity is noted and the measure is noted as being

unidimensional (Hagborg, 1993). In examining discriminant validity of the measure, Fleming and Courtney (1984) found no significant correlations between self-esteem scores and age (0.13) or vocabulary (-0.04). A meta-study of the measure across 53 surveyed nations revealed the mean reliability to be substantial, Cronbach's alpha measuring .81 (Schmitt & Allik, 2005).

The Rosenberg Self-Esteem Scale is a 10 item, pencil-paper, student questionnaire that measures overall self-esteem (Wylie, 1989). Each item is rated on a four point Likert scale from 1 (strongly agree) to 4 (strongly disagree). Items 2, 5, 6, 9, 10 are reverse scored. Higher scores indicate higher levels of self-esteem. Schmitt and Allik (2005) additionally contribute that due to the extensive history of its use, its uncomplicated language, and being quick to administer, that the measure is particularly suitable for children.

Accordingly, the Rosenberg Self-Esteem Scale was selected for utilisation on the basis that the measure also allows for specific self-evaluations to be combined into an overall value of self-esteem providing what Hagborg (1993) and Huang and Dong (2012) refer to as an excellent brief measure of global self-esteem. The Scale was employed in the current study to measure the degree of change over time in the student participant's personal perception of their self-esteem, the construct for goal one of the Teaching Personal and Social Responsibility model.

Dishman's Self-Motivation Inventory for Children (SMI-C9)

An assessment measure for goal two in the model had to be general enough to be utilised by school aged children, but also have empirical validity in application to the

assessment of self-motivation in the context of physical activity. Of particular interest to the current study, Motl, Dishman, Felton and Pate (2003) have examined Dishman's Self-Motivation Inventory for Children after earlier research by Biddle and associates (1996) identified the lack of a valid measure to assess self-motivation in children. Biddle and associates (1996) had concluded, on the basis of five independent studies of English speaking children, that the positively worded measure can be used reliably in intervention studies that examine self-motivation in a physical activity context. Motl and associates (2003) subsequently verified that the measure demonstrated strong evidence of multi-group and longitudinal factorial invariance from a large sample of adolescent girls in their longitudinal study of physical activity.

The Dishman Self-Motivation Inventory for Children is a 9 item pencil-paper student questionnaire that measures overall self-motivation (Marshall & Biddle, 2001). Each item is rated on a four point Likert scale from 1 (very unlike me) to 4 (very much like me). All items are positively worded and positively scored. Higher scores indicate higher levels of self-motivation. The Self-Motivation Inventory for Children is also simple to administer and takes minutes to complete.

The Dishman Self-Motivation Inventory for Children has demonstrated acceptable properties including acceptable reliability and validity with the specific population of children (Motl, et al., 2003; Dishman, et al., 2008). The measure has demonstrated high internal consistency when employed with the child population. Acceptable evidence has also been demonstrated to support factor validity and measurement equivalence in the measure (Smith & Bar-Eli, 2007). The measure has acceptable internal consistency and test-retest reliability, and has reasonable concurrent and

predictive validity. Cronbach's alpha reliability coefficient was noted as being acceptable at .83 (Marshall & Biddle, 2001).

In the current study, the choice of measure examining self-motivation is the second measure to be administered in a battery of measures to be completed by the student participants. The Dishman Self-Motivation Inventory for Children is the only measure of its type that provides not only empirical value, but is also quick and uncomplicated in administration. On the basis of these identified factors, the Dishman measure was selected for the current study to assess goal two of the Hellison (2003) model; student participant's development of self-motivation.

Muris's Self-Efficacy Questionnaire for Children (SEQ-C)

Psychological measures examining self-efficacy are predominantly single domain specific, for example, focusing on reading tasks or writing skills in isolation. Additionally, as noted with self-motivation as the second goal of the model, measures to examine self-efficacy specifically in children, are likewise sparse. In order to examine goal three of the Hellison (2003) model, several measures would have to be traditionally employed as multiple domains of influence are in operation. Hellison (2003) has stated that at goal three, student participants are becoming noticeably independent. By explanation of becoming independent, Hellison (2003) believes that it is at goal three in his model where students may be improving in academic ability, forming positive social relationships, and being emotionally aware both in terms of their own feelings but also being sensitive to others. A review of the academic literature provided one potentially suitable measure that simultaneously examines these developmental aspects in children.

Muris (2001) developed the Self-Efficacy Questionnaire for Children having identified that the assessment of self-efficacy in youth had been historically conducted using adult measures adapted for the task. The questionnaire itself is comprised of three subscales which link directly to Hellison's (2003) aspirations for goal three of the Teaching Personal and Social Responsibility model. Muris (2001) explains the subscales as representative of three domains of self-efficacy; social self-efficacy, the subjects' perceived capability, peer relationships and assertiveness, academic self-efficacy, the subjects' perceived ability to fulfill learning objectives, and emotional self-efficacy, the subjects' perceived capability in successfully dealing with emotions.

The Muris Self-Efficacy Questionnaire for Children is a 24 item, pencil-paper, student questionnaire that measures children's perceptions of their social self-efficacy (ability to relate and get along with other peers), emotional self-efficacy (ability to regulate unpleasant emotions), and academic self-efficacy (ability to succeed in school and display appropriate learning behaviours). The three subscales each contain eight items in which participants rate their competence goal on a 5-point Likert scale from 1 (not at all) to 5 (very well). Scores are summed to yield a measure of self-efficacy for each domain (Muris, 2001). All items are positively scored and higher scores indicate higher levels of self-efficacy.

The measure has demonstrated acceptable reliability and validity in assessing multidimensional self-efficacy (Suldo, Shaunessy, & Hardesty, 2008). The study conducted by Suldo and associates (2008) demonstrated correlations between the subscales of this measure to be positive and moderate in magnitude and the internal consistencies for each subscale to be acceptable. The mean reliability coefficient for the self-efficacy subscales was noted at .86 in their study. The measure has

demonstrated that the internal consistency reliability is satisfactory for the assessment of self-efficacy in a normal sample of school aged children (Muris, 2001, 2002). Acceptable evidence has also been demonstrated to support factor validity in the measure. Cronbach's alpha reliability coefficients for the subscales were reported as .85 social self-efficacy, .86 emotional self-efficacy, and .88 for academic self-efficacy (Muris, 2001). Finally, the subscales of the measure are significantly intercorrelated. Children's self-efficacy covaries across the three domains (Muris, 2001). As a specific measure designed to assess self-efficacy in children, the measure was designated as the assessment measure for goal three of the Teaching Personal and Social Responsibility model in the current study.

Caprara's Prosocial Behaviour Scale (PBS)

Traditional approaches to the assessment of prosocial behaviour in children have predominantly focused upon behavioural assessment from a third party, for example a parent or teacher. Measures initially sought to examine such aspects of behaviour as proactive aggression, related factors such as anxiety and depression, inattention, and truancy. Analysis then demonstrated that the absence of such behavioural aspects suggested that prosocial behaviour was what remained. Another approach has been attempting to assess the construct through related concepts such as friendliness, conformity, honesty, the display of emotional empathy, emotional regulation, and altruism, again, from the perspective of a third party. Neither of these options was specifically addressing the need for a self-reporting assessment of prosocial behaviour that children could complete in the current study. A self-reporting measure was required that specifically evaluated what student participants believed of themselves at a prosocial level.

The assessment of the student participants' level of functioning at goal four of the Hellison (2003) model required a valid measure with wording appropriate for children. Following ongoing research that began with Caprara and Pastorelli (1989) assessing emotional susceptibility, they subsequently developed the Prosocial Behaviour Scale (Capara & Pastorelli, 1993). The measure was initially developed and employed for use with school aged children between seven and ten years of age. The Scale is comprised of simply worded statement questions that children are readily able to comprehend. Accordingly, the Scale is straightforward to administer and takes minutes to complete.

The measure itself is a 15 item, pencil-paper, student questionnaire that measures prosocial behaviour (Caprara & Pastorelli, 1993). Each item is rated on a 3-point Likert scale from 1 (often) to 3 (never). Various items offer a description of a child's behaviour denoting altruism, sensitivity, trust, caring, and agreeableness each found in Hellison's goal 4 of the model. Each item is positively scored, 5 items serve as a control and do not contribute to the final score. Higher scores indicate higher levels of prosocial behaviour.

Measuring prosocial behaviour, the Caprara Prosocial Behaviour Scale has demonstrated acceptable properties including acceptable reliability and validity (De Minzi, Lemos, & Mesurado, 2011). The Scale has since been validated, with high reliability coefficients, in a number of studies and continued research by Caprara and Pastorelli (1993), and Bandura, Caprara, Barbaranelli, Gerbino, and Pastorelli (2003). Bandura and associates (2003) stated that the Cronbach's alpha of .95 for reliability was significant in their study. In addition, they revealed through factor analysis, a single factor structure for the measure. High alpha coefficients confirm

the internal consistency of the Caprara Prosocial Behaviour Scale and acceptable evidence has also been demonstrated to support the factorial structure of the Scale examined through principal component analysis (Caprara, Capanna, Steca, & Paciello, 2005).

In the current study, the Caprara Prosocial Behaviour Scale was used to assess self-reported prosocial behaviours of the student participants. The results from the measure would indicate the degree to which each participant was able to demonstrate goal four of the Teaching Personal and Social Responsibility model.

Positive Behavior Scale (Parent and Teacher versions)

Goal five is the final goal of the Hellison (2003) Teaching Personal and Social Responsibility model. Participants at goal five of the model are able to demonstrate the previous four goals of the model, which could be noted by any observer, and do so outside of the training environment where the goals of the model were learnt. An objective assessment then was required to determine if generalisation of the model's goals outside of the school hall had occurred for the student participants. In the current study, it is here at goal five where the triangulation of assessment was conducted. The objective measure chosen would be completed both by the teacher and parent of the participating student.

Likewise, similar to the development of a prosocial measure, the development of such a measure to examine positive behaviour has suffered in the literature as to what constitutes a positive behaviour, including being able to measure the concept. Traditionally, positive behaviour in children has been measured by the absence of

problem behaviours such as aggression, anger, or defiance, rather than the presence of positive behaviours such as relational social skills, autonomy, or responsibility. An additional consideration for an appropriate measure choice in the current study was the setting for the intervention. The student participants in the current study were predominantly from low-income families typically associated with the decile one educational rating, the chosen measure was required to have been validated for use in such a demographic.

To address these issues, the Positive Behavior Scale (Polit, 1998) was considered. The Positive Behavior Scale was initially developed to examine positive behaviours of children whom had been identified as having an economically disadvantaged background (Quint, Bos, & Polit, 1997). It has since been verified as a reliable measure of positive behaviour of children in home and school settings (Epps, Park, Huston, & Ripke, 2003; Gennetian, & Miller, 2002; Linver, Roth, & Brooks-Gunn, 2009). Due to its versatility, the current study was able to utilise this measure for parents and school teachers, perceived important adults of the child participants, separately and independently from one another whilst measuring the same construct (Epps, et al., 2003). The measure provided two separate streams of information to compare and contrast the development of positive behaviours in the child participants objectively.

The Positive Behavior Scale for parents and teachers was selected as the assessment measure for goal five of the Teaching Personal and Social Responsibility model. The measure asks identical questions in both versions but is prefaced by either ‘your child’ for the parent version or ‘your student’ for the teacher version. It is a 25 item pencil-paper adult questionnaire that measures positive

behaviour and is divided into three subscales for use in child populations (Gennetian & Miller, 2002). The three subscales are social competence and sensitivity (is helpful and cooperative), autonomy (is independent), and compliance (usually does what I tell (him/her) to do, waits for his/her turn during activities). Items are rated on a five point Likert scale from 1 (never) to 5 (all of the time). All items are positively worded and positively scored. Each item is scored on a 1-5 scale. Higher scores indicate higher levels of positive behaviour in the child by the observing parent or teacher.

As a measure of objective positive behaviour, the Positive Behavior Scale for parents and teachers has demonstrated acceptable properties including high reliability and high correlations for validity for use in the specific population of child measurement (Gennetian & Miller, 2002). In the Gennetian and Miller (2002) study, the Cronbach's alpha for the measure is recorded at .95 with a mean of .86 across the subscales. The Positive Behavior Scale has demonstrated high internal consistency when employed with the target population of children. Acceptable evidence has also been demonstrated to support factor validity and significant measurement equivalence in the subscales for the measure, the alpha coefficients for each of the subscales were above .90 (Epps, et al., 2003).

Data collection and administration

The current study was implemented over one scholastic year, delivering the Teaching Personal and Social Responsibility model to the intervention school. Table 6 illustrates the testing schedule. As a longitudinal design was chosen for the current study, a key strength of the design was having multiple waves of data collection. The six waves, three more than the minimum recommended by Singer and Willett (2003),

would sufficiently illustrate change over time across the measures as completed by the study participants.

Table 6

Testing protocol.

Administration	Date	Test Location	Child Measures	Parent / Teacher Measure
1	**March**	**School**	**S-ES, SMI-C9, SEQ-C, & PBS**	**Positive Behavior Scale**
2	**May**	**School**	**S-ES, SMI-C9, SEQ-C, & PBS**	**Positive Behavior Scale**
3	**July**	**School**	**S-ES, SMI-C9, SEQ-C, & PBS**	**Positive Behavior Scale**
4	**September**	**School**	**S-ES, SMI-C9, SEQ-C, & PBS**	**Positive Behavior Scale**
5	**October**	**School**	**S-ES, SMI-C9, SEQ-C, & PBS**	**Positive Behavior Scale**
6	**December**	**School**	**S-ES, SMI-C9, SEQ-C, & PBS**	**Positive Behavior Scale**

At each of the six test time points, the Self-Esteem Scale, Self-Motivation Inventory, Self-Efficacy Questionnaire, and the Prosocial Behaviour Scale (denoted as S-ES, SMI-C9, SEQ-C, & PBS respectively in Table 6) were completed by the student participants; a Positive Behavior Scale was completed by the students' class teacher, and one also completed by the child's nominated parent (refer Table 6). Six testing administrations were conducted in total, at both participating schools, which

included a baseline set of measures collected at intervention commencement. The strategy for the triangulation of assessment here involving the participants, their teachers and parents, was to obtain quantitative results from more than one source simultaneously. Every participant was assigned a unique alphanumeric identification code to protect identities.

The administration of the test items for the students was conducted in the familiarity of their usual classroom during time made available by the participating schools. The class teachers agreed to complete one questionnaire for each of their students in their own time as not to impact on their usual classroom teaching requirements. Each student participant also took a parent questionnaire home to be completed by the designated parent, ensuring that the same parent completed the questionnaire each time. The completed questionnaire was returned in a provided sealed envelope to the school. A dedicated drop box was provided for this purpose in both participating schools.

Study timelines

As a summary of the intervention timeline for the current study, Table 7 presents schedules for test administration and session plan delivery by weeks of the intervention. As previously presented, the specificity of the test administration is outlined in Table 6. The training session plans are individually detailed in Appendix I.

Table 7

Timelines of the current study:

Intervention and test administration timeline.

Week 1	Week 8	Week 16	Week 24	Week 32	Week 40	Week 41
Intervention start / 1st Test Administration	2nd Test Administration	3rd Test Administration	4th Test Administration	5th Test Administration	6th Test Administration	Grading class / Intervention end

Session plan timeline.

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
Session Plan 1 / Session Plan 2	Session Plan 3 / Session Plan 4	Session Plan 5 / Session Plan 6	Session Plan 7 / Session Plan 8	Session Plan 9 / Session Plan 10	Session Plan 1 / Session Plan 2	Session Plan 3 / Session Plan 4	Session Plan 5 / Session Plan 6	Session Plan 7 / Session Plan 8	Session Plan 9 / Session Plan 10
Week 11	**Week 12**	**Week 13**	**Week14**	**Week 15**	**Week 16**	**Week 17**	**Week 18**	**Week 19**	**Week 20**
Session Plan 1 / Session Plan 2	Session Plan 3 / Session Plan 4	Session Plan 5 / Session Plan 6	Session Plan 7 / Session Plan 8	Session Plan 9 / Session Plan 10	Session Plan 1 / Session Plan 2	Session Plan 3 / Session Plan 4	Session Plan 5 / Session Plan 6	Session Plan 7 / Session Plan 8	Session Plan 9 /Session Plan 10
Week 21	**Week 22**	**Week 23**	**Week 24**	**Week 25**	**Week 26**	**Week 27**	**Week 28**	**Week 29**	**Week 30**
Session Plan 1 / Session Plan 2	Session Plan 3 / Session Plan 4	Session Plan 5 / Session Plan 6	Session Plan 7 / Session Plan 8	Session Plan 9 / Session Plan 10	Session Plan 1 / Session Plan 2	Session Plan 3 / Session Plan 4	Session Plan 5 / Session Plan 6	Session Plan 7 / Session Plan 8	Session Plan 9 / Session Plan 10
Week 31	**Week 32**	**Week 33**	**Week34**	**Week 35**	**Week 36**	**Week 37**	**Week 38**	**Week 39**	**Week 40**
Session Plan 1 / Session Plan 2	Session Plan 3 / Session Plan 4	Session Plan 5 / Session Plan 6	Session Plan 7 / Session Plan 8	Session Plan 9 / Session Plan 10	Session Plan 1 / Session Plan 2	Session Plan 3 / Session Plan 4	Session Plan 5 / Session Plan 6	Session Plan 7 / Session Plan 8	Session Plan 9 / Session Plan 10

Data analysis and rational

A time series investigation was chosen as the longitudinal design for the current study. While typically, time series analysis is used where cyclical and recurring processes are anticipated, in the present study the time series design allowed for the examination of change over time in the participants engaged in the current intervention study using the Teaching Personal and Social Responsibility model (Hellison, 2003). The examination of change was administered utilising the five measures, repeated six times, over the course of the current study. The aim of the six administrations of measurement was to gather sufficient information as to provide meaningful individual growth trajectories for every participant. Glass (1997), Gratton and Jones (2004), Singer and Willett (2003) state that six sessions of data administration and collection are sufficient to conduct a time series design. The Hellison (2003) model does not state any determinant or specification as to when, or at what point from participation, that any individual becomes personally and socially responsible. As such, it was not possible to predict onset or growth for measurement at any specific point during the intervention. Consequently, measurement was time-structured with all participants on an identical schedule (Singer & Willett, 2003). Put simply, the repeated measures were equally spaced over the course of the intervention, thus offering both balance and symmetry whilst examining change in the levels of participant responding across the measures sampled.

A complete data set from each test administration of all participants was compiled using simple spreadsheets enabling track and trace of data. In the current study, data collection did not suffer from missing data concerns due to non-completed, incomplete, or lost questionnaires. There are no missing items in the final data set.

At the end of the school intervention phase of the study, a complete person-period data set was organised and constructed utilising *SPSS* Version 19.0 for Windows (SPSS Inc., 2010) to begin the analysis.

Before in-depth analysis of the participant data could be conducted and then drawn from, measure reliability in the current study was an important requirement to be established. Utilising Cronbach's alpha coefficients for reliability at all administration points across all measures, including respective measure subscales, would meet this requirement (Nunnally, 1978). Having verified the reliability of the measures employed in this study, individual and group empirical growth plots from the person-period data set could be produced.

Statistical measurement of individual change over time

Utilising *SPSS*, empirical growth plots for each student participant provided an initial indication of change over the course of the current study. A visual inspection of the individual growth plots suggested using a parametric approach and straight line fitted trajectories were to be applied to smooth the empirical growth records. Individual records of the student participants demonstrated a potential fit with each projected linear trajectory. The multiple waves of data, and initial indicators from the straight line trajectories, provided sufficient information to select and apply a linear change model for subsequent analysis. The resulting linear trajectories were then able to be summarised for every student participant using exploratory ordinary least squares (OLS) regression model fitting.

OLS regression trajectories were conducted for every participant over every measure used in the current study. Utilising *SPSS,* the OLS trajectories were superimposed on the participant's respective empirical growth plots. A distinction was then made apparent between the participants both visually in graph form, but also in numerical summaries obtained from performing the regression. The numerical records from the within-person regression summarised the respective closeness of fit to trajectory lines and growth trajectories for each participant over the course of the current study. The graphs and numerical records, generated by OLS regression modelling, summarise how the individuals changed over the course of the current study.

Individual trajectories demonstrated the participants change over time, for each measure. Having explored individual change over time, individual trajectories were then compared. Examining every participant's smoothed trajectory simultaneously illustrated interindividual differences between the participants that had occurred over time. Continuing with OLS regression methods, a collection of fitted OLS trajectories for every participant for each measure was constructed. One graph featuring every participant's trajectory, with a corresponding numerical record, was produced for each measure employed. For each graph, an average summary trajectory was additionally superimposed upon the collection of individual OLS trajectories. The average summary trajectory allowed for the comparison between individual change in relation to group change.

In selecting a linear individual change model for the current study, each participant's growth is summarised as the fitted intercept and fitted slope for each measure obtained from the numerical records generated from the OLS regression procedures.

A comparison of initial intercepts for each of the participants illustrated the interindividual differences between participants across each measure at study commencement, and the initial intercepts are the estimate of each participant's initial status at that point. The variation in the fitted slopes illustrated the interindividual differences in the rates of change in each of the measures sampled over the course of the current study.

To summarise the OLS trajectories, standardisation of the measures provided an overview of measure trajectories by group. The simultaneous presentation allowed for a comparison for each measure, including respective subscales, at each administration during the current study. Visual differences are made apparent between the participant groups across the six times points. Standardisation of the measures completed by the children, and measures completed by the parents and the teachers were reported separately.

To determine the nature of the relationship between the initial status and the rate of change of individual differences, analysis of correlation coefficients between intercepts and slopes was conducted. The correlation coefficients illustrated the nature of the relationship between participants' initial status at study commencement and the rate of any subsequent change over the course of the current study, for each of the employed measures. Numerical records produced from the correlation coefficient analysis display interactional relationships between the measures indicating if change over time was illustrated by any measure(s) in particular, or by the group of measures as a whole. A determination of the nature of the relationship between the measures could then be described by comparing any participant's initial

status for each measure in relation to the rate of change observed over the same measure in the current study.

Statistical measurement of group change over time

To conclude the analysis, a repeated measures (multivariate repeated measures manova) analysis would be applied to the four measures completed by the student participants over the six time points. Statistical power has been previously addressed for the current study. However the differences between group compositions required a more conservative estimate of the effects. Pillai's Trace multivariate test was used because of its robustness in the presence of unequal dependent variate variance (Olson, 1976). Mean differences between the groups, across the six time points were assessed for each of the measures at the multivariate level due to a violation of assumptions for sphericity. As multivariate tests were used, univariate tests were substituted with an analysis of subjects effects as it is equivalent to a one-way analysis of variance (Ho, 2006). Differences of the mean scores for each of the measures indicated intervention differences and were accordingly interpreted. Comparisons were made for respective effects between the groups and over the time points. A statistical claim was made regarding the mean differences between the intervention and control groups from participating in an application of the Teaching Personal and Social Responsibility model for the current study.

Finally for the parent and teacher assessment, independent *t*-tests were used to determine if the parent and teacher groups differed on the Positive Behavior Scale. One each would be completed for the parent and teacher of both the intervention and control groups for differences in terms of their means over the course of the

current study. In comparing the results of the independent *t*-tests, an indication would be given for group differences of mean significant change in positive behaviour from the observations of their respective parents and teachers.

The application of Guttman scaling in the current study

A secondary analysis was possible in examining the data so that both items and subjects can be assessed as a single cumulative dimension of the measures at each time point. In so doing, it was possible to test the stage-like progression assumption of the Hellison's (2003) Teaching Personal and Social Responsibility model. In the current study, the possibility for stage progression was assessed using Guttman's (1950) scaling protocol, referred to as Scalogram Analysis. Specifically, Scalogram Analysis was employed to determine if the administered measures in the current study possessed scalability and could therefore form a scalogram. Scalogram analysis requires the transformation of measure scores to a mean score per item per individual. An assessment to see if respondents could climb the scalogram over time, from repeat administrations of what becomes a unidimensional scale of the combined measures at each time point, could be conducted. Further detail in the application of Scalogram Analysis in the current study is detailed in Chapter 5 of this thesis.

Chapter 3

Preliminary Results

This chapter begins the presentation of the results obtained from the analysis of the data collected in the current study. The data collection phases during the intervention proved crucial to the analysis in two ways. Firstly, there are no missing items from any of the measures and second, there was a complete return rate on all of the questionnaires, from every administration. Thus the current study explores the data as it was collected, without having to complete missing data procedures, and avoiding any potential for bias that missing information may promote.

The results of the reliability analysis performed on all composite measures employed are presented initially. An assessment of the amount of variance within the data across all measures was then conducted using ordinary least squares regression model fitting. Having confirmed the degree of variance, a correlation analysis was performed to determine if measures co-varied. The degree of association between the measures would identify if any of the measures had greater sensitivity to the intervention, and if one or more measures performed in accordance with any other in terms of initial equivalence or rate of change. Standardisation of the mean score of each of the measures was then performed, and then presented simultaneously, allowing for a visual assessment and comparison of the rate of averaged change between the study groups. Of consequence to the current study, the results taken together would give an initial indication if change in the intervention group occurred in accordance with the stage progression theory of the Hellison (2003) model, or otherwise.

Reliability analysis

To make certain that the results were well supported and accurate; an initial step of confirming the reliability of the main outcome measures was required. The integrity of the overall analysis and study results would then be reinforced. Whilst reliability of the variable measures employed in this study have been demonstrated in the literature as previously discussed, it was necessary to re-assess their reliability within the specific context of the present study.

The reliability analysis was performed using *SPSS* Version 19.0 for Windows (SPSS Inc., 2010). For ease of visual reference, means and standard deviations are presented in Table 8 for the self-reporting measures completed by the child participants, and Table 9 for the Positive Behavior Scale completed by their respective class teacher and designated parent. Table 10 provides the results of the reliability analysis for all of the measures completed in the current study. As evident in Table 10, the average alphas across the measures were acceptable, each greater than α = 0.70. The reliability analysis of the measures demonstrates psychometric evidence for all of the utilised measures based on thresholds cited within the literature (Nunnally, 1978).

Table 8

Means and Standard Deviations (SD) for all child self-reporting measures (including subscales) for control and intervention groups.

Control Group

	S-ES		SMI-C9		SEQ-C (A)		SEQ-C (S)		SEQ-C (E)		PBS	
Time	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1	*13.73*	*2.53*	*21.29*	*4.55*	*21.22*	*3.04*	*21.10*	*4.31*	*21.31*	*4.41*	*16.29*	*2.98*
2	*14.35*	*2.33*	*21.96*	*4.18*	*21.59*	*3.94*	*21.57*	*4.84*	*21.86*	*4.48*	*16.14*	*3.40*
3	*14.37*	*2.35*	*22.76*	*4.22*	*21.73*	*3.86*	*22.14*	*4.63*	*22.10*	*3.80*	*16.04*	*3.42*
4	*14.55*	*2.18*	*22.94*	*4.15*	*22.22*	*4.05*	*22.65*	*3.90*	*22.92*	*3.97*	*15.55*	*4.21*
5	*14.80*	*3.01*	*21.86*	*3.88*	*22.08*	*4.17*	*22.65*	*4.34*	*21.84*	*3.64*	*15.49*	*3.74*
6	*14.67*	*3.42*	*22.08*	*3.65*	*22.10*	*4.09*	*23.10*	*4.73*	*22.31*	*3.91*	*14.61*	*3.75*

Intervention Group

	S-ES		SMI-C9		SEQ-C (A)		SEQ-C (S)		SEQ-C (E)		PBS	
Time	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1	*12.61*	*2.79*	*19.92*	*2.88*	*20.47*	*3.30*	*20.36*	*2.99*	*20.53*	*3.69*	*14.11*	*2.69*
2	*14.36*	*2.43*	*22.19*	*2.36*	*22.78*	*2.63*	*22.64*	*2.53*	*22.61*	*3.32*	*15.25*	*2.49*
3	*16.31*	*2.81*	*24.47*	*3.28*	*24.39*	*2.52*	*24.28*	*2.93*	*24.58*	*2.94*	*16.72*	*2.40*
4	*18.39*	*3.56*	*26.83*	*3.27*	*26.33*	*2.95*	*26.86*	*3.47*	*27.50*	*3.66*	*18.64*	*2.54*
5	*20.58*	*4.07*	*29.14*	*2.43*	*29.17*	*3.53*	*29.83*	*4.24*	*29.64*	*3.87*	*20.53*	*2.72*
6	*22.97*	*3.33*	*31.64*	*2.34*	*32.78*	*3.65*	*32.97*	*4.03*	*33.11*	*3.52*	*22.78*	*2.90*

Table 9

Means and Standard Deviations (SD) for the Positive Behavior Scale (teachers(T) and parents(P) by subscale) for control and intervention groups.

Control Group

	PBS T (Sc)		PBS T (A)		PBS T (C)		PBS P (Sc)		PBS P (A)		PBS P (C)	
Time	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1	*34.29*	*6.11*	*16.84*	*2.39*	*28.08*	*4.18*	*34.82*	*5.60*	*15.43*	*2.81*	*26.76*	*4.08*
2	*35.63*	*6.01*	*16.96*	*2.57*	*28.29*	*3.97*	*36.31*	*5.72*	*15.49*	*3.03*	*27.71*	*4.66*
3	*34.53*	*5.73*	*16.82*	*2.94*	*29.29*	*4.25*	*35.18*	*6.18*	*16.18*	*3.29*	*27.84*	*4.79*
4	*35.06*	*7.55*	*16.69*	*3.10*	*29.06*	*6.02*	*36.92*	*6.31*	*16.20*	*3.00*	*29.33*	*5.94*
5	*37.20*	*6.25*	*17.43*	*2.64*	*30.10*	*4.92*	*36.35*	*6.20*	*16.43*	*3.12*	*28.71*	*5.49*
6	*37.43*	*6.12*	*17.33*	*2.36*	*29.43*	*4.75*	*36.80*	*6.60*	*15.84*	*2.79*	*29.18*	*4.98*

Intervention Group

	PBS T (Sc)		PBS T (A)		PBS T (C)		PBS P (Sc)		PBS P (A)		PBS P (C)	
Time	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1	*32.31*	*4.68*	*15.03*	*2.12*	*27.28*	*3.25*	*32.72*	*4.55*	*14.56*	*1.93*	*27.31*	*2.91*
2	*32.92*	*4.56*	*15.42*	*2.02*	*27.97*	*2.97*	*34.00*	*4.60*	*15.97*	*1.92*	*28.72*	*2.67*
3	*35.56*	*4.58*	*16.31*	*1.86*	*29.36*	*3.34*	*36.25*	*5.78*	*17.00*	*2.32*	*29.75*	*2.99*
4	*36.81*	*3.96*	*17.14*	*1.69*	*31.97*	*3.32*	*37.94*	*5.21*	*18.14*	*2.55*	*32.39*	*4.11*
5	*40.78*	*4.40*	*18.97*	*1.46*	*35.00*	*3.13*	*42.53*	*4.63*	*20.42*	*2.26*	*35.78*	*4.40*
6	*44.61*	*3.83*	*21.22*	*1.39*	*38.08*	*2.94*	*46.17*	*4.41*	*22.75*	*1.93*	*39.61*	*3.68*

Table 10

Reliability analysis of all measures (including subscales) calculated with Cronbach's alpha.

Time	S-ES	SMI-C9	SEQ-C (A)	SEQ-C (S)	SEQ-C (E)	PBS	PBS T (Sc)	PBS T (A)	PBS T (C)	PBS P (Sc)	PBS P (A)	PBS P (C)
1	*.84*	*.84*	*.83*	*.82*	*.80*	*.82*	*.89*	*.85*	*.94*	*.92*	*.89*	*.94*
2	*.89*	*.83*	*.80*	*.85*	*.81*	*.83*	*.92*	*.92*	*.94*	*.93*	*.92*	*.94*
3	*.82*	*.84*	*.80*	*.82*	*.84*	*.78*	*.91*	*.92*	*.95*	*.92*	*.93*	*.95*
4	*.85*	*.84*	*.83*	*.83*	*.81*	*.82*	*.93*	*.92*	*.94*	*.94*	*.93*	*.94*
5	*.85*	*.86*	*.86*	*.85*	*.83*	*.80*	*.92*	*.92*	*.94*	*.94*	*.93*	*.95*
6	*.85*	*.85*	*.86*	*.84*	*.82*	*.77*	*.93*	*.92*	*.95*	*.95*	*.92*	*.94*
Average Alpha α	*.85*	*.84*	*.83*	*.84*	*.82*	*.80*	*.92*	*.91*	*.94*	*.93*	*.92*	*.94*

Key

Child Measures:

S-ES	Self-Esteem Scale
SMI-C9	Self-Motivation Inventory (C9)
SEQ-C (A)	Self-Efficacy (Academic subscale)
SEQ-C (S)	Self-Efficacy (Social subscale)
SEQ-C (E)	Self-Efficacy (Emotional subscale)
PBS	Positive Behavior Scale

Teacher / Parent Measure:

PBS T (Sc)	Positive Behavior Scale - Teacher (Social competence subscale)
PBS T (A)	Positive Behavior Scale - Teacher (Autonomy subscale)
PBS T (C)	Positive Behavior Scale - Teacher (Compliance subscale)
PBS P (Sc)	Positive Behavior Scale - Parent (Social competence subscale)
PBS P (A)	Positive Behavior Scale - Parent (Autonomy subscale)
PBS P (C)	Positive Behavior Scale - Parent (Compliance subscale)

Determination of variance in the data

For the current study, being able to determine the degree of empirical equivalency between the study groups was an important feature of the investigation. Through the employed measures at study outset for the control and intervention groups, the mean initial intercepts at the first administration were similar. For the child, parent, and teacher results, it was demonstrated that near identical empirical groups of participants existed for evaluation in the current study. Further points on group equivalency are detailed in each respective section hereafter.

To adequately explore and report the data clearly, the analysis is presented in two parts. The first section examines the collected data from the measures completed by the child participants; the second section examines the collected data from the measures completed by the child's class teacher and respective designated parent.

Assessing the variance in the child measures

An exploration of the child variables (self esteem, self motivation, self efficacy, and prosocial behaviour) was required to determine the degree of variability in these measures. In the current study, the control and intervention groups of child participants completed these four separate subjective self evaluation measures six times during the course of the study. It was expected that sufficient variability in each respective outcome variable would exist.

For exploratory purposes, ordinary least squares (OLS) regression model fitting using *SPSS* was employed initially at an individual level for every participant in each

group in the current study (Appendix J). Fitted OLS trajectories were determined and averaged change trajectories are used to illustrate comparative differences between the study groups for each measure. A significant degree of variance in the current study between the intervention and control groups was demonstrated.

Graphical representations for the results of the regression model fitting are presented in Figure 5 through to Figure 16. Each measure has a companion pair of figures. For ease of reference, the graphed results for each measure are initially from the control group followed by the intervention group. Results are presented at the level of sample average in both groups. The mean summary of each measure is displayed using a single red trajectory across each of the six sampled time points.

When comparing the range of trajectories between the control and intervention groups at study outset, the control group demonstrates a minor representation of individuals with higher initial points at study commencement in two of the measures surveyed. Referring to the self-motivation measure and the social and autonomy subscales of the self-efficacy measure (refer Figures 7, 9 and 11 respectively), there is a visual difference between these and the intervention group (refer Figures 8, 10, and 12). Despite the variation, the commencement points of the OLS averaged trajectories are equivalent between the two groups. The equivalency in the averaged trajectories in each of the measures at study commencement demonstrates sufficient matching between the intervention and control groups prior to the implementation of the current study. Referring to the initial intercepts at time point one for each measure (Figures 5-16), the single red line in each of the measures illustrate a similar averaged trajectory commencement for both the control and intervention groups for the child measures.

Results from the control group on the child measures

The pattern of average change for the control group generally demonstrated a maintained averaged OLS trajectory, for each self reporting measure over the time frame of the current study. There are some minor variations, including mixed positive and negative change, in the control group for some of the participants in each measure.

The range of individual trajectories in the self esteem measure (Figure 5) is narrow indicating an almost static result for this measure across the control group participants during the course of the current study. The self-motivation and self-efficacy measures demonstrate the greatest degree of variation (Figures 7, 9, 11, and 13) in the control group. At the group level, the averaged OLS trajectories illustrate a sustained result over the course of the current study for each measure and respective subscale with one exception. The self-efficacy social subscale demonstrates a minor increase over the course of the current study (Figure 11). In addition, each measure demonstrated significant variation at an individual level, in terms of positive and negative growth trajectories.

In the last self-reporting measure surveyed, the averaged trajectory for the Prosocial Behaviour Scale (PBS) illustrates a continued decrease in the rate of change over the course of the current study for the control group, with a marked decline at the final time point (Figure 15).

Results from the intervention group on the child measures

In comparison, for each of the self-reporting measures completed by the members of the intervention group, increased positive change over the course of the study was reported. In addition, the average change for the intervention group is prominent, demonstrated by the start point, slope, and finish point of the single red trajectory line in every measure. Additionally, there are several noteworthy occurrences in the self-reporting measures from the children of the intervention group.

For the intervention participants, the averaged OLS trajectories demonstrate near linear rates of positive change in both the self-esteem measure (S-ES) displayed in Figure 6 and the self-motivation measure (SMI-C9) in Figure 8. The self-efficacy measure (SEQ-C) demonstrated some minor variations in terms of the rate of positive change, noted on the academic (A) and emotional (E) subscales (refer Figures 10 and 14). The steepness of growth for a minority of the intervention subjects, who began with higher than average initial start points in the measure, demonstrated a slower rate of positive change over time. The Prosocial Behaviour Scale (PBS) illustrated the slowest rate of initial growth, over time points 1-3, of all the self reporting measures surveyed in the current study for the intervention group (Figure 16). Further, a marked increased in the rate of positive change is noted from time point five to study conclusion at time point six.

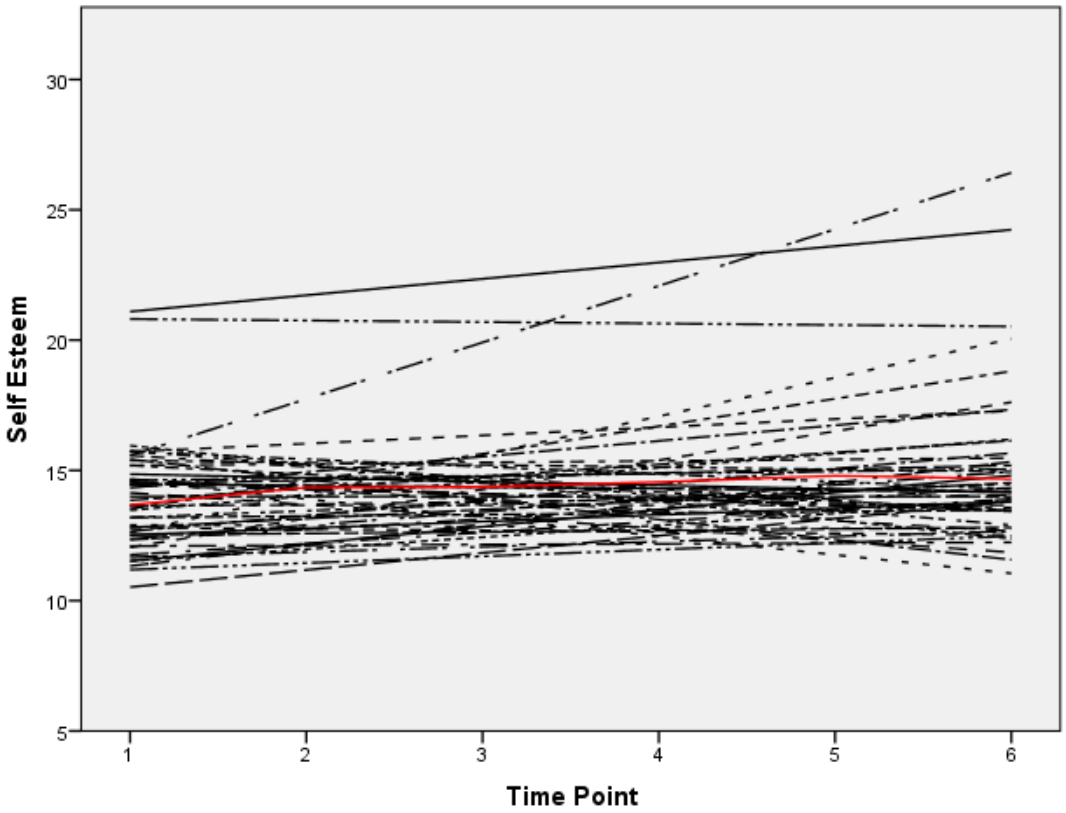


Figure 5: Control OLS trajectories for the S-ES measure.

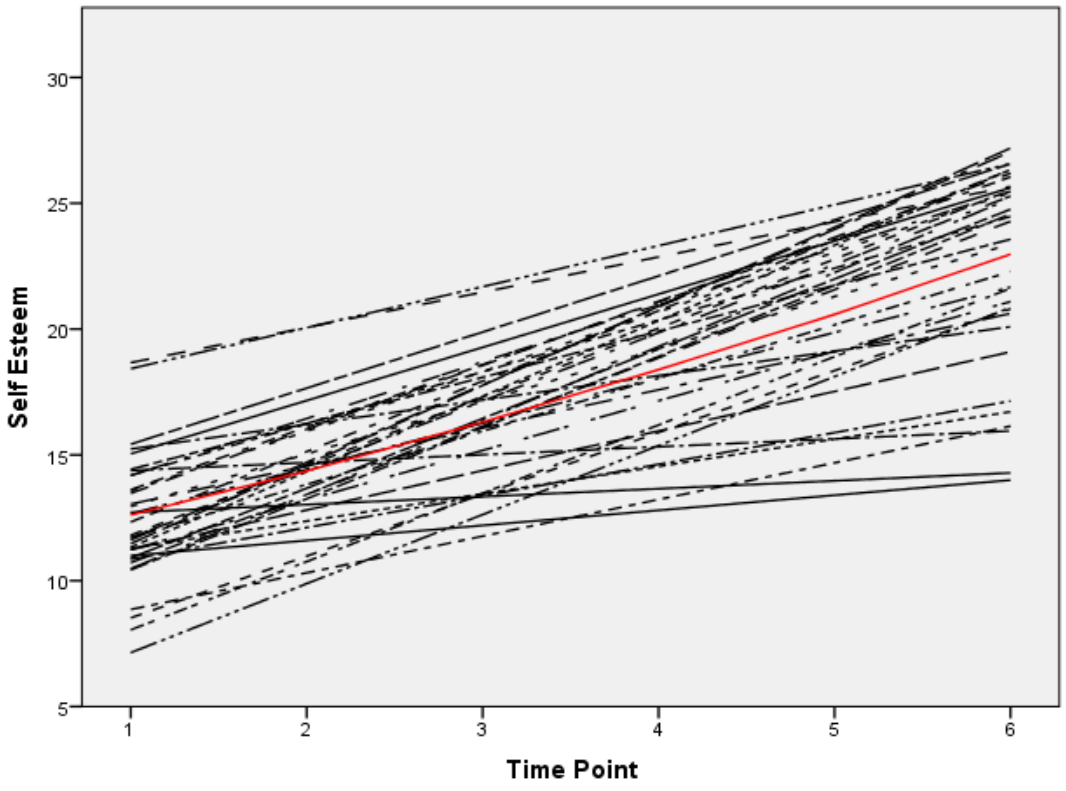


Figure 6: Intervention OLS trajectories for the S-ES measure.

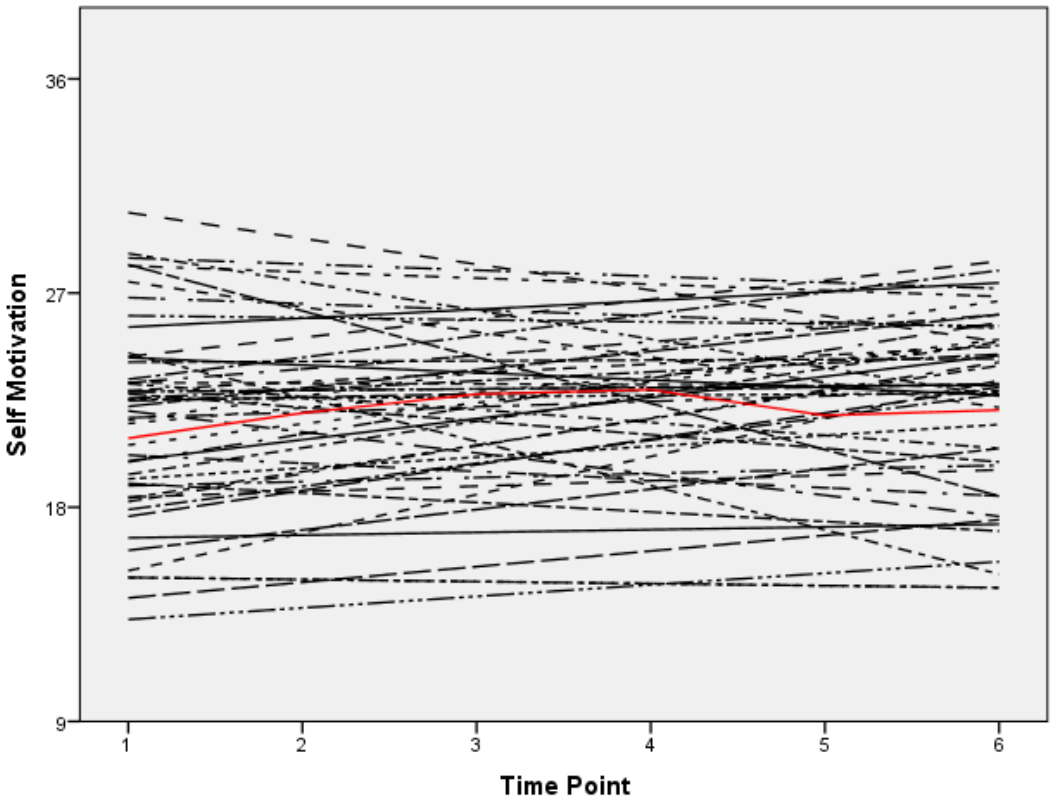


Figure 7: Control OLS trajectories for the SMI-C9 measure.

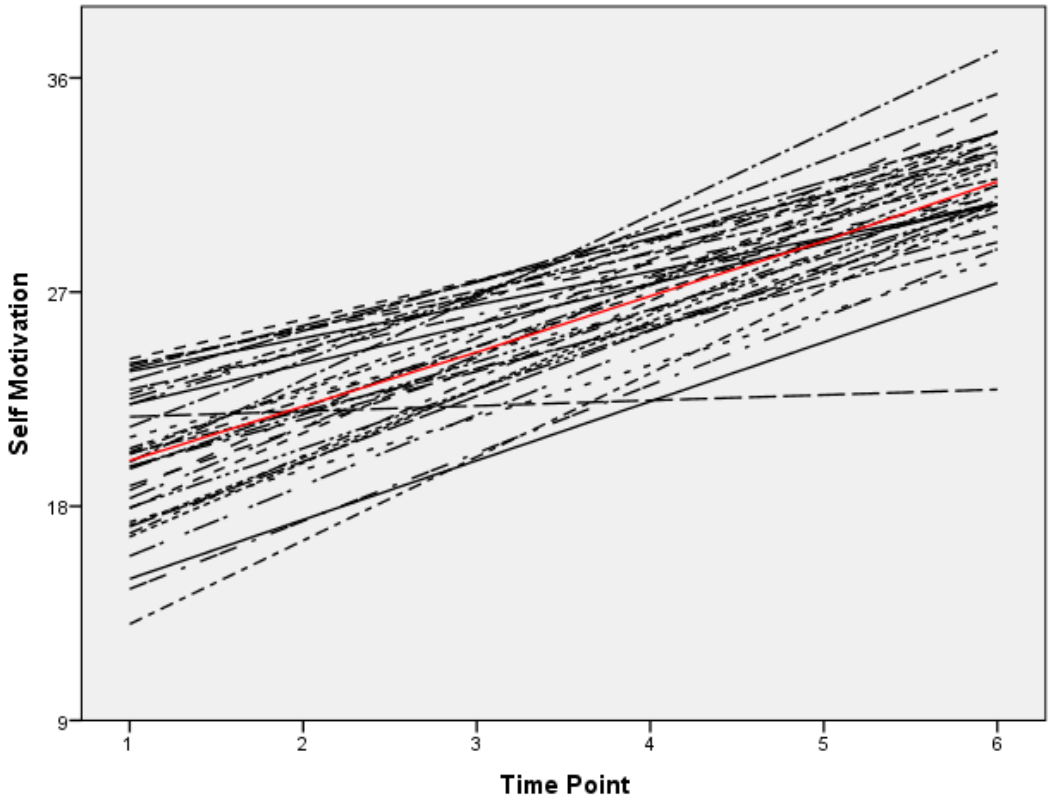


Figure 8: Intervention OLS trajectories for the SMI-C9 measure.

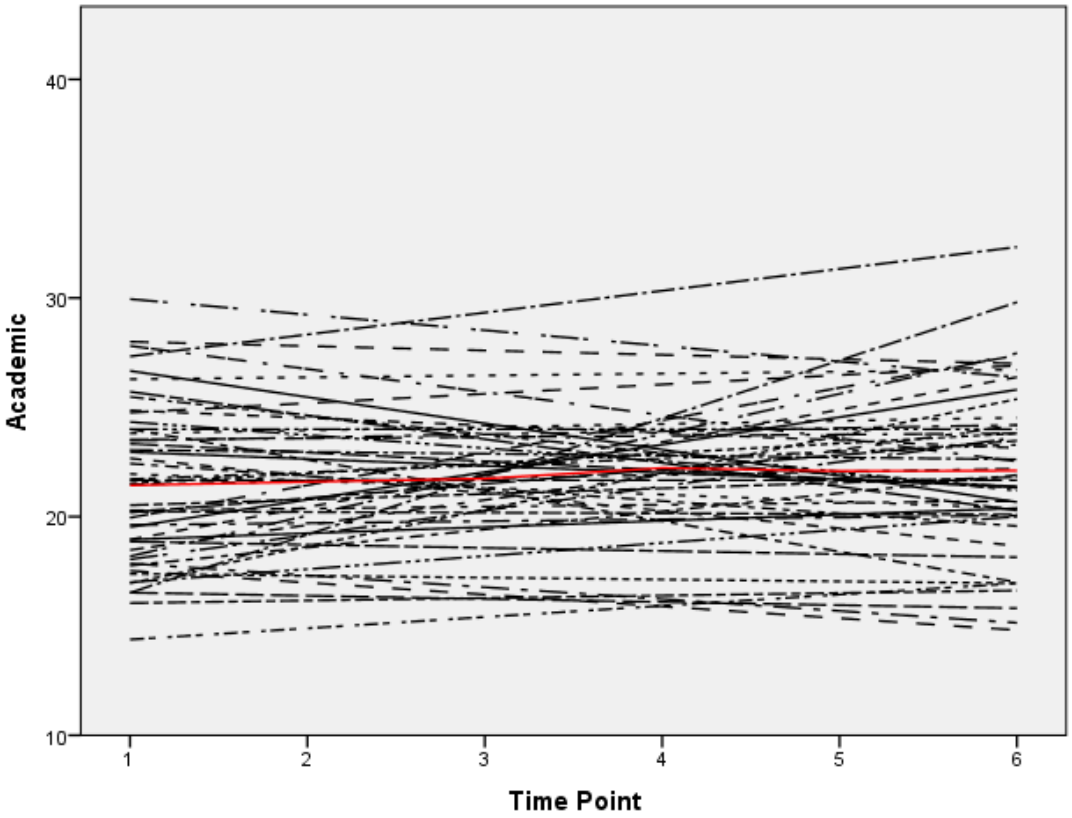


Figure 9: Control OLS trajectories for the SEQ-C (A subscale) measure.

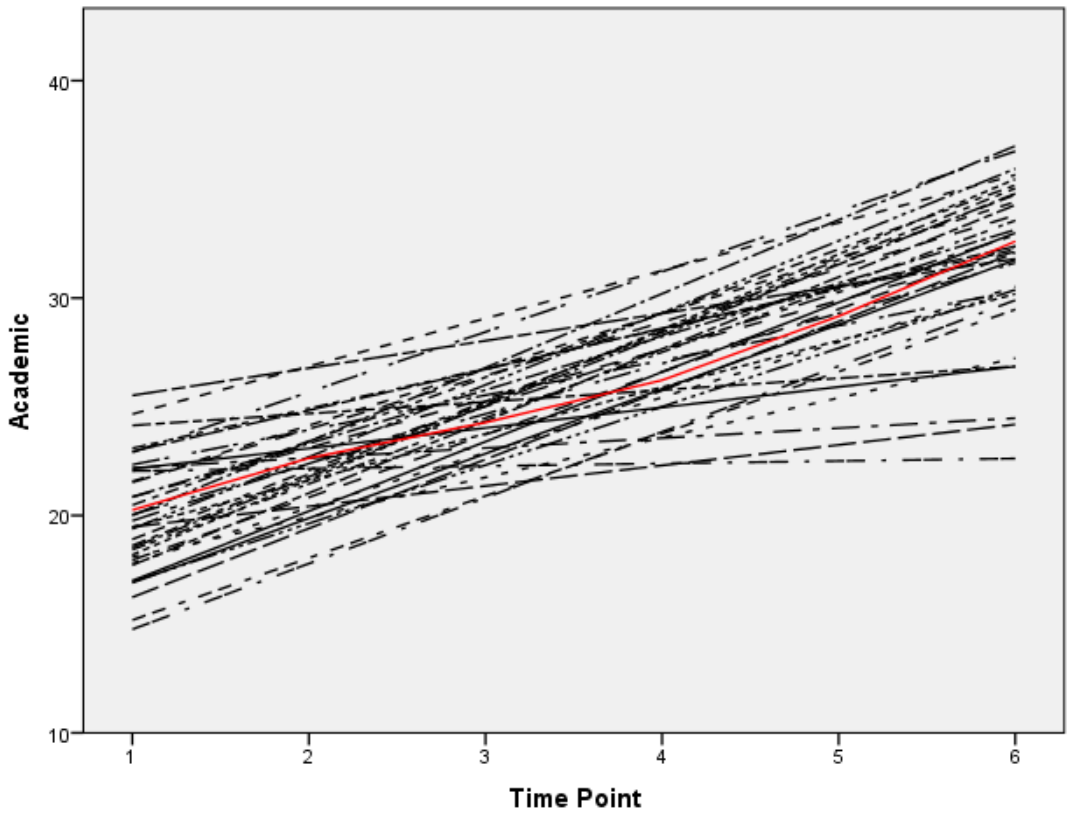


Figure 10: Intervention OLS trajectories for the SEQ-C (A subscale) measure.

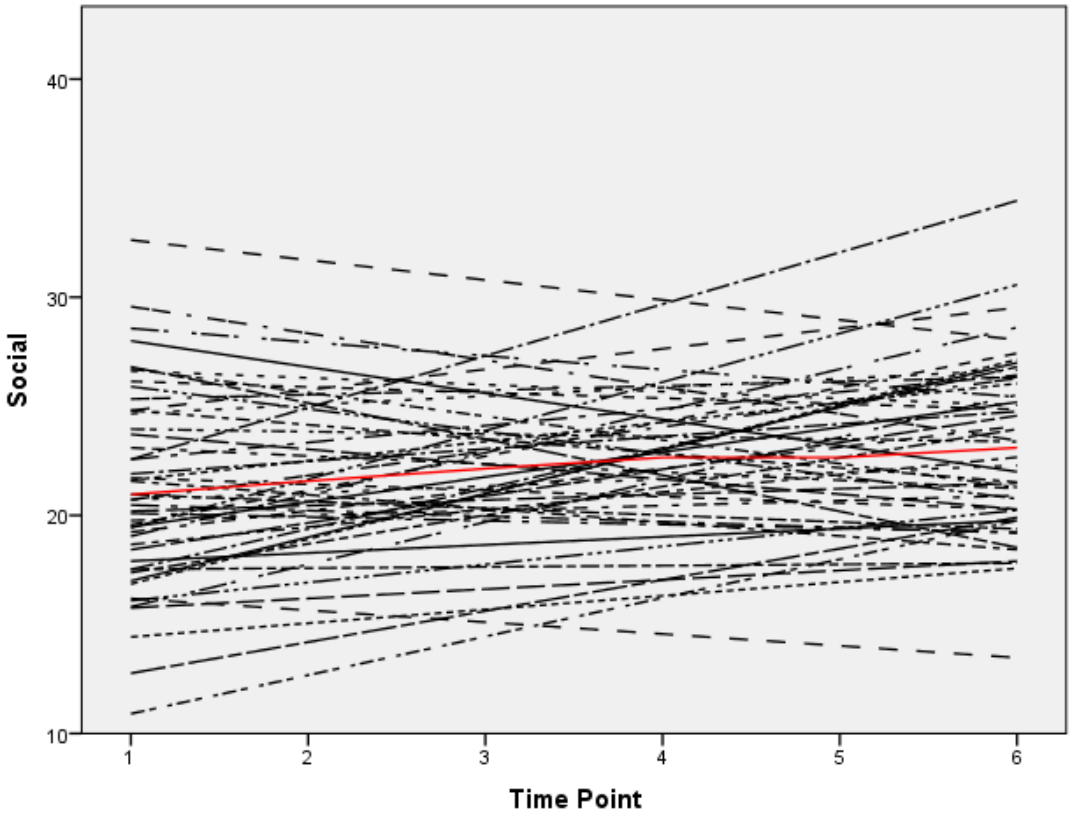


Figure 11: Control OLS trajectories for the SEQ-C (S subscale) measure.

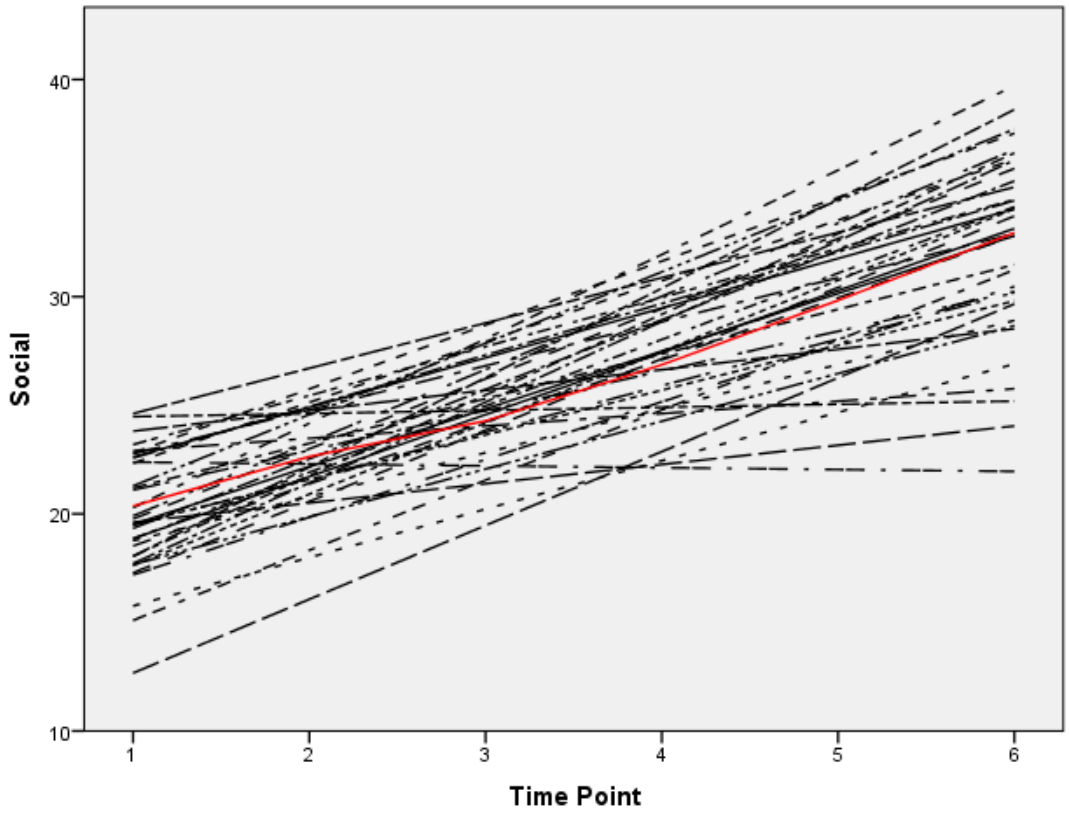


Figure 12: Intervention OLS trajectories for the SEQ-C (S subscale) measure.

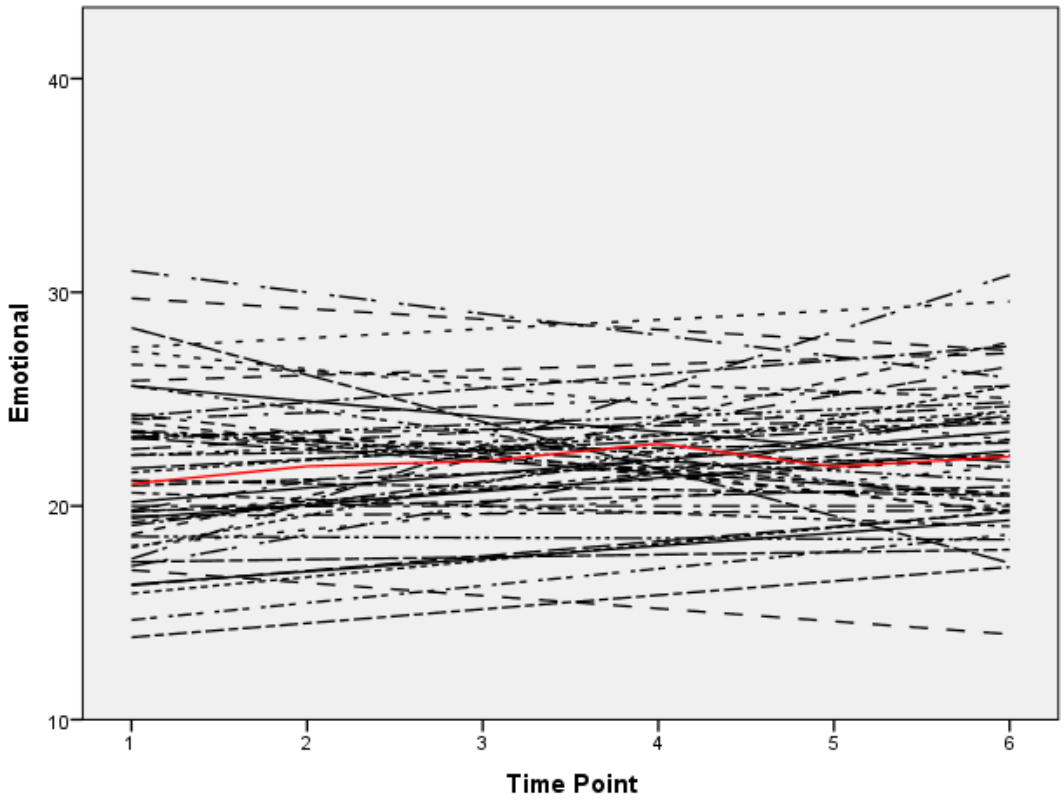


Figure 13: Control OLS trajectories for the SEQ-C (E subscale) measure.

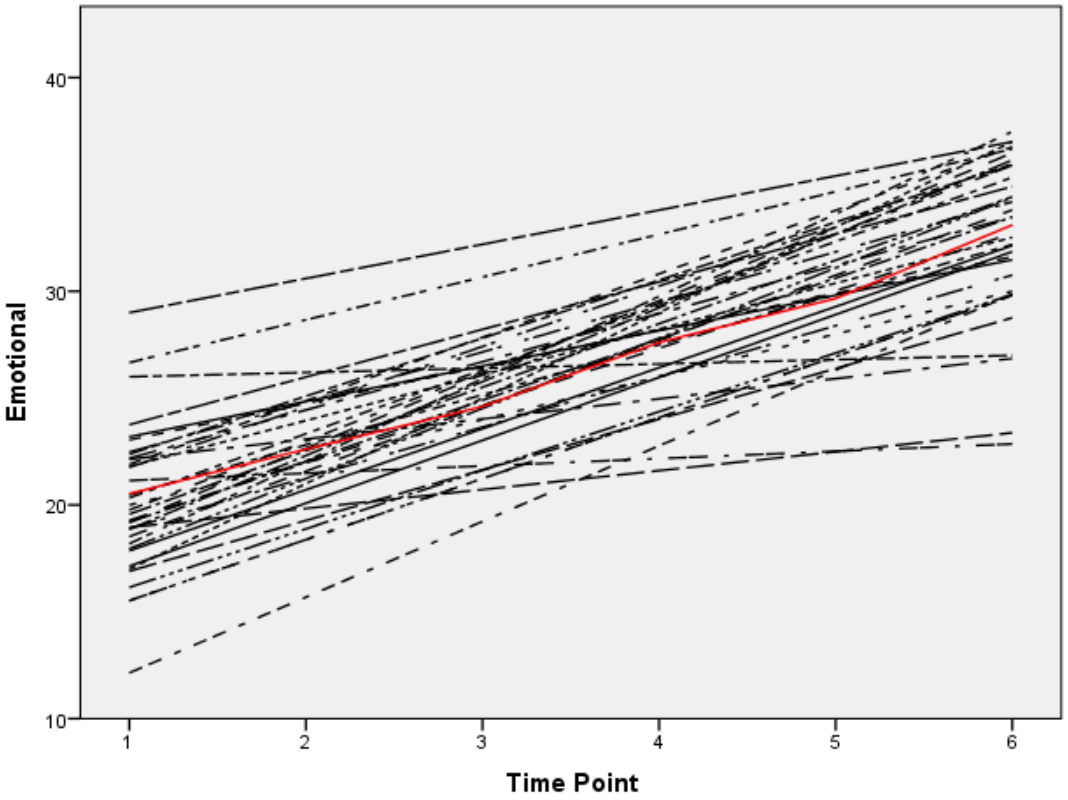


Figure 14: Intervention OLS trajectories for the SEQ-C (E subscale) measure.

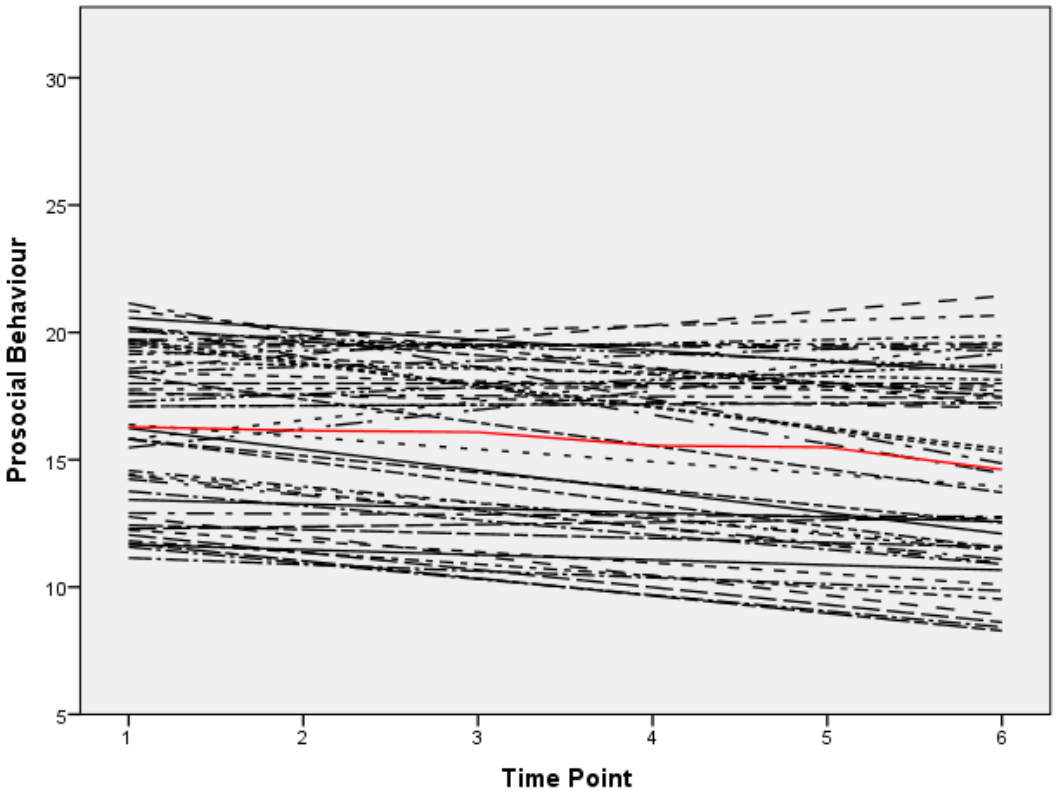


Figure 15: Control OLS trajectories for the PBS measure.

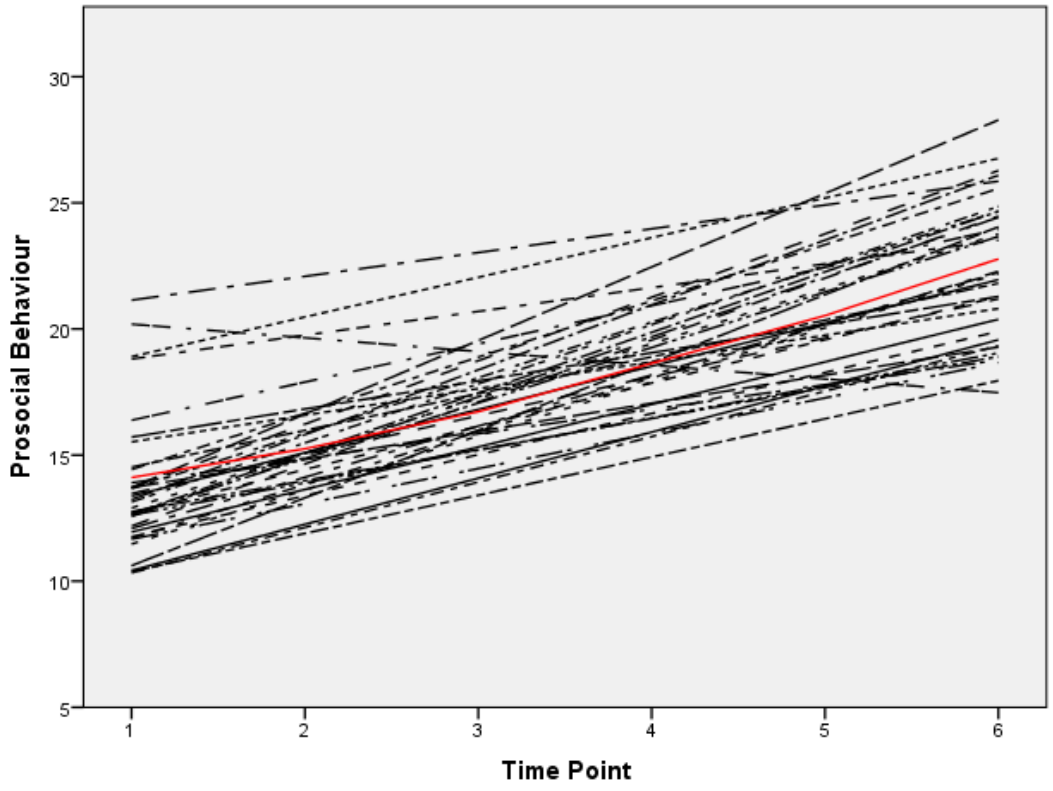


Figure 16: Intervention OLS trajectories for the PBS measure.

Overview of the child measures

To summarise, the following two graphs illustrate the standardised mean OLS trajectories for each child measure completed in the current study. Each measure's trajectory line respectively demonstrates the standardised average rate of change over time in Figure 17 for the control group and Figure 18 for the intervention group. For reference, the measures are denoted as S-ES (Self-Esteem Scale), SMI-C9 (Self-Motivation Inventory), SEQ-C(A) (Self-Efficacy Questionnaire, academic subscale), SEQ-C(S) (Self-Efficacy Questionnaire, social subscale), SEQ-C(E) (Self-Efficacy Questionnaire, emotional subscale), and PBS (Prosocial Behaviour Scale).

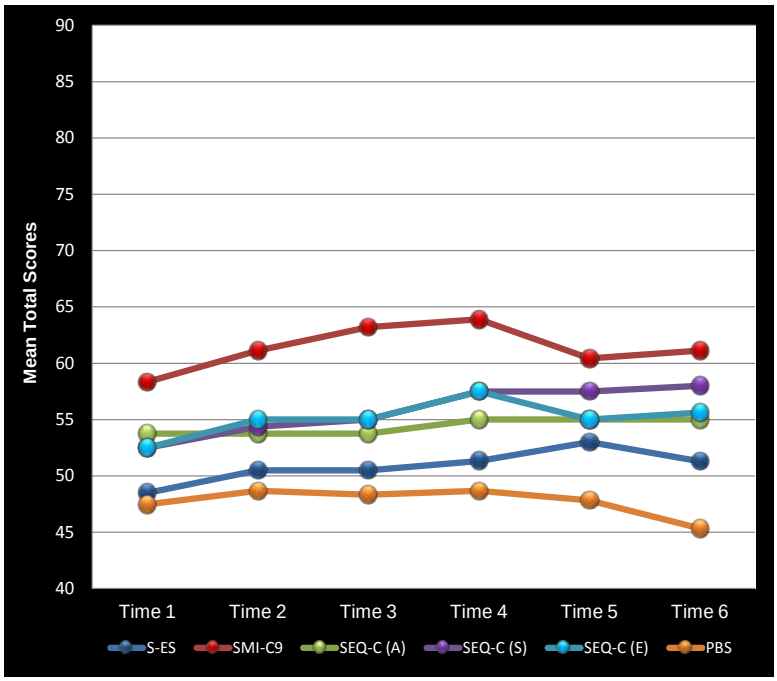


Figure 17: Standardised OLS mean trajectories by measure - Control group.

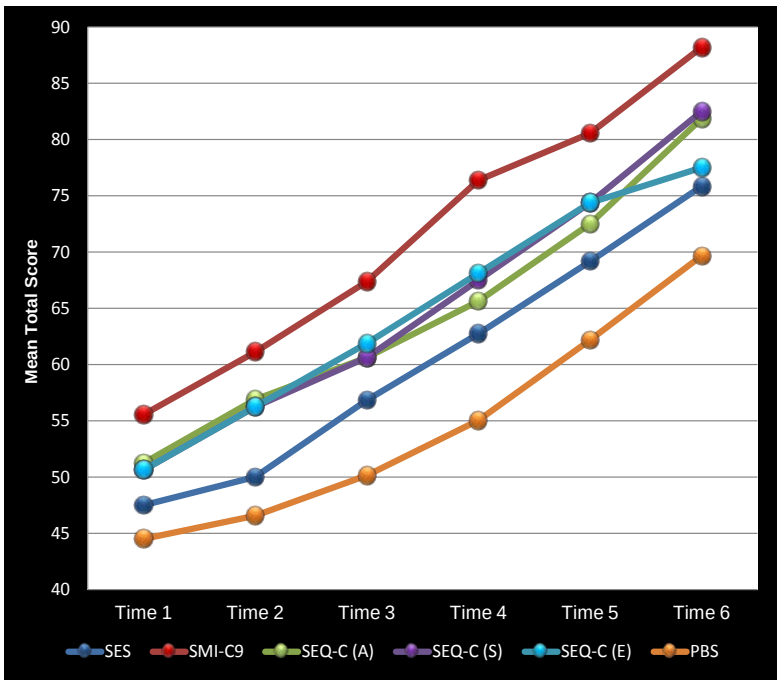


Figure 18: Standardised OLS mean trajectories by measure - Intervention group.

Differences between the intervention and control sample are visibly perceptible when comparing Figures 17 and 18. Of the measures sampled, the participants in the control group had no remarkable variation in the rate of positive change across these measures during the current study. When comparing initial start points with time six in isolation, the majority of the measures illustrate a sustained averaged trajectory line (Figure 17). There are notable exceptions illustrated over the time points however. The Self-Motivation Inventory (SMI-C9) demonstrated an initial gradual increase in the measure to point four before declining back at point five. The social Self-Efficacy Questionnaire subscale (SEQ-C(S)) demonstrated an averaged minor

increase over the current study. Finally, the Positive Behavior Scale (PBS) demonstrated a continued decline for the control participants over the same period of time.

The results for the intervention group are outstanding for all the child measures surveyed (Figure 18). Having previously demonstrated empirical equivalence at commencement, the results for the intervention group demonstrate reliable and considerable rates of positive change across all sampled measures at every time point. These standardised results for the intervention sample illustrate increased and improved responding by the child participants throughout the current study. Further analysis of the interaction of the measures between the groups was warranted.

Assessing the variance from the Positive Behavior Scale - parent and teacher measure

The second section here explores the results from the Positive Behavior Scale (Polit, 1998), completed by the teachers and parents of the participants in each group. The Positive Behavior Scale is comprised of three subscales. The subscales are social competence (SC), autonomy (A), and compliance (C). Two versions of the Positive Behavior Scale are used, one version for teachers and the second for parents. For the ease of reference, these two versions of the Positive Behavior Scale are denoted as PBS(T) for the teacher version and PBS(P) for the parent version. The results gained from both versions of this measure were hypothesised to show progressive positive change across all subscales in the intervention group. In comparison, results from the control group were expected to show consistent scores or possible minimal positive change due to maturation over the course of the current study.

The degree of empirical similarity at study commencement between the parent and teacher groups was an important feature to have substantiated. It has been achieved by determining and comparing the initial trajectory points for the parents and teachers across the subscales of the Positive Behavior Scale. An examination of initial equivalence between the two groups, and the degree of variance in the Positive Behavior Scale is now demonstrated here, beginning with results from the teacher version followed by the parent version. For ease of visual comparison, the figures presented in this section illustrate the result from the control group first followed by the intervention group for each subscale of the Positive Behavior Scale.

Assessment of the Positive Behavior Scale by teachers (PBS (T))

The measure was completed by the same classroom *teacher* for every participant of their respective class for each of the six test administrations. The mean score for each subscale, social competence (SC), autonomy (A), and compliance (C), is represented by the single red trajectory line across the sampled time points. The initial proximity of the averaged trajectory line at time point one, in each of the subscales, demonstrates empirical similarity at study commencement for the teacher sample for both groups (Figures 19 - 30).

Results from the control group on the teachers measure

For the assessment of the control group by their teacher, ordinary least squares trajectories for the control group are illustrated for the subscales of social competence (Figure 19), autonomy (Figure 21), and compliance (Figure 23). Minor changes in the average trajectories of the subscales are noted. Each subscale

demonstrates a wide variety of trajectories for the participants whom indicate a range of postive and negative growth rates. In comparing the average trajectory lines from study commencement to the final test administration however, the level in each subscale was similar for the control group from the perspective of their class teacher in the present study.

Results from the intervention group on the teachers measure

For comparison, the assessment of the intervention group by ordinary least squares trajectories is presented for the subscales of social competence (Figure 20), autonomy (Figure 22), and compliance (Figure 24). The participants in the intervention group experienced consistent and significant positive change over the course of the study, as illustrated in these subscales, from the perspective of their class teacher. An initial visual assessment of these subscales illustrates a narrower range of trajectories across the course of the current study when compared to the matching subscales of the control group (Figures 19, 21, and 23).

There are no notable individual distinctions between the subscales over the first three time points. Each subscale illustrates a similar pattern of sustained positive change in the participants. A notable increase in rate of positive change from time point four onwards, from the point of view of the participants' class teacher, is observed in the social competence and autonomy subscales (Figures 20 and 22). The averaged trajectory for the compliance subscale illustrates a marked improvement earlier, from time two, in the intervention participants (Figure 24).

Assessment of the Positive Behavior Scale by parents (PBS (P))

The Positive Behavior Scale(P) was completed by the *parents* of the participants. It is identical to the teacher version, with phrasing altered for the parent perspective, and it has the same set of three subscales. As with the teacher version, the three subscales are social competence (SC), autonomy (A), and compliance (C). The Positive Behavior Scale(P) was completed by the same dedicated parent of each respective child participant at each administration throughout the study.

Near equivalent starting points at study implementation on each subscale are demonstrated in the results for the parents of both the control and intervention groups. Referring to the average single red trajectory lines, the lines in each subscale illustrate empirical similarity between the parents of the control and intervention groups at study commencement (Figures 25 - 30).

Results from the control group on the parents measure

The results from the parents of the control group participants are presented as ordinary least squares trajectories illustrating the social competence (Figure 25), autonomy (Figure 27), and compliance (Figure 29) subscales. In comparing respective initial points with final points on each subscale, the parents perspective demonstrates an average sustained result across the course of the current study without major improvement in the control participants.

Similarly to the teachers of the control group, the parent trajectories display an average result sustained over the course of the current study for the participants.

The averaged trajectory lines do manifest minor fluctuations in the subscales, however, they are not meaningful to the final outcome. The subscales also highlight a similar range of individual trajectories noted in the teacher subscales (Figures 19, 21, and 23).

Results from the intervention group on the parents measure

The results of the Positive Behavior Scale from the parents' perspective of their respective children are presented using ordinary least squares trajectories and are illustrated using the same subscales. Similarly to the teachers results for the intervention group, social competence (Figure 26), autonomy (Figure 28), and compliance (Figure 30) subscales each demonstrate a narrower range of individual trajectory lines when compared to the parents of the control group (Figures 25, 27, and 29), both at study commencement through to study conclusion. In addition, the start points of the averaged trajectories (single red line) are similar for both the parent (Figures 26, 28, and 30) and teacher assessments (Figures 20, 22, and 24) of the intervention group demonstrating empirical equivalence.

Across each of the subscales, rates of increased positive growth are reported by the parents of the intervention participants over the course of the current study. Similarly to the teacher results for the intervention group, the social competence and autonomy subscales display a marked escalation in the averaged trajectory line from time point 4. The compliance subscale also demonstrates a similar rate of increase, although earlier from time point 3. For both the parent and teacher perspective, the compliance subscale accelerated first during the current study. Also, both the parent

and teacher groups report a similar range of individual change trajectories, each being positive, across each of the subscales.

Variety of trajectories from the Positive Behavior Scale

It was consistently demonstrated in the results from the Positive Behavior Scale completed by the teachers and parents that a wide range of individual trajectories were presented in the control sample. In comparison, the intervention group results display a narrower range and variety of trajectories. A visual observation may suggest that both parents and teachers of one group of participants were aware of the current study to the point of demonstrating some form of response bias. However, the control and intervention groups were not numerically equivalent in terms of the number of participants in each group. By equating the two groups numerically, potentially removing 13 individuals from the control trajectories, it would quieten some of the noise in the control data and visually improve the appearance of the grouped trajectories. However, the initial status of the averaged trajectory for both groups, across each of the subscales, is near equivalent at study outset. The rate, and degree, of change demonstrated in both groups from the average initial status onwards does differ between the two groups *during* the course of the current study, not at study outset.

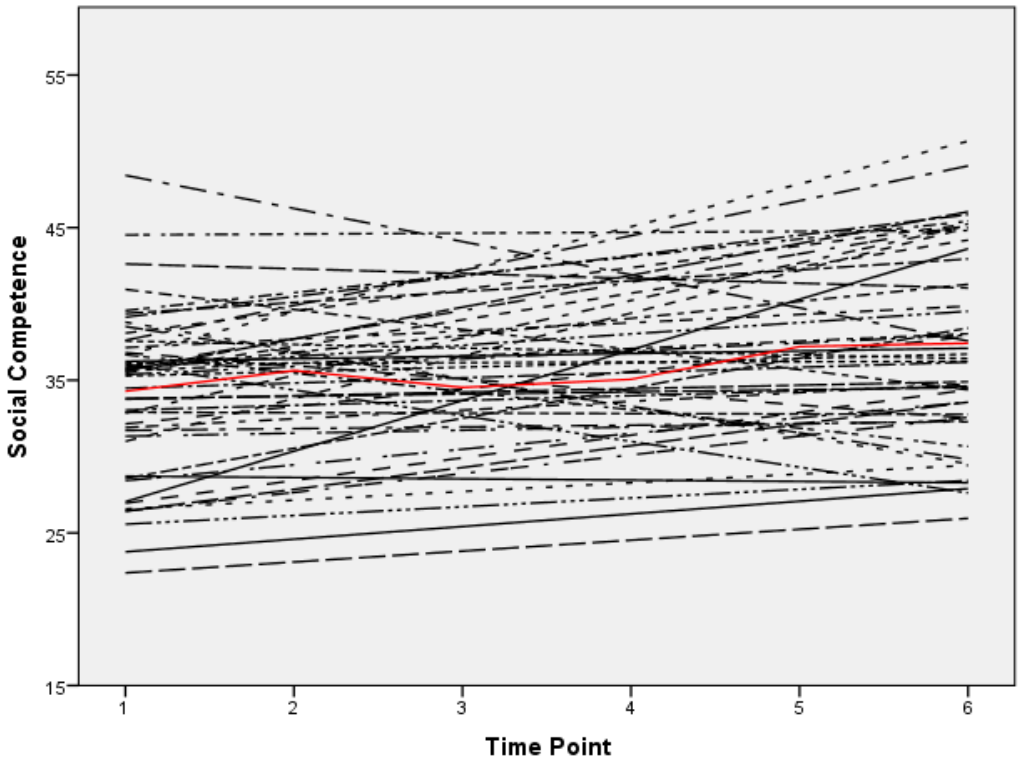


Figure 19: Control OLS trajectories for the Positive Behavior Scale (T) (subscale SC).

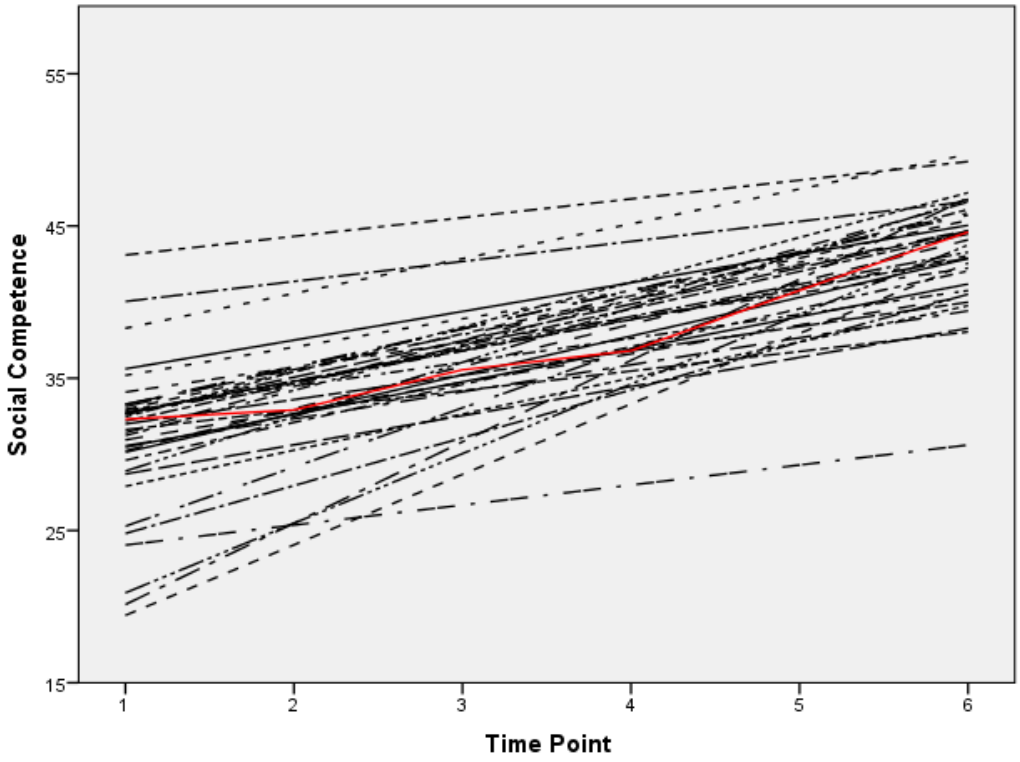


Figure 20: Intervention OLS trajectories for the Positive Behavior Scale (T) (subscale SC).

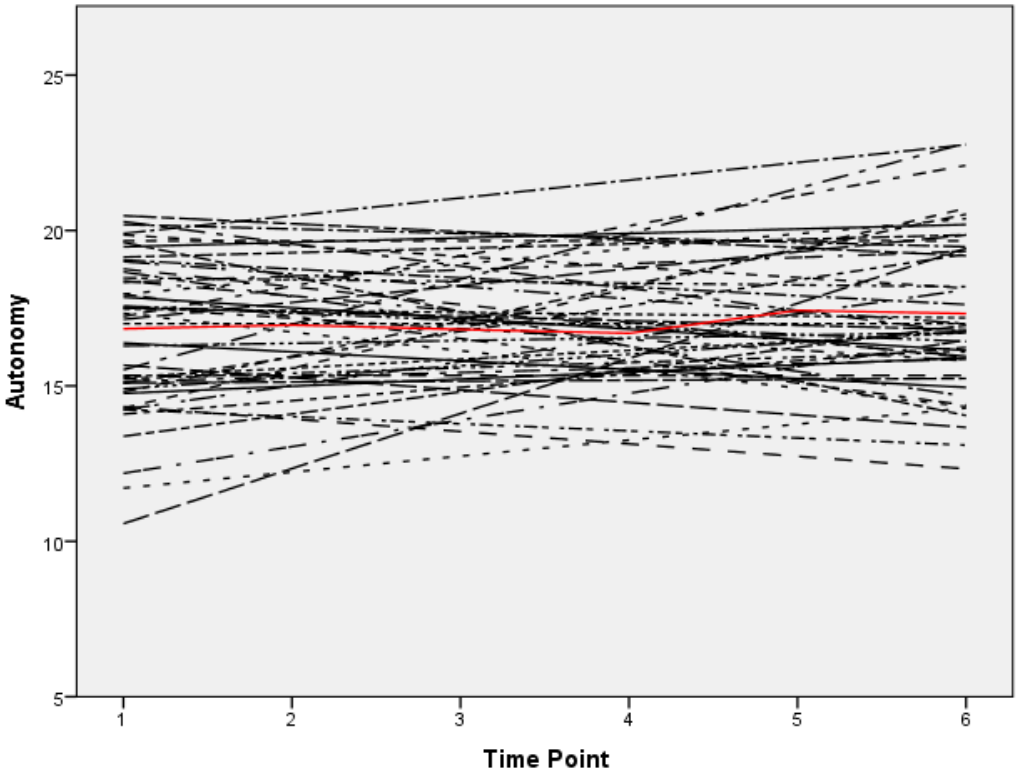


Figure 21: Control OLS trajectories for the Positive Behavior Scale (T) (subscale A).

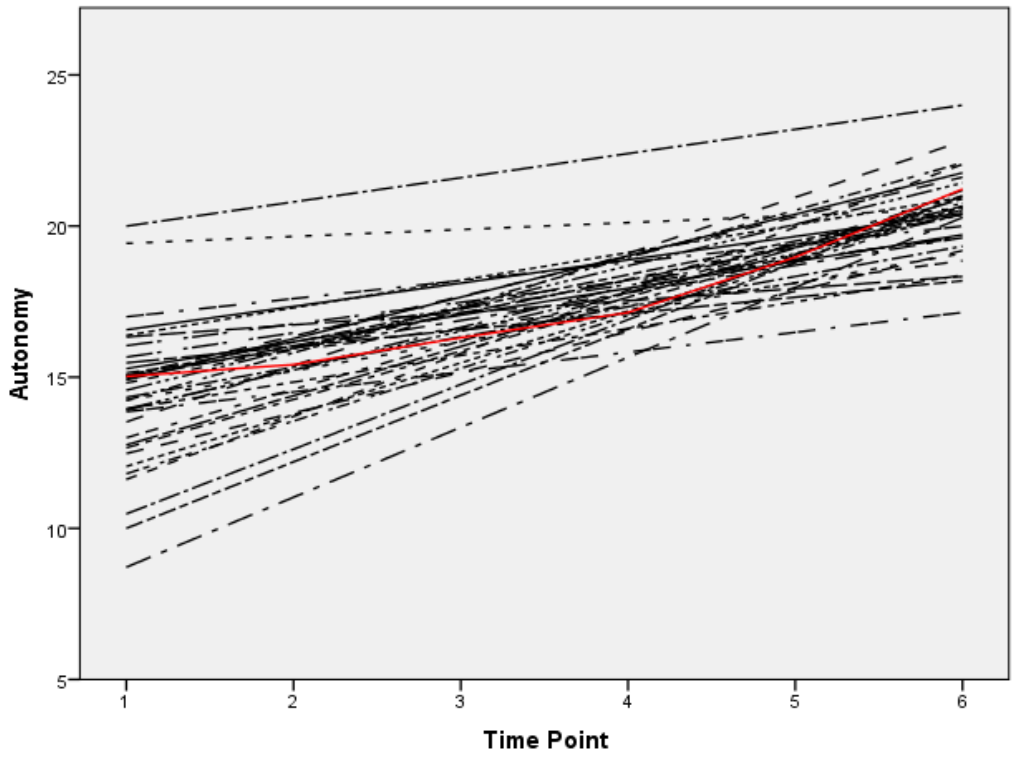


Figure 22: Intervention OLS trajectories for the Positive Behavior Scale (T) (subscale A).

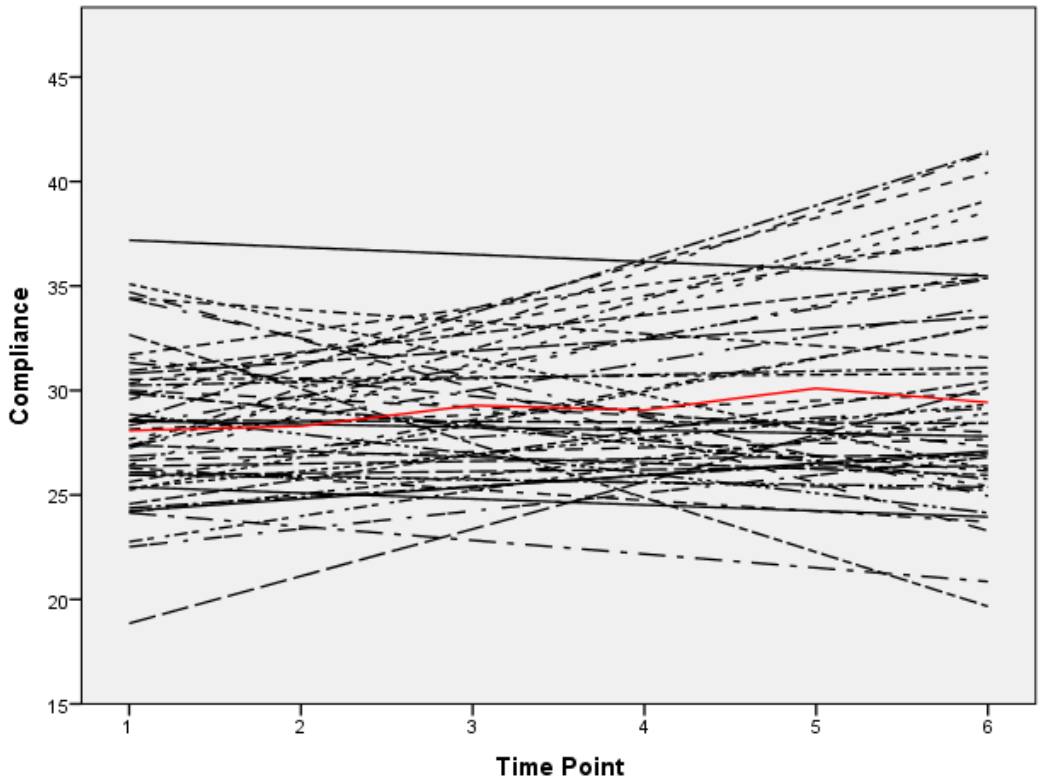


Figure 23: Control OLS trajectories for the Positive Behavior Scale (T) (subscale C).

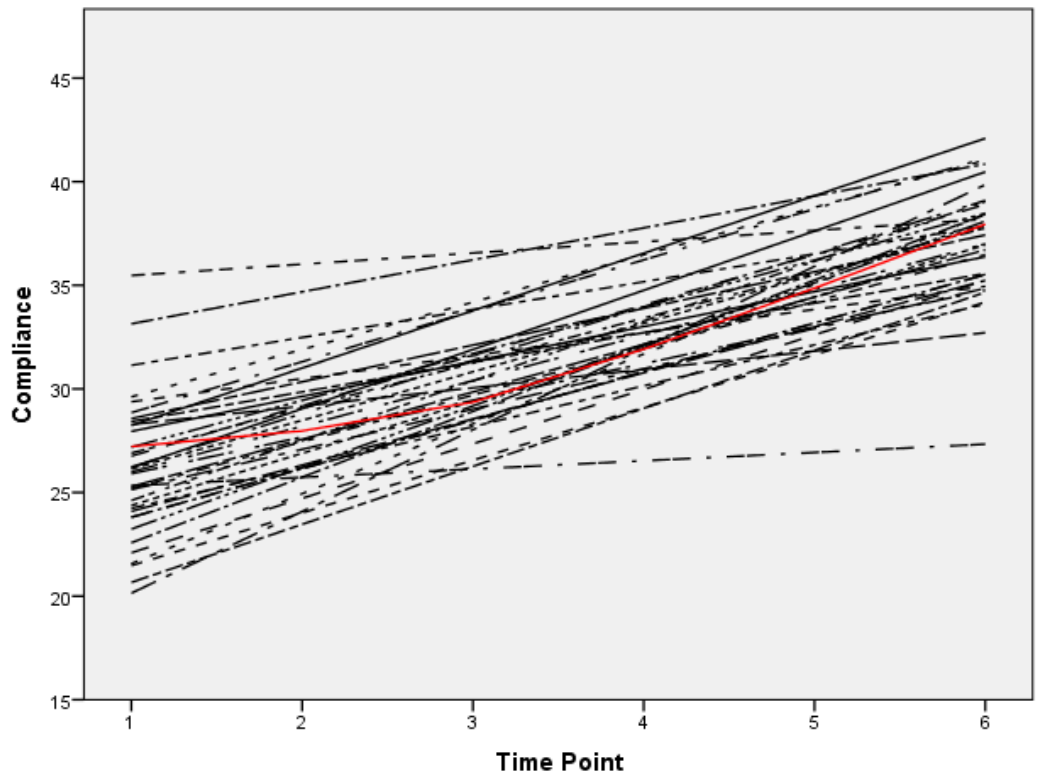


Figure 24: Intervention OLS trajectories for the Positive Behavior Scale (T) (subscale C).

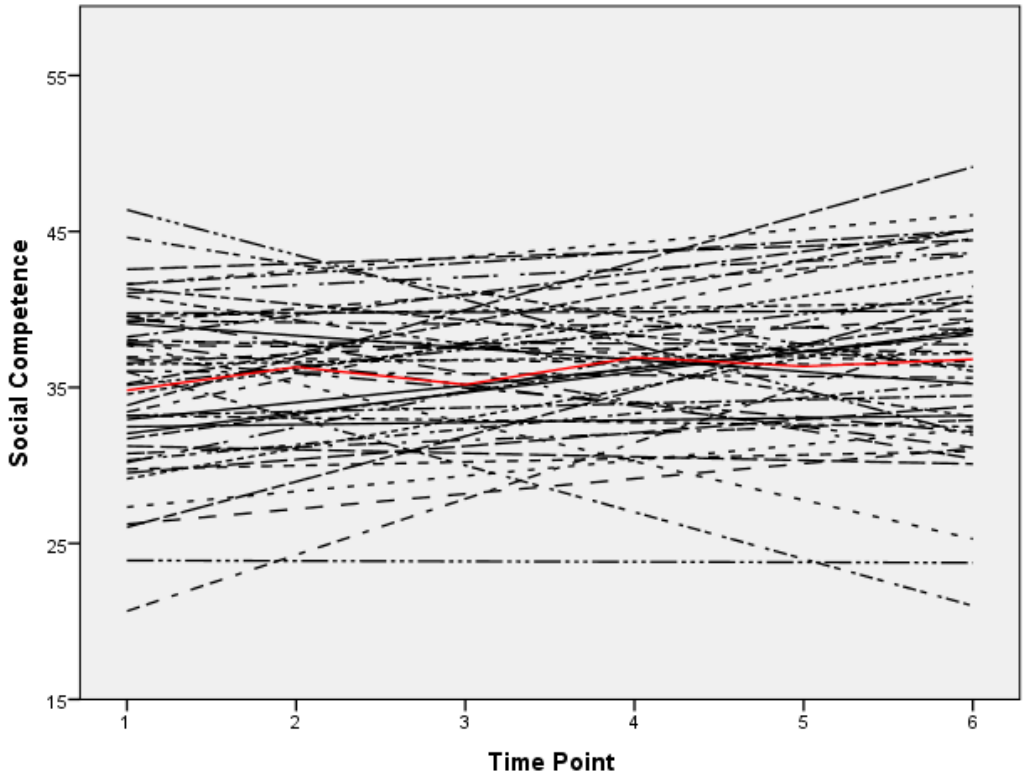


Figure 25: Control OLS trajectories for the Positive Behavior Scale (P) (subscale SC).

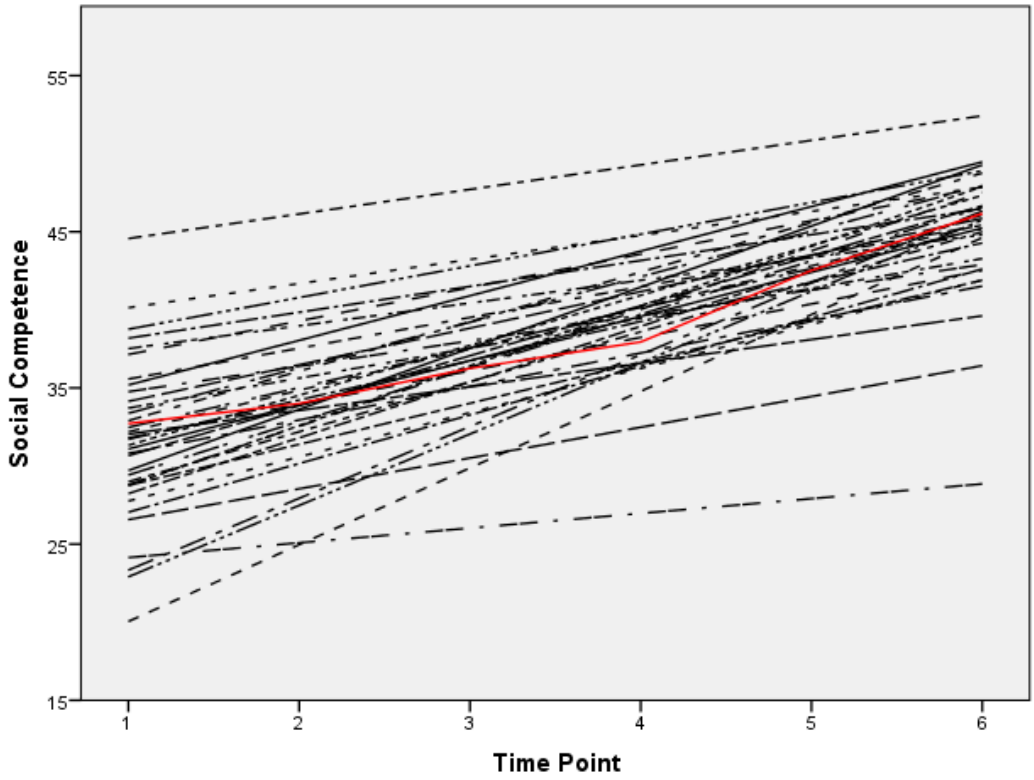


Figure 26: Intervention OLS trajectories for the Positive Behavior Scale (P) (subscale SC).

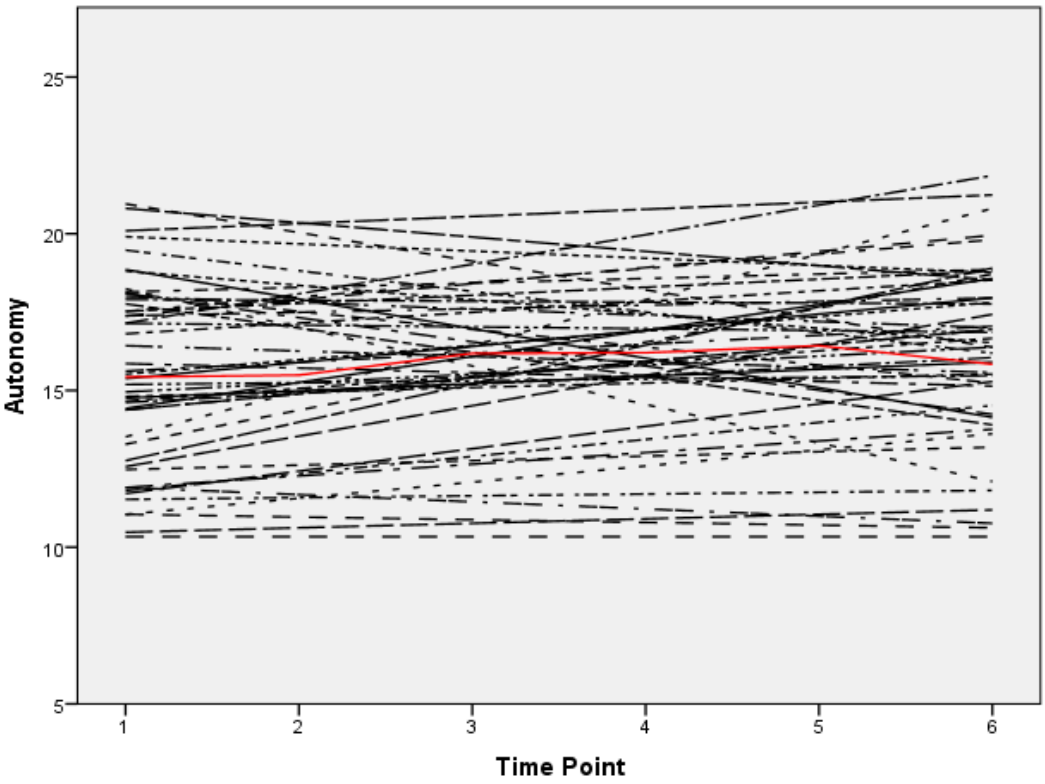


Figure 27: Control OLS trajectories for the Positive Behavior Scale (P) (subscale A).

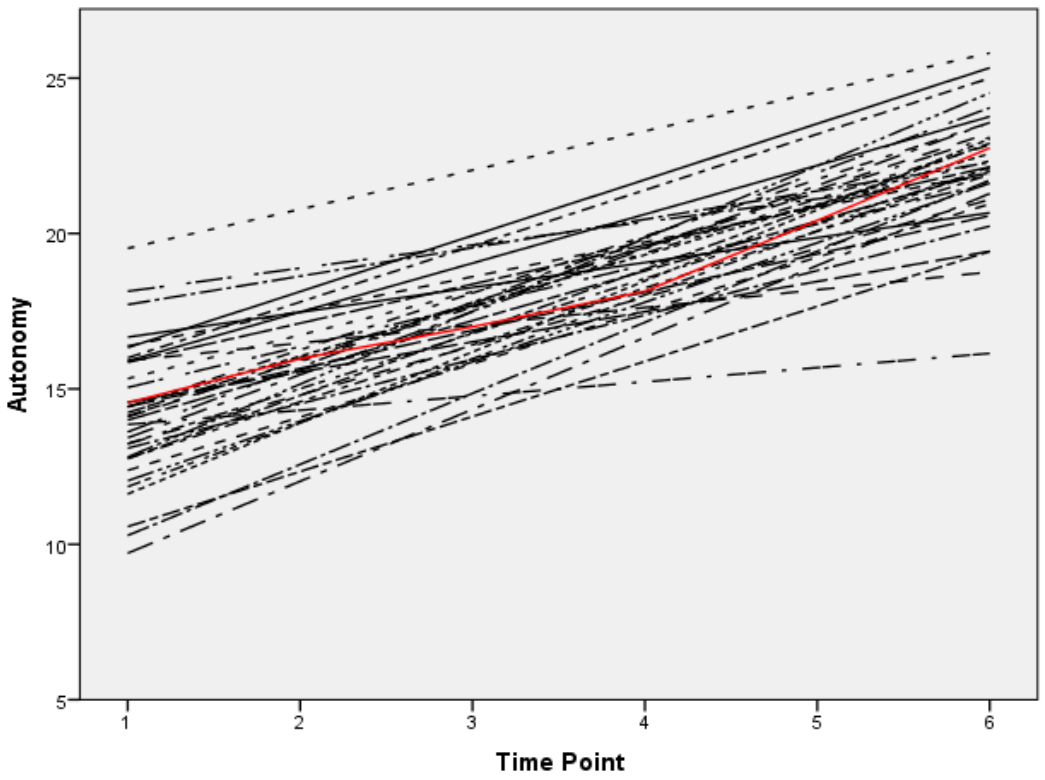


Figure 28: Intervention OLS trajectories for the Positive Behavior Scale (P) (subscale A).

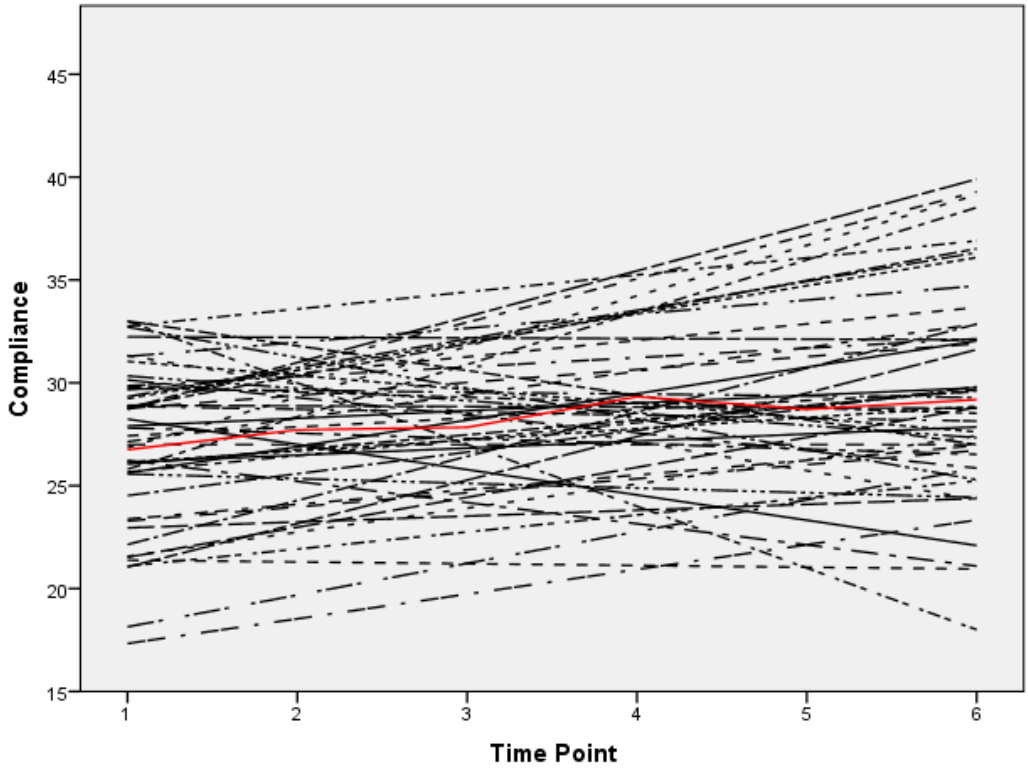


Figure 29: Control OLS trajectories for the Positive Behavior Scale (P) (subscale C).

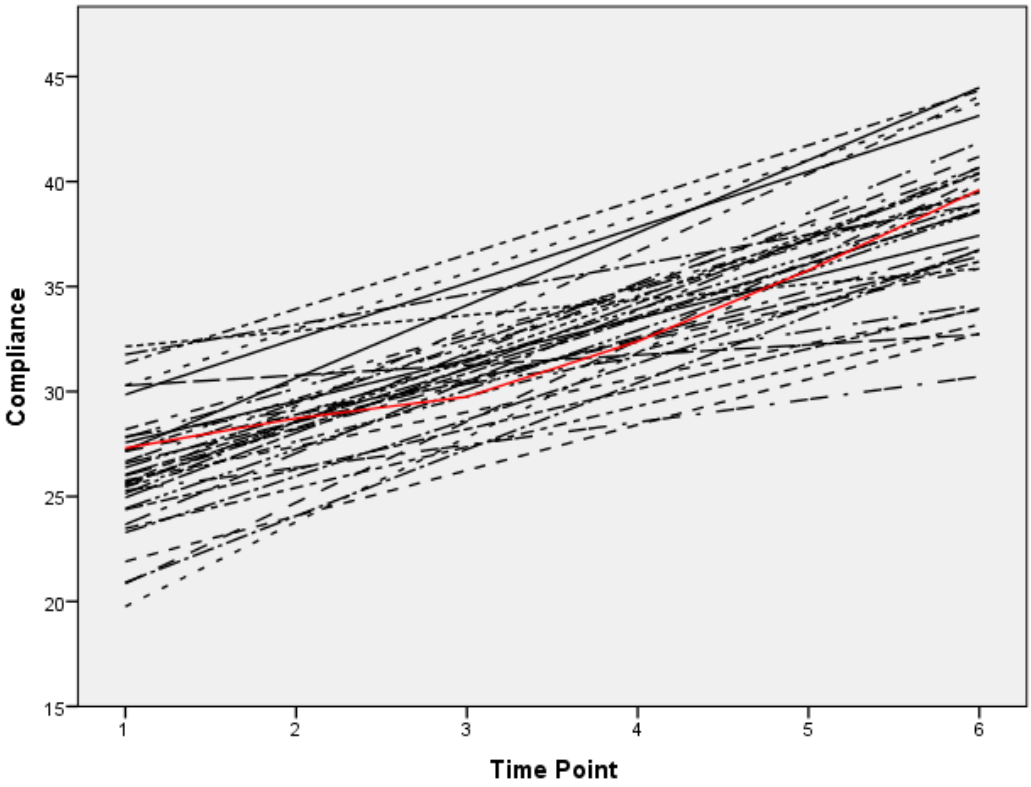


Figure 30: Intervention OLS trajectories for the Positive Behavior Scale (P) (subscale C).

Overview of the Positive Behavior Scale - parent and teacher measure

The standardised mean OLS trajectories for the Positive Behavior Scale employed in the current study are summarised in the following section. For ease of reference, the subscales of the Positive Behavior Scale (PBS) for the teacher (T) and parent (P) versions are denoted as social competence (SC), autonomy (A), and compliance (C). Each OLS trajectory line represents a subscale of the Positive Behavior Scale and respectively demonstrates the average rate of change over time for each participant group from the perspective of the participants' class teacher and parent.

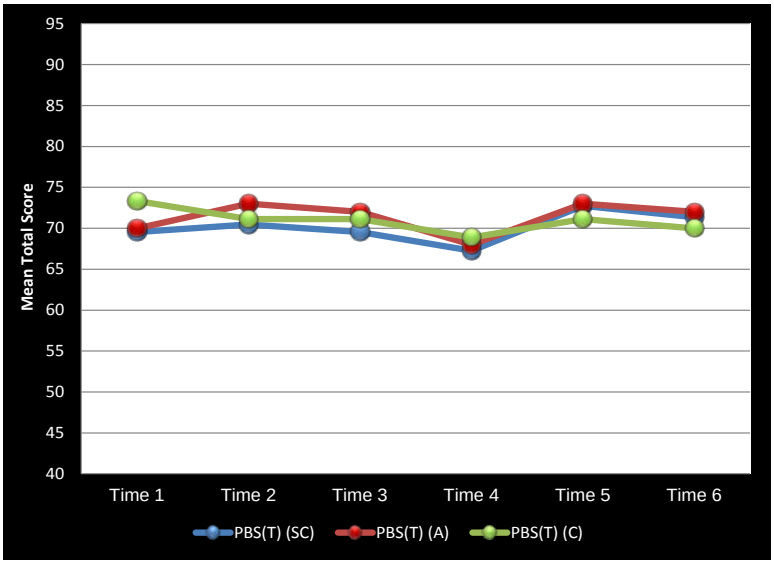


Figure 31: Teachers standardised OLS mean trajectories by subscale – Control group.

From the teacher's perspective, Figure 31 illustrates the result for the control group. The results for the control group did not improve or increase significantly on average

over the course of the current study. A visual comparison of the time point summary across of the subscales highlights near flat trajectories across the course of the current study, indicating minimal change over time for the control participants. There is one instance of decline in each of the subscales at time point four, which was not considered significant in the context of the final result for the control group. The participants of the control group demonstrated a minor increase in the social competency (SC) and autonomy (A) subscales from the teacher's perspective, but a decrease in compliance (C) over the course of the current study.

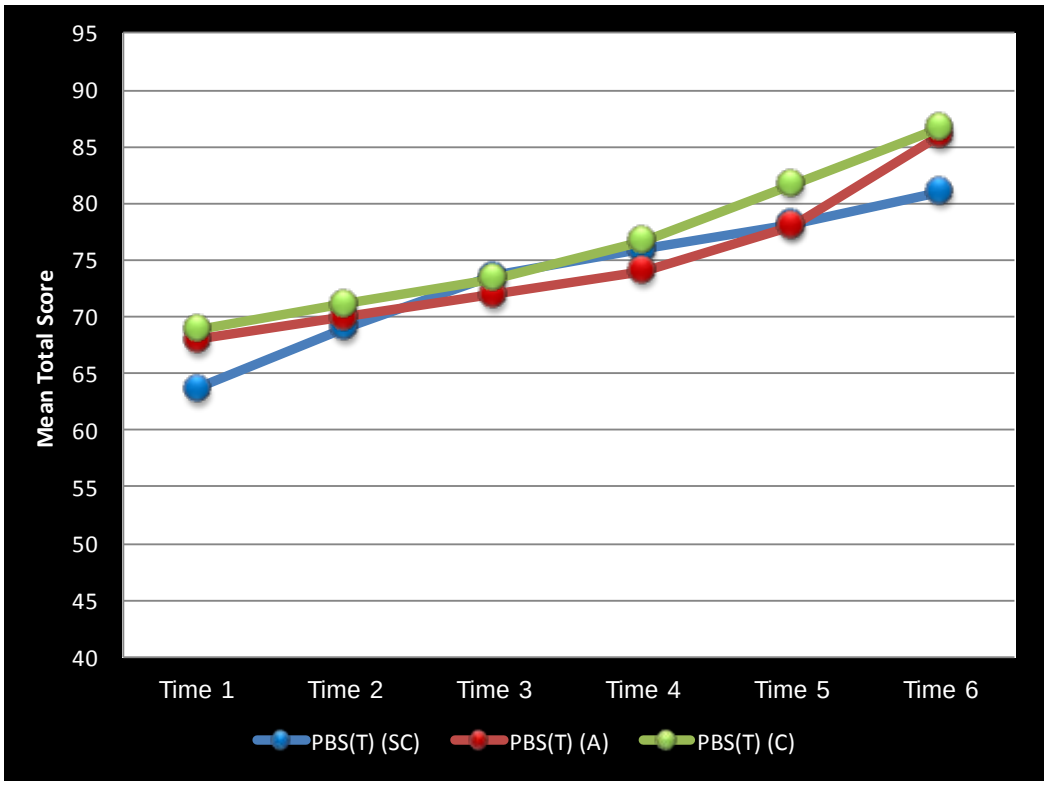


Figure 32: Teachers standardised OLS mean trajectories by subscale -Intervention group.

In comparison, the averaged result of the intervention sample increased and improved throughout the study as illustrated in Figure 32. The intervention group

participants show increasing rates of change on all subscales of the Positive Behavior Scale over the course of the study. Each of the three subscales display similar rates of change for each of the OLS trajectories for the intervention group. One final noteworthy point from the teachers of the intervention group is that each subscale demonstrates an increased rate of positive change over the period of time point three and time point four through to study conclusion.

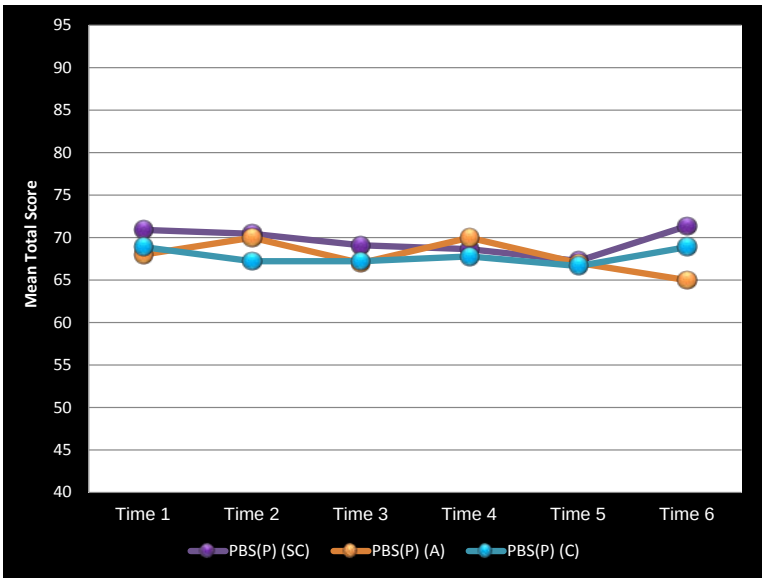


Figure 33: Parents standardised OLS mean trajectories by subscale – Control group.

From the parent's perspective, Figure 33 illustrates the result for the control group. The result for the control group demonstrates that the subscales scores do not markedly improve, on average, during the current study. A visual comparison of time

point summary scores across each of the subscales highlights near flat trajectories across the course of the current study, indicating minimal change over time for the control participants. The near flat trajectories demonstrate that the initial status of the trajectories were equivalent until time point 4. At time point 4, the subscales decline to time point 5. From time point 5 the autonomy subscale continues to decline, where as the social competence and compliance subscales return to points similar to time point one.

In comparing the standardised OLS mean trajectories from the parent's perspective, marked differences are visibly made evident when comparing the control group with the result from the intervention group illustrated in Figure 34.

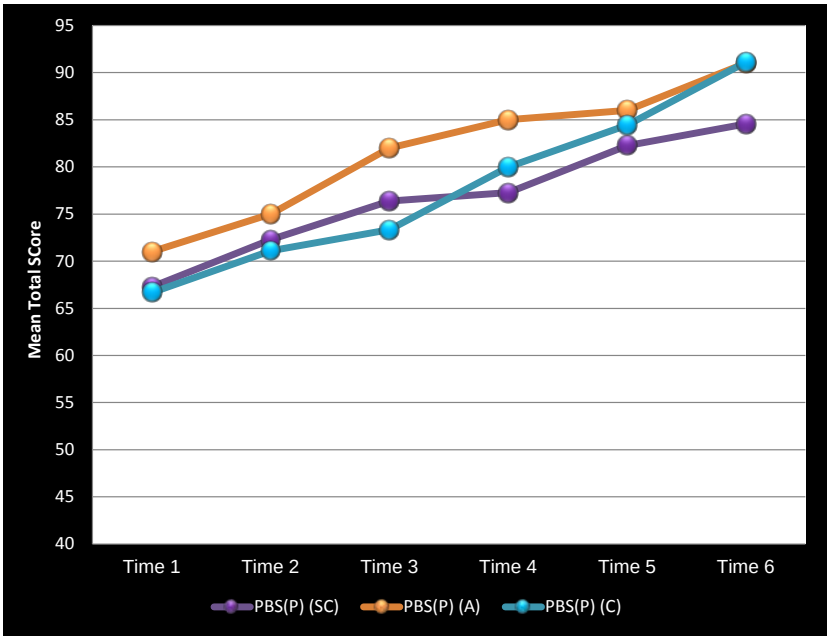


Figure 34: Parents standardised OLS mean trajectories by subscale – Intervention group.

The standardised OLS mean trajectories for the intervention group demonstrate positive change throughout the current study. A visual comparison between the control and intervention data demonstrates an observable difference in the rate of change between the two groups from the parent's perspective. The intervention group illustrates increasing averaged scores on all subscales of the Positive Behavior Scale over the course of the current study. Whilst each of the subscales demonstrate positive growth, the rate of growth was not uniform. Between each other, the subscales experienced increasing rates of positive growth at differing time points during the current study (Figure 34).

Comparisons between the teacher and parent results

In making an initial visual comparison between the parent and teacher results from the control and the intervention group, the parent and teacher results for each group are consistent over the course of the current study. The pattern and proximity of the subscale trajectories across the control and intervention groups are well fitted. Whilst minor variations in the subscale trajectories do exist, the variations are not significant to the overall outcome.

The initial status of each subscale trajectory for the teachers is similar for both groups (Figures 31 and 32). In comparing the initial status of each subscale trajectory at Time 1 for both parents and teachers, a minor variation is observed. There is a small difference in the initial status of the social competency (SC) subscale which is lower for the teachers of the intervention group compared to the other subscales, as well as being lower when compared to the control group.

The parents of the control and intervention groups illustrate near identical start points at Time 1, indicating a similar disposition in the parents in relating their observations of their respective child (Figures 33 and 34). There is a minor variation for the parents of the intervention group where the social competence (SC) and compliance (C) subscales initial status is marginally lower compared to the parents of the control group at Time 1.

Scrutinising at a closer level, a number of details emerge. In comparing the teacher's standardised trajectories from Figure 32 with those of the parent's in Figure 34, the parents of the intervention group report a marginally higher rate of scores over all the subscales than did the teachers of the intervention group. The parents and teachers for the intervention group reported growth rates in autonomy (A) and compliance (C) greater than rates of change in social competency (SC) over the course of the current study. Further, at study conclusion both the autonomy (A) and compliance (C) subscales finish at similar points from the teacher and parent perspectives of the intervention group. For the control group, the parents reported less autonomy overall of their respective child than did the teachers of the same group at study completion (Figures 33 and 31 respectively). In addition, the teachers of the control group reported a minor decline in compliance in their students in the current study.

When comparing the Positive Behavior Scale (PBS) standardised results from adults overall, the teachers and parents for the intervention group indicated positive change over time across all three subscales for the participants (Figures 32 and 34). The teachers and parents of the control group did not report any significant increase in any of the subscales of the measure over the course of the current study (Figures 31 and 33).

Preliminary correlation analysis of all measures in the current study

The results presented thus far illustrate variation over time in the intervention group. In comparison, the control group demonstrate a maintained average result over the course of this study. Given that some variance exists in the intervention sample, the investigation of possible predictors is warranted. If indicative predictors were included in the analysis, the degree of variability in the data may be abridged conclusively. To determine which parameters may be included, a complete correlation analysis was carried out.

As a linear model was suitable for the data, a regression analysis using the ordinary least squares (OLS) estimates of intercepts and rates of change of outcome variables made it possible to test for the degree of inter-relation between the measures employed for the intervention sample. This was also completed for the control sample to enable comparison. In fitting the ordinary least squares regression model as a function of linear time to each student's data and constructing bivariate correlations, a summation of the results for each child participant is available in Appendix K. The ordinary least squares regression models for the measures used in the current study appear as Tables 22 – 25 for the control participants, and Tables 26 – 29 for the intervention particpants.

Using the estimated slopes and intercepts for each measure, a bivariate correlation analysis was performed. It allowed for the identification of any significant relationships between the respective measures. Tables 11 and 12 display the correlations between the measures for the control participants. Tables 13 and 14 illustrate the correlations between the measures for the intervention particpants. The

results highlighted the relationships that existed between some of the predictor variables at a Pearsons <.05 level of significance.

The correlations for the Positive Behavior Scale completed by the parents and teachers of the control group demonstrate further details (Table 11). The Positive Behavior Scale demonstrates minor intercorrelations across the subscales between the parents and the teachers. Specifically, the result from the parents and teachers of the control group illustrates that the autonomy subscale had the greatest degree of signficant correlation. There is also significant intercorrelation between the social competency and compliance subscales for the parents and teachers. In terms of rates of change, the autonomy subscale illustrates the greatest significant correlation. Also, there is significant intercorrelation between social competence as perceived by the teachers with social competence and compliance from the parents. Finally, there is a significant correlation in the rate of change between the parents and the teachers on the compliance subscale.

Observing the results of the correlation analysis for the control participants (Table 12), the measures completed by the students reveal only one significant result. The Self-Motivation Inventory was positively correlated with the Self-Efficacy Questionnaire over the course of the current study, with the emotional subscale demonstrating the strongest result of the self-efficacy measure. However, there were no significant correlations in rates of change for any of the measures completed by the children of the control group in the current study.

Table 11

Control correlations for the Positive Behavior Scale for teachers and parents (Initial Estimates and Rates of Change).

	PBSPa	PBSPaRoC	PBSPsc	PBSPscRoC	PBSPc	PBSPcRoC	PBSTa	PBSTaRoC	PBSTsc	PBSTscRoC	PBSTc	PBSTcRoC
PBSPautonomy	-	**-.655**** .000	.324* .023	-.086 .557	**.508**** .000	-.048 .745	**.627**** .000	**-.390**** .006	.280 .051	-.030 .839	.238 .100	-.031 .833
PBSPautonomyRoC		-	-.233 .108	**.391**** .006	**-.392**** .005	**.394**** .005	**-.420**** .003	**.567**** .000	-.159 .276	.250 .083	-.234 .106	.252 .080
PBSPsocialcomp			-	**-.722**** .000	**.685**** .000	**-.334*** .019	**.365**** .010	-.171 .241	**.526**** .000	-.263 .068	.280 .052	-.106 .470
PBSPsocialcompRoC				-	**-.608**** .000	**.680**** .000	-.140 .337	.183 .209	-.357* .012	**.423**** .002	-.245 .090	.230 .112
PBSPcompliance					-	**-.671**** .000	**.428**** .002	-.335* .019	**.387**** .006	-.262 .069	.362* .010	-.271 .060
PBSPcomplianceRoC						-	-.115 .430	.273 .057	-.176 .227	**.399**** .005	-.311* .030	**.478**** .001
PBSTautonomy							-	**-.705**** .000	.290* .043	-.097 .506	.348* .014	-.121 .409
PBSTautonomyRoC								-	-.171 .241	**.405**** .004	-.288* .045	**.395**** .005
PBSTsocailcomp									-	**-.576**** .000	.259 .073	-.167 .251
PBSTsocialcompRoC										-	-.340* .017	**.540**** .000
PBSTcompliance											-	**-.715**** .000
PBSTcomplianceRoC												-

Note. ** p<.01; * p<.05 significance level (2-tailed; Pearson correlation). Significant ** p<.01 correlations are in **bold**.

Table 12

Control correlations for child self-reporting measures (Initial Estimates and Rates of Change).

	SEQa	SEQaRoC	SEQs	SEQsRoC	SEQe	SEQeRoC	PBS	PBSRoC	SMI	SMIRoC	SES	SESRoC
SEQacademic	-	**-.672**** .000	**.865**** .000	**-.586**** .000	**.864**** .000	**-.616**** .007	-.134 .358	.088 .549	**.526**** .000	-.131 .371	-.166 .255	.001 .997
SEQaRoC		-	**-.568**** .007	**.798**** .000	**-.499**** .000	**.756**** .000	.211 .145	.149 .306	-.252 .081	.296* .039	-.116 .427	.287* .045
SEQsocial			-	**-.771**** .000	**.843**** .000	**-.601**** .000	-.074 .615	-.025 .864	**.535**** .000	-.162 .267	-.180 .215	.072 .625
SEQsRoC				-	**-.564**** .000	**.766**** .000	.166 .253	.204 .159	-.276 .055	.248 .085	-.026 .857	.127 .383
SEQemotional					-	**-.745**** .000	-.141 .334	.162 .267	**.588**** .000	-.199 .169	-.231 .111	.011 .939
SEQeRoC						-	.298* .037	.050 .734	-.356* .012	.328* .022	.012 .935	.195 .180
PBS							-	-.120 .412	-.112 .446	.161 .270	-.062 .673	.133 .362
PBSRoC								-	.103 .481	.031 .832	-.114 .435	.032 .826
SMI									-	**-.688**** .000	-.035 .810	-.003 .985
SMIRoC										-	-.217 .134	.301* .036
SES											-	**-.681**** .000
SESRoC												-

Note. ** p<.01; * p<.05 significance level (2-tailed; Pearson correlation). Significant ** p<.01 correlations are in **bold**.

Table 13

Intervention correlations for the Positive Behavior Scale for parents and teachers (Initial Estimates and Rates of Change).

	PBSPa	PBSPaRoC	PBSPsc	PBSPscRoC	PBSPc	PBSPcRoC	PBSTa	PBSTaRoC	PBSTsc	PBSTscRoC	PBSTc	PBSTcRoC
PBSPautonomy	-	**-.773**** .000	.359* .032	-.314 .062	.336* .045	-.033 .847	**.805**** .000	**-.730**** .000	**.442**** .007	-.326 .052	**.518**** .061	-.350* .036
PBSPautonomyRoC		-	.004 .982	.302 .006	-.138 .423	.245 .151	**-.518**** .001	**.525**** .001	-.091 .596	.273 .107	-.211 .217	**.428**** .009
PBSPsocialcomp			-	**-.745**** .000	.400* .016	-.003 .986	.398* .016	-.345* .039	**.796**** .000	**-.516**** .001	**.543**** .001	-.181 .292
PBSPsocialcompRoC				-	-.291 .085	.248 .144	-.368* .027	.421* .011	**-.614**** .000	**.692**** .000	**-.453**** .006	**.447**** .006
PBSPcompliance					-	**-.706**** .000	.408* .013	-.366* .028	.306 .069	-.279 .099	**.606**** .000	**-.441**** .007
PBSPcomplianceRoC						-	-.074 .668	.110 .524	.074 .667	.159 .355	-.287 .089	**.576**** .000
PBSTautonomy							-	**-.803**** .000	**.449**** .006	-.317 .060	**.665**** .000	-.419* .011
PBSTautonomyRoC								**-**	-.375* .024	.339* .043	**-.623**** .000	**.475**** .003
PBSTsocialcomp									-	**-.801**** .000	**.572**** .001	-.256 .020
PBSTsocialcompRoC										-	**-.458**** .005	**.463**** .004
PBSTcompliance											-	**-.751**** .000
PBSTcomplianceRoC												-

Note. ** p<.01; * p<.05 significance level (2-tailed; Pearson correlation). Significant ** p<.01 correlations are in **bold**.

Table 14

Intervention correlations for child self-reporting measures (Initial Estimates and Rates of Change).

	SEQa	SEQaRoC	SEQs	SEQsRoC	SEQe	SEQeRoC	PBS	PBSRoC	SMI	SMIRoC	SES	SESRoC
SEQacademic	-	**-.785**** .000	**.823**** .000	**-.617**** .000	**.836**** .000	**-.613**** .000	.117 .301	-.270 .111	.324 .054	-.273 .107	-.298 .078	.102 .555
SEQaRoC		-	**-.725**** .000	**.878**** .000	**-.639**** .000	**.829**** .000	**-.471**** .004	**.487**** .003	-.282 .095	**.453**** .006	.203 .236	-.127 .461
SEQsocial			-	**-.734**** .000	**.790**** .000	**-.648**** .000	.185 .279	-.385* .020	.333* .047	-.344* .040	-.322 .056	.101 .558
SEQsRoC				-	**-.539**** .001	**.811**** .000	**-.497**** .002	**.553**** .000	-.245 .150	**.447**** .006	.218 .202	-.158 .359
SEQemotional					-	**-.728**** .000	.094 .586	-.140 .415	.378* .023	-.293 .083	-.293 .083	.227 .183
SEQeRoC						-	-.413* .012	.397* .017	-.298 .077	**.448**** .006	.145 .397	-.214 .209
PBS							-	**-.715**** .000	-.019 .911	-.010 .952	-.112 .514	.167 .330
PBSRoC								-	-.116 .500	.255 .134	.223 .191	-.050 .772
SMI									-	**-.802**** .000	.143 .406	.062 .718
SMIRoC										-	-.058 .736	-.060 .727
SES											-	**-.560**** .000
SESRoC												-

Note. ** p<.01; * p<.05 significance level (2-tailed; Pearson correlation). Significant ** p<.01 correlations are in **bold**.

In contrast, from the teachers and parents of the intervention group, the rates of change demonstrate multiple, moderately significant, intercorrelations across the respective subscales (Table 13). For the intervention group, the parent autonomy subscale and the teacher compliance subscale each demonstrate predominance over all other subscales. There is also a single signficant intercorrelation for the social competence subscale. In terms of rates of change, the subscales illustrate a similar result. There is a signficant intercorrelation between the teacher compliance subscale, and each of the parent subscales. Additionally, in terms of rates of change, the autonomy and the social competence subscales each illustrate significant intercorrelation.

The results for the intervention group do not demonstrate any strong positive correlations between the individual child self-reporting measures (Table 14). However, there are significant negative intercorrelations between the Prosocial Behaviour Scale and the rates of change of the Self-Efficacy Questionnaire. Conversely, there is significant intercorrelation between the rates of change for the academic and social self-efficacy subscales with the Prosocial Behaviour Scale. Additionally, each of the self-efficacy subscales are positively intercorrelated with the Self-Motivation Inventory in terms of rates of change.

The data for the intervention group did not demonstrate the existance of multiple predictor variables. No individual measure can be isolated as having a significant predominant relationship over any other measure. However, the rates of change did indicate that the scores continuously increased throughtout the current study across the measures for the intervention participants. In comparison, minor variations in the measures and rates of change across the measures are noted for the control group.

Chapter 4

Statistical analysis: Child, parent and teacher measures

In establishing that a linear relationship between the measures was demonstrated, and that high correlations between the measures did not exist, further detailed analysis of the variance in the measure scores was possible. For the child measures, a simultaneous test for statistically significant differences between the control and intervention conditions on all four measures was conducted using multivariate repeated measures (MANOVA). For the measure of the parents and teachers perspectives of the child participants, independent samples *t*-tests were performed to detect statistically significant differences between the control and intervention conditions over the course of the current study.

Multivariate repeated measures (child measures)

A multivariate analysis of variance was performed on the four measures completed by the child participants; self-esteem (SE-S), self-motivation (SMI-C9), self-efficacy (SEQ-C), and prosocial behaviour (Prosocial Behaviour Scale). Grouping was separated between intervention or control conditions and six time intervals served as within-subjects variables. Sphericity was initially inspected using Mauchly's Test, which tests for the equivalence of the hypothesized and the observed variance/covariance patterns for each of the measures. Each of the four Mauchly's statistics were highly significant; self-esteem $W = .31$, χ^2 (14) = 95.50, $p < .001$, self-motivation, $W = .49$, χ^2 (14) = 58.27, $p < .001$, self-efficacy $W = .27$, χ^2 (14) = 106.50, $p < .001$, and prosocial behaviour $W = .38$, χ^2 (14) = 78.23, $p < .001$. All four

measures suggest that the observed matrices do not have approximately equal variances and equal co-variances. As the assumption of sphericity is violated for each measure, multivariate statistics are interpreted using Pillai's Trace.

All of the multivariate tests were significant and observed power is acceptable (Table 15). Pillai's Trace was used as the number of participants in each group are not equal (n = 36 intervention, n = 49 control). The multivariate tests of the child self-reporting measures suggest that the measure scores across the six time points have at least one mean vector pairing which produced a significant difference.

Table 15

Multivariate tests using Pillai's Trace (all significant at $p < .001$).

Effect	*V*	*F*	df_1	df_2	Observed Power*
Measures	.98	1434.505	3	81	1.0
Measures x Group	.35	14.536	3	81	1.0
Time	.85	92.144	5	79	1.0
Time x Group	.81	69.008	5	79	1.0
Measures x Time	.78	16.208	15	69	1.0
Measures x Time x Group	.54	5.285	15	69	1.0

* $p < .05$

Though the multivariate test of the child measures suggests the significance of at least one mean pairing, it is unclear from the multivariate test as to which individual comparison the observed mean difference is significant. In order to make the determination, a series of individual measure comparisons are presented in Table 16. The means presented in Table 16 indicate that the control group had significantly lower scores for self-esteem (M = 14.41), self-motivation (M = 22.14), self-efficacy (M = 66.08), and prosocial behaviour (M = 15.68) over the course of the current study ($p < .05$).

Table 16

Estimated marginal means by Group.

Measure	Group	Mean	95% Confidence Interval	
			Lower Bound	Upper Bound
Self-Esteem	Intervention	17.537	16.758	18.316
	Control	14.412	13.743	15.080
Self-Motivation	Intervention	25.699	24.716	26.682
	Control	22.146	21.304	22.989
Self-Efficacy	Intervention	78.472	75.680	81.265
	Control	66.085	63.691	68.479
Prosocial Behaviour	Intervention	18.023	17.067	18.980
	Control	15.687	14.867	16.507

In referring to Table 17, for the time and group interaction, Pillai's Trace indicates that the interaction is statistically significant, suggesting the measure scores made across the six time points improved dependent upon intervention group membership $V = .54$, $F = 5.29$, $df = (15,69)$, $p < .001$.

To aid in the interpretation of the mean interaction effects, individual estimated marginal mean graphs are presented for each measure. The plotted graphs are determined by the measure scores of estimated marginal means (Table 17). Figures 35 - 38 demonstrate student participant responses from each of the measures, for the intervention and control groups, at each time point. There is a consistent rate of greater linear growth illustrated in each of the figures for the intervention group when compared to the control group.

Tests of within-subjects contrasts present the contrasts between the responses from the measures obtained across the six time points. Table 18 presents the mean change, across the time points, between the intervention and control groups. In conjunction with Figures 35 - 38, the results indicate that the change in each measure between the Time points is significantly different between the intervention and control groups ($p < .05$). Between the groups, the contrasts presented in Table 18 are all significant. Table 18 indicates the scores across the measures are statistically different between groups and the greatest level of mean change across each Time points was experienced by the intervention group ($p < .001$).

Table 17

Estimated marginal means by Time.

Measure	Group	Time	Mean	95% Confidence Interval	
				Lower Bound	Upper Bound
Self-Esteem	Intervention	1	12.611	11.735	13.487
		2	14.361	13.574	15.148
		3	16.306	15.459	17.152
		4	18.389	17.447	19.331
		5	20.583	19.424	21.742
		6	22.972	21.850	24.095
	Control	1	13.735	12.984	14.486
		2	14.347	13.673	15.021
		3	14.367	13.642	15.093
		4	14.551	13.743	15.359
		5	14.796	13.802	15.789
		6	14.673	13.711	15.636
Self-Motivation	Intervention	1	19.917	18.612	21.221
		2	22.194	21.025	23.364
		3	24.472	23.195	25.749
		4	26.833	25.572	28.095
		5	29.139	28.030	30.248
		6	31.639	30.591	32.687
	Control	1	21.286	20.168	22.404
		2	21.959	20.957	22.962
		3	22.755	21.660	23.850
		4	22.939	21.858	24.020
		5	21.857	20.907	22.807
		6	22.082	21.183	22.980
Self-Efficacy	Intervention	1	61.361	58.031	64.691
		2	68.028	64.413	71.643
		3	73.250	69.917	76.583
		4	80.694	77.282	84.107
		5	88.639	84.948	92.330
		6	98.861	95.080	102.642
	Control	1	63.633	60.779	66.487
		2	65.020	61.922	68.119
		3	65.980	63.123	68.837
		4	67.796	64.871	70.721
		5	66.571	63.408	69.735
		6	67.510	64.269	70.751
Prosocial Behaviour	Intervention	1	14.111	13.177	15.046
		2	15.361	14.353	16.370
		3	16.722	15.718	17.726
		4	18.639	17.444	19.834
		5	20.528	19.419	21.637
		6	22.778	21.645	23.911
	Control	1	16.286	15.485	17.087
		2	16.143	15.278	17.007
		3	16.041	15.180	16.901
		4	15.551	14.527	16.575
		5	15.490	14.539	16.441
		6	14.612	13.641	15.584

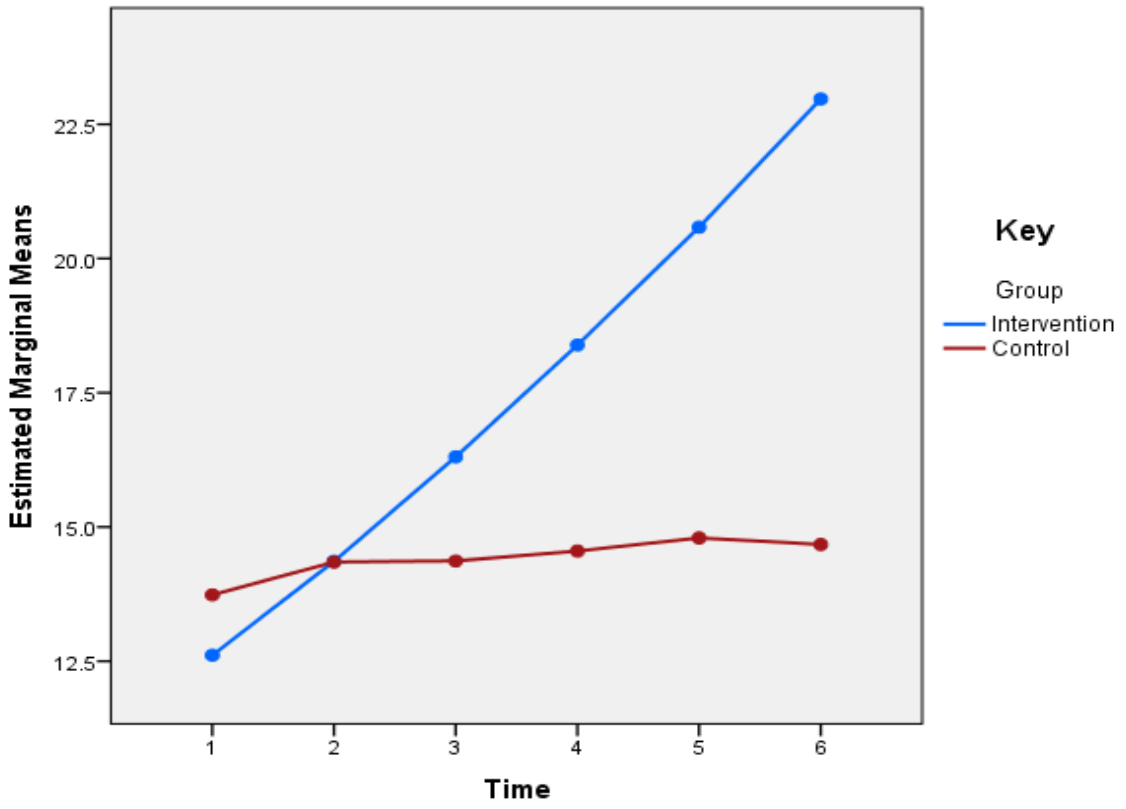


Figure 35: Estimated Marginal Means of self-esteem by group.

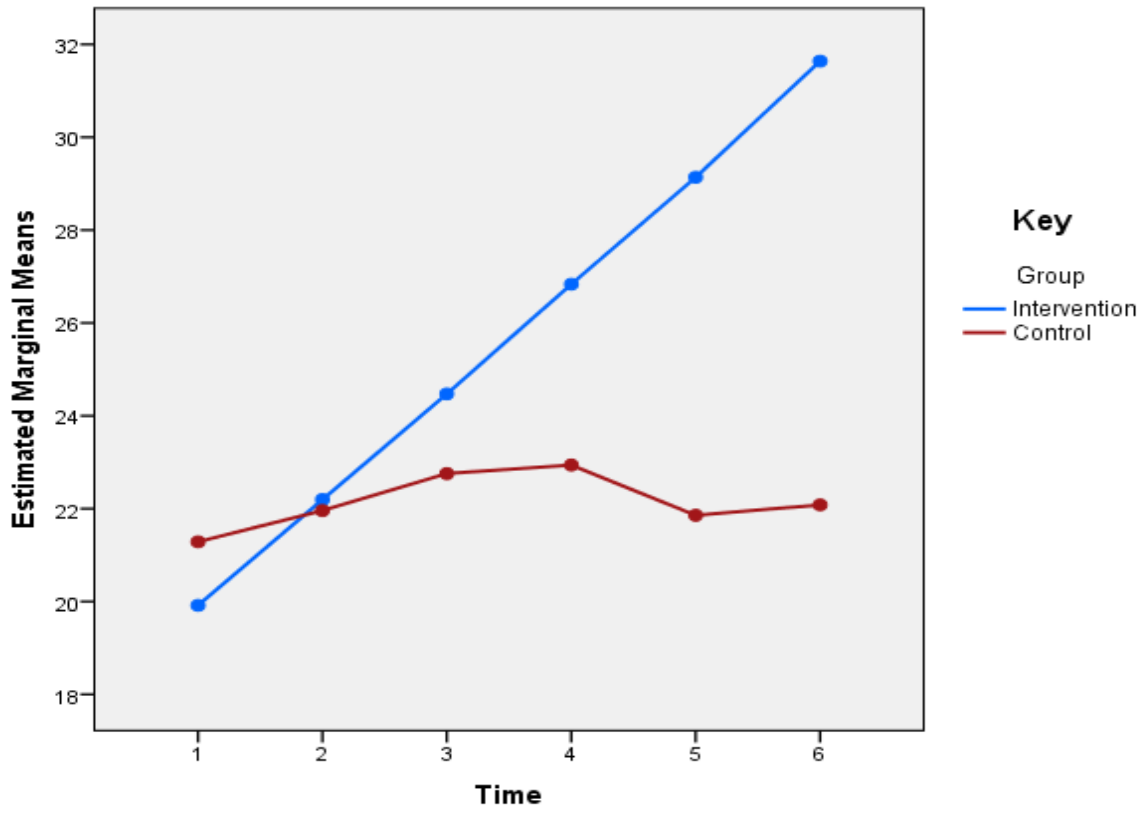


Figure 36: Estimated Marginal Means of self-motivation by group.

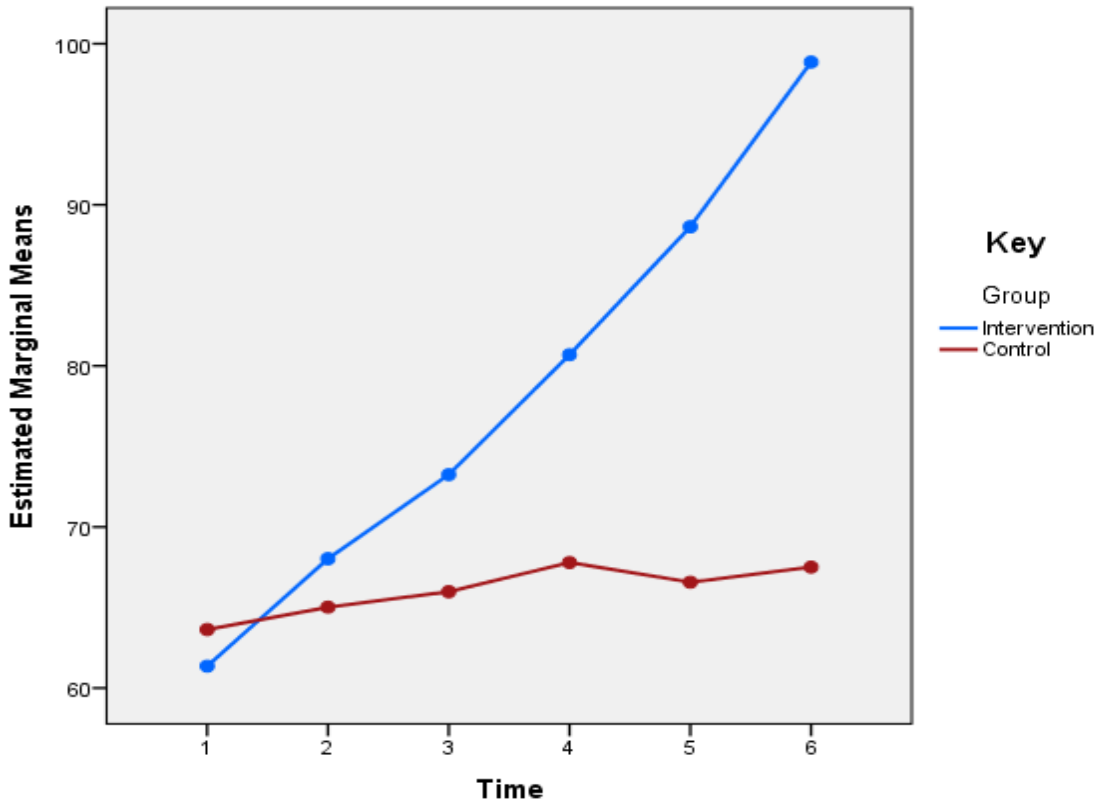


Figure 37: Estimated Marginal Means of self-efficacy by group.

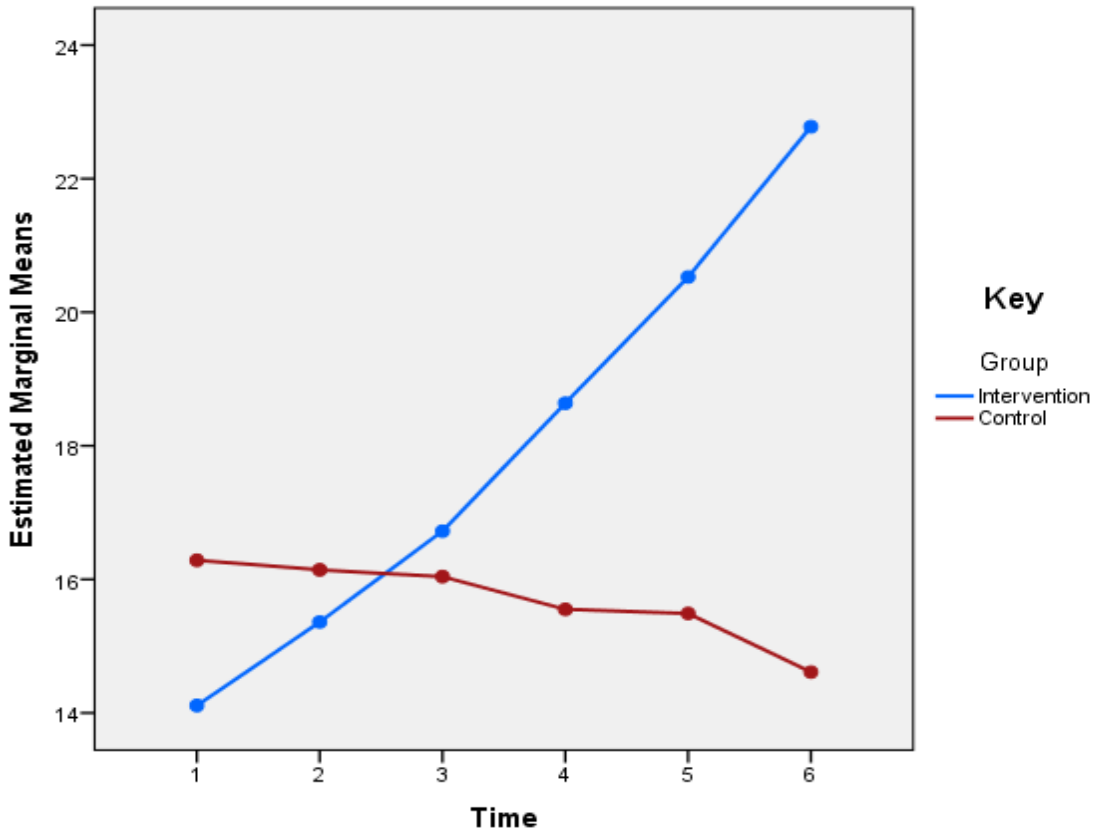


Figure 38: Estimated Marginal Means of prosocial behaviour by group.

Table 18

Mean change difference between Time points (all significant at $p < .001$).

Group	Measure	Time1 to Time2	Time2 to Time3	Time3 to Time4	Time4 to Time5	Time5 to Time6
Intervention	Self-Esteem	1.75	1.94	2.08	2.19	2.38
	Self-Motivation	2.27	2.28	2.36	2.31	2.50
	Self-Efficacy	6.67	5.22	7.44	7.94	10.22
	Prosocial Behaviour	1.25	1.36	1.92	1.89	2.25
Control	Self-Esteem	0.61	0.02	0.18	0.24	-0.12
	Self-Motivation	0.67	0.80	0.18	-1.08	0.22
	Self-Efficacy	1.39	0.96	1.82	-1.22	0.94
	Prosocial Behaviour	-0.14	-0.10	-0.49	-0.06	-0.88

Independent t-tests (parent and teacher measure)

As a comparison between the teachers and parents, independent-samples *t*-tests were conducted to compare the Positive Behavior Scale (PBS) data, for the teacher (T) and parent (P) perspectives, in the intervention and control conditions.

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
PBS(T)	Intervention	216	86.12	12.884	.877
	Control	294	81.74	11.201	.653

Independent Samples Test

		Levene's Test for Equality of Variances		***t*-test for Equality of Means**						
									95% Confidence Interval of the Difference	
		F	Sig.	*t*	*df*	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
PBS(T)	Equal variances assumed	10.386	.001	4.092	508	.000	4.379	1.070	2.276	6.481
	Equal variances not assumed			4.005	424.103	.000	4.379	1.093	2.230	6.528

Figure 39: Group Statistics and Independent Samples Test for the Positive Behavior Scale (PBS) completed by teachers (T).

Referring to Figure 39 for the PBS(T) result, a Levene's test indicated unequal variances (F = 10.39, p = .001), so degrees of freedom were adjusted from

508 to 424, correcting the violation. There was a significant difference in the scores for the intervention (M = 86.12, SD = 12.88) and control (M = 81.74, SD = 11.20) conditions; $t(424) = 4.01$, $p < .001$, $d = .88$. The 95% confidence interval for the average score of the PBS(T) ranged from 2.23 to 6.53. The result illustrates that the teachers reported a greater quantity of positive behaviour in the intervention group than teachers of the control group over the course of the current study.

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
PBS(P)	Intervention	216	88.67	14.648	.997
	Control	294	80.24	12.219	.713

Independent Samples Test

		Levene's Test for Equality of Variances		***t*-test for Equality of Means**						
									95% Confidence Interval of the Difference	
		F	Sig.	*t*	*df*	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
PBS(P)	Equal variances assumed	11.290	.001	7.071	508	.000	8.429	1.192	6.087	10.771
	Equal variances not assumed			6.879	412.010	.000	8.429	1.225	6.020	10.837

Figure 40: Group Statistics and Independent Samples Test for the Positive Behavior Scale (PBS) completed by parents (P).

For the PBS(P) result presented in Figure 40, a Levene's test indicated unequal variances (F = 11.29, p = .001), so degrees of freedom were adjusted from 508 to 412. There was a significant difference in the scores for the intervention (M = 88.67, SD = 14.65) and control (M = 80.24, SD = 12.22) conditions; $t(412) = 6.88$, p <.001, d = 1.51. The 95% confidence interval for the average score of the PBS(P) ranged from 6.02 to 10.84. The result demonstrates that the parents reported a higher amount of positive behaviour in the intervention group than parents of the control group over the course of the current study.

Chapter 5

Guttman Scalograms: Construction and analyses

In the previous chapter, assessments of the child, parent and teacher measures demonstrated statistically significant changes in mean scores over time, on each of Hellison's goals separately (Table 1, p6). The participants in the intervention group benefited from the intervention, on each goal, over time. From the measures over time, it was also possible to track differential rates of progression between the intervention and control groups. However, it has not yet been demonstrated that any *stage-like* changes over time occurred, i.e. sequencing. As explored in chapter one, one way to check if the children's progress followed a set stage-like sequence, is to assess whether their responses form a Guttman scalogram. Further, it is still unknown if stage change occurred in the same *order* that the Hellison (2003) model predicts. We saw in chapter one how, in some contexts, stages can sometimes be reversed. In effect therefore, two specific questions remain for the present thesis, a) was there a scalogram, and b) if the answer to a) is yes, did the participants in the intervention, but not the control, group climb up the scalogram over time?

a) Was there a scalogram?

Guttman (1947, 1950) scaling has in the past been used in the development of measures of attitudes among adolescents towards substance abuse (Andrews, Hops, Ary, Lichtenstein, Tildesley, 1991), as well as attitudes

towards treatment planning and client evaluation in counselling therapy (Shorkey & Whiteman, 1977). These prior works are in the area of health, and therapy, and are only indirectly linked to social responsibility development. More specifically, Guttman Scalogram Analysis has never been applied to the assessment of the Hellison (2003) model.

There are two parts to the Scalogram Analysis in the current study. First the four child self-report measures of self-esteem, self-motivation, self-efficacy, and prosocial behaviour could form a four-item Guttman scale, at each of the six measurement points in time. Second, the addition of a parent and teacher measure of positive behaviour (outside the training venue itself) was administered over all six time points. This could form, potentially, a five-item quasi-Guttman scalogram ('quasi' because the parents and teachers did not rate the children on goals 1 - 4, nor did the children rate themselves on goal 5, and the parent and teacher score was designed to be combined into one index). To recap, there were six time points in the current study. At all six, the children completed self-report measures for goals 1 – 4 (Table 1, p6). At each of the six time points, the parents and teachers completed their measure for goal 5 of the model (Table 1, p6). The parents and teachers did not complete any other measure, apart from a goal 5 measure, at times 1 through 6.

The parent and teacher measure for goal 5 was computed by taking the average of the two scores, per item, one for the parent and one from the teacher, at each of the six time points. Because the parents and teachers did not have the opportunity to rate goals 1 - 4, nor did the students rate goal 5, two separate Guttman scalograms would be constructed: One for the child

self-report measures, and a second which additionally included the parent and teacher measure (a quasi-Guttman test).

An illustrative representation of a perfect Guttman scale is schematised in Figure 53, based upon subjects (participant 'ID') and items (measures) from the current study.

	Self - Reports				Parent/Teacher
	Goal 1	**Goal 2**	**Goal 3**	**Goal 4**	**Goal 5**
ID	**Self-Esteem**	**Self-Motivation**	**Self-Efficacy**	**Prosocial Behaviour**	**Positive behaviour**
3B2	1	1	1	1	0
3B5	1	1	1	0	0
3C9	1	1	0	0	0
4B1	1	0	0	0	0
4B2	0	0	0	0	0
4B5	0	0	0	0	0
. .	. .	. .	. .	. .	. .
4B7	1	0	0	1	0
4D2	1	0	1	0	0
4D3	0	0	1	0	0
Count	4	3	2	1	0

Key: 1 = above the mid-point ('on').

0 = below the mid-point ('off').

Figure 53: A representation of a perfect Guttman scale for the current study, according to the Hellison (2003) model.

Step one in any Guttman protocol consists in creating binary variables ('1' for 'on' and '0' for off). Each child's scores were re-coded, on each continuous measure, into a binary variable, about the mid-point. Thus if a child's mean score per item per measure was above the mid-point of '3' it was designated

‘1’ (i.e. ‘on’). If it fell below, it was re-coded to ‘0’ (i.e. ‘off’). The same process was applied to all six measures of goal 5, given by parent and teacher scores, using average score per item per factor (goal 5 score), across both parent and teacher perspectives.

In step two of Guttman’s (1950) protocol, the data is then initially organised in columns, left to right, in goal order according to Hellison’s (2003) model. The columns in Figure 53 were arranged in the sequence proposed by Hellison’s model, i.e. goal 1 = self-esteem, 2 = self-motivation, 3 = self-efficacy, 4 = prosocial behaviour, and 5 = positive behaviour. Individual participant item response patterns were then ordered alpha-numerically by participant, in a descending order, by row.

In the next step of the Guttman (1950) protocol, he recommends that the task is to minimise ‘errors’ across the item response patterns. Items whose columns contain greater numbers of ‘1’s are moved to the left of columns with a lower tally of ‘1’s. Figure 54 is an exemplar of one such table, of the intervention group, for the four child self-reporting measures only, at Time 1. The logic here is that lower level needs should be endorsed more often than higher level needs.

Comparing Figure 54 and Figure 53, the order of the measures found from the scalogram test in the current study did *not* match the expected order of the Hellison (2003) model presented in Figure 1.

Hellison Order:	Self-Esteem	Self-Motivation	Self-Efficacy	Prosocial Behaviour
Guttman* Order:	Self-Motivation	Self-Efficacy	Self-Esteem	Prosocial Behaviour
ID				
3B1	0	1	0	0
3B2	0	0	0	0
3B3	0	0	0	0
3C1	0	0	0	0
3C10	1	0	1	0
3C11	0	0	1	0
3C12	0	0	0	0
3C13	0	0	1	0
3C14	0	0	0	0
3C2	1	1	0	0
3C3	0	1	0	0
3C4	0	1	0	0
3C5	0	0	0	1
3C6	0	0	0	0
3C7	0	0	0	0
3C8	0	0	0	0
3C9	1	0	0	0
4B1	1	0	0	0
4B2	0	0	0	0
4B3	0	0	1	0
4B4	0	0	0	0
4B5	0	0	0	0
4B6	0	0	0	1
4B7	1	0	0	1
4C1	1	1	0	0
4C2	1	1	0	0
4C3	1	1	0	0
4C4	1	0	1	0
4C5	0	0	0	0
4C6	1	1	0	1
4C7	0	0	0	0
4C8	0	0	0	0
4C9	0	0	0	0
4D1	0	0	0	0
4D2	1	0	1	0
4D3	0	0	1	0
Total Count	11	8	7	4

Figure 54: Rearranging the columns according to Guttman (1950) - Intervention group at Time 1.

*NOTE: Refers to temporal order based on this current study's Guttman analysis of our dataset.

Specifically in Figure 54, the total count of item scores of the participants was highest for self-motivation (11), then self-efficacy (8), followed by self-esteem (7), and lastly by prosocial behaviour (4). Thus, following Guttman's (1950) protocol, the goal of self-esteem (goal 1 in the Hellison model) was interchanged with self-motivation and self-efficacy (goals 2 and 3 of the Hellison model).

This type of finding (i.e., columns interchanging) is important because, according to Guttman (1950), if there is a hierarchy to be found, then the order of the goals proposed in the Hellison (2003) model could be invalid as they would not form a scalogram (based on Figure 54). A check of whether the reversals of the columns found in Figure 54 occurred at other time points was conducted. Importantly, at each of the six time points in the current study, the Guttman order of the measures demonstrated in Figure 54 was identical for both intervention and control groups, and regardless of four or five items in the scalogram. Hence, the reordering of the Hellison (2003) goals across all time points is *reliable*.

Step five in the Guttman (1950) protocol is the rearrangement of the individual participant item response patterns (i.e., rows). The previous alpha-numerical ordering of individual item response patterns in Figure 54 was rearranged. Figure 55 demonstrates the rearrangement of the individual item participant response patterns for the intervention group at Time 1. In Figure 55, response patterns which only contain consecutive '1's, without errors, were placed first (3C2-4B1). Patterns that demonstrate any number of non-consecutive '1'

scores were then added next (3B1-4D3), followed lastly by any pattern containing purely '0's (3B2-4D1).

ID	Self-Motivation	Self-Efficacy	Self-Esteem	Prosocial Behaviour
3C2	1	1	0	0
4C1	1	1	0	0
4C2	1	1	0	0
4C3	1	1	0	0
3C9	1	0	0	0
4B1	1	0	0	0
3B1	0	1	0	0
3C10	1	0	1	0
3C11	0	0	1	0
3C13	0	0	1	0
3C3	0	1	0	0
3C4	0	1	0	0
3C5	0	0	0	1
4B3	0	0	1	0
4B6	0	0	0	1
4B7	1	0	0	1
4C4	1	0	1	0
4C6	1	1	0	1
4D2	1	0	1	0
4D3	0	0	1	0
3B2	0	0	0	0
3B3	0	0	0	0
3C1	0	0	0	0
3C12	0	0	0	0
3C14	0	0	0	0
3C6	0	0	0	0
3C7	0	0	0	0
3C8	0	0	0	0
4B2	0	0	0	0
4B4	0	0	0	0
4B5	0	0	0	0
4C5	0	0	0	0
4C7	0	0	0	0
4C8	0	0	0	0
4C9	0	0	0	0
4D1	0	0	0	0

Key: | **3B1** 0 1 0 0 | = working example.

Figure 55: Counting errors (rearranging the rows according to Guttman (1950)) - Intervention group at Time 1.

The logic here is that with the previous reordering of the columns, and rows now rearranged, the process provides a triangular pattern, expected in cumulative scales (Robson, 1993). In Figure 55, the red cutting line serves as a visual marker, highlighting a triangular pattern, which also serves as a visual separation between error free and error response patterns.

The next step in Guttman's protocol (1950) is the counting of errors. An error is defined as any response of '0' occurring ahead of '1' (to the left of) in any participant response pattern. In the case of '**3B1**' from Figure 55 (boxed working example) the response pattern of '**0 1 0 0**' contains an error (a need state cannot be met before its antecedent need is satisfied). For '3B1's responses (in the text box) to be error free, the response line would have to be either '**1 1 0 0**' or '**0 0 0 0**', not '**0 1 0 0**'. Either way however, for the purposes of tallying errors, there is only one error in this case, in accordance with the protocol in Guttman (1950). Errors were therefore counted using this process for all scalograms, at each time point.

In the next step in Guttman's (1950) protocol, a Coefficient of Reproducibility is calculated by counting up the number of errors in each scalogram, and dividing these errors by the total number of responses, then subtracting the result from a value of one, as per the following formula:-

Coefficient of Reproducibility:

= 1.0 – (*n* errors) / total responses

= 1.0 – (*n* errors) / [(*n* items) x (*n* respondents)]

Firstly, Coefficients of Reproducibility were generated from Scalogram Analysis of the child self-report measures used for both the control and intervention groups separately. Secondly, Coefficients of Reproducibility were produced by combining the four child self-reporting measures with the single parent and teacher measure, at each of the six time points. Separately at each of the six time points, a single coefficient for the intervention group, and the control group, was thus produced. In total, twelve Coefficients of Reproducibility were calculated (Table 19).

Table 19

Coefficients of Reproducibility for all measures – control (*n* = 49) and intervention groups (*n* = 36).

	Self-Reported Goals 1 - 4		**Self-Reported and Parent/Teacher Goals Combined**	
	Control	**Intervention**	**Control**	**Intervention**
Time 1	0.88	0.90	0.87	0.89
Time 2	0.89	0.90	0.88	0.89
Time 3	0.88	0.92	0.88	0.91
Time 4	0.88	0.93	0.86	0.93
Time 5	0.89	0.95	0.88	0.96
Time 6	0.90	0.98	0.90	0.98
	$\bar{x}$ 0.88	$\bar{x}$ 0.93	$\bar{x}$ 0.87	$\bar{x}$ 0.92
	$\bar{x}$ 0.91		$\bar{x}$ 0.90	

In Table 19, the mean Coefficients of Reproducibility for the control group fall (marginally) below the 0.90 threshold that is recommended by Guttman (1950). Nevertheless, Robson (1993) states that for a Coefficient of Reproducibility to be statistically meaningful, it should be calculated over more than one occasion and averaged to account for error. Over six time points in the current study, the averaged Coefficient of Reproducibility meets the criterion of ≥ 0.90 (0.91, Table 19).

From the child self-reported measures for goals 1 - 4, across Time one to Time six, the mean Coefficient of Reproducibility was 0.91 (Table 19). When combining the child self-report measures for goals 1 - 4 with the parent and teacher measure for goal 5, across Time 1 to Time 6, the mean (quasi) Coefficient of Reproducibility was 0.90 (Table 19). These coefficients meet the criterion for Guttman's original error specification of ≥ .90 (Edwards, 1957). Each respective Guttman scalogram of the control and intervention groups, with Coefficients of Reproducibility noted for each, is included as Appendix L.

Therefore, the averaged Coefficients of Reproducibility produced in the current study are acceptable. We can infer that the goals of personal and social responsibility form a Guttman scalogram, and quasi-scalogram, and that the order of the stages is temporally reliable.

b) Did the participants in the Intervention group, but not in the Control, climb up the scalogram over time?

As the scalograms were established with a greater than or equal to .9 Coefficient of Reproducibility, we may proceed with the final step in the Guttman (1950) protocol. To determine if the intervention participants climbed up the revised scalogram over the course of the current study, each individual participant was assigned respective scale scores. From Guttman's (1950) protocol, the assignment of an individual scale score was based on the count of '1' responses observed in the participants' item response pattern. Therefore, an individual scale score could be any value between 0 (no '1' responses) and 4 (four '1' responses) for the self-reporting scalogram, and 0 and 5 for the quasi-scalogram.

In keeping with Guttman's (1950) recommendations, it is feasible to combine the data to obtain a group representation. The participants' scale scores were averaged, at each time point, to provide a group scale score, at each time point, one each for the intervention group and the control group. Over the six time points, two scale scores were calculated for every participant, in the intervention and control groups. One scale score for the child self-reporting measures, and the second combined the child self-reporting measure with the averaged score of the parent and teacher measure.

Mean scale scores were plotted for each group, intervention and control, at each of the six time points in the current study for goals 1 - 4 (Figure 56), and 1 – 5 (Figure 57). The separation between the means is also presented (*d'*).

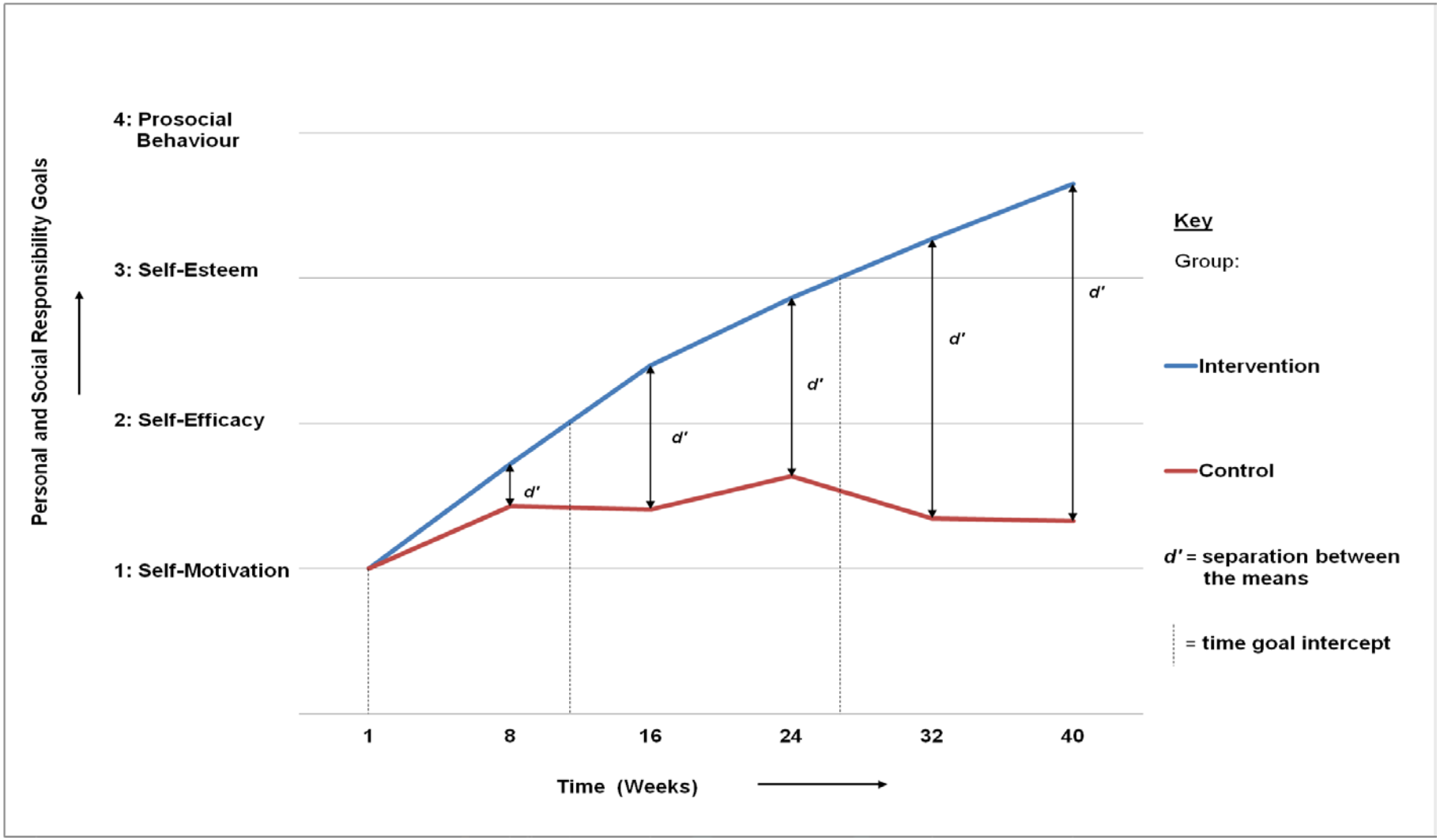


Figure 56: Mean scale scores as a function of time and treatment group – Goals 1 - 4 only.

Figure 56 presents the plotted group mean scale scores over time for the first four goals. For Figure 56, there is an emerging difference between the intervention and control conditions. Mean scale scores for the intervention group tended to climb faster than those for the control group, over the time course of the study. Specifically, by week 16, a marked difference between the groups emerged. For the intervention group, the time goal intercept of the group mean score shows that self-motivation was present at week 1, self-efficacy emerged at approximately week 11, and self-esteem appeared at approximately Week 27. In comparison, the control group presented with self-motivation at week 1, and did not progress up the scalogram to any further goal thereafter.

A between groups analysis was conducted over the six time points. The number of participants in each group are control *n* = 49 and intervention *n* = 36. As these groups are not equivalent in size, the Kruskal-Wallis procedure was used, as recommended by Ho (2006). The test analysis for Figure 56 provided six separate statistics (Table 20).

Table 20

Between groups comparison, rates of progress at all time points, goals 1 - 4.

Kruskal-Wallis Test

	Week1	**Week8**	**Week16**	**Week24**	**Week32**	**Week40**
Chi-Square	.522	1.015	20.077	19.246	36.632	50.637
df	1	1	1	1	1	1
Sig.	.470	.314	.000	.000	.000	.000
Non-significant			Significant at < .001			

For Table 20, at week 16 and beyond, there is significant difference between the intervention and control group; χ^2 (1, n = 85) = 20.077, p < .001. At week 24, the difference between the conditions was significant; χ^2 (1, n = 85) = 19.246, p < .001. Week 32 demonstrated a significant difference; χ^2 (1, n = 85) = 36.632, p < .001. Lastly, at week 40, the difference between the intervention and control group was also significant; χ^2 (1, n = 85) = 50.637, p < .001.

Figure 57 extends the number of rungs in the Guttman hierarchy to a quasi-scalogram of five goals, by including parent and teacher perceptions of positive behaviour (a 'quasi'-Guttman scalogram). In Figure 57, the same divergant pattern in Figure 56 emerges. From study outset to week 16, the intervention group demonstrates a steady rate of climb. In comparison, the control group reaches asymptote at week 16.

In Figure 57, the time goal intercept of the group mean score, for the intervention participants, demonstrated that self-motivation was apparent at week 1. The intercept for self-efficacy occured at approximately week 10, and self-esteem at approximately week 20. At 32 weeks, prosocial behaviour was apparent. In comparison, the control group demonstrated that the same pattern in Figure 56 was evident, where the control did not progress from goal one, which presented at week 1.

Following the Kruskal-Wallis procedure, the test analysis for Figure 57 provided six separate statisitcs (Table 21).

Table 21

Between groups comparison, rates of progress at all time points, goals 1 - 5.

Kruskal-Wallis Test

	Week1	**Week8**	**Week16**	**Week24**	**Week32**	**Week40**
Chi-Square	.591	1.507	20.801	20.815	40.607	55.180
df	1	1	1	1	1	1
Sig.	.442	.220	.000	.000	.000	.000
Non-significant			Significant at < .001			

For Table 21, from week 16, there is significant difference between the intervention and control group; χ^2 (1, n = 85) = 20.801, p < .001. At week 24, the significant difference between the conditions was χ^2 (1, n = 85) = 20.815, p < .001. A significant difference at week 32 was also demonstrated; χ^2 (1, n = 85) = 40.607, p < .001. For the final time point at week 40, a significant difference was demonstrated between the intervention and control group; χ^2 (1, n = 85) = 55.180, p < .001.

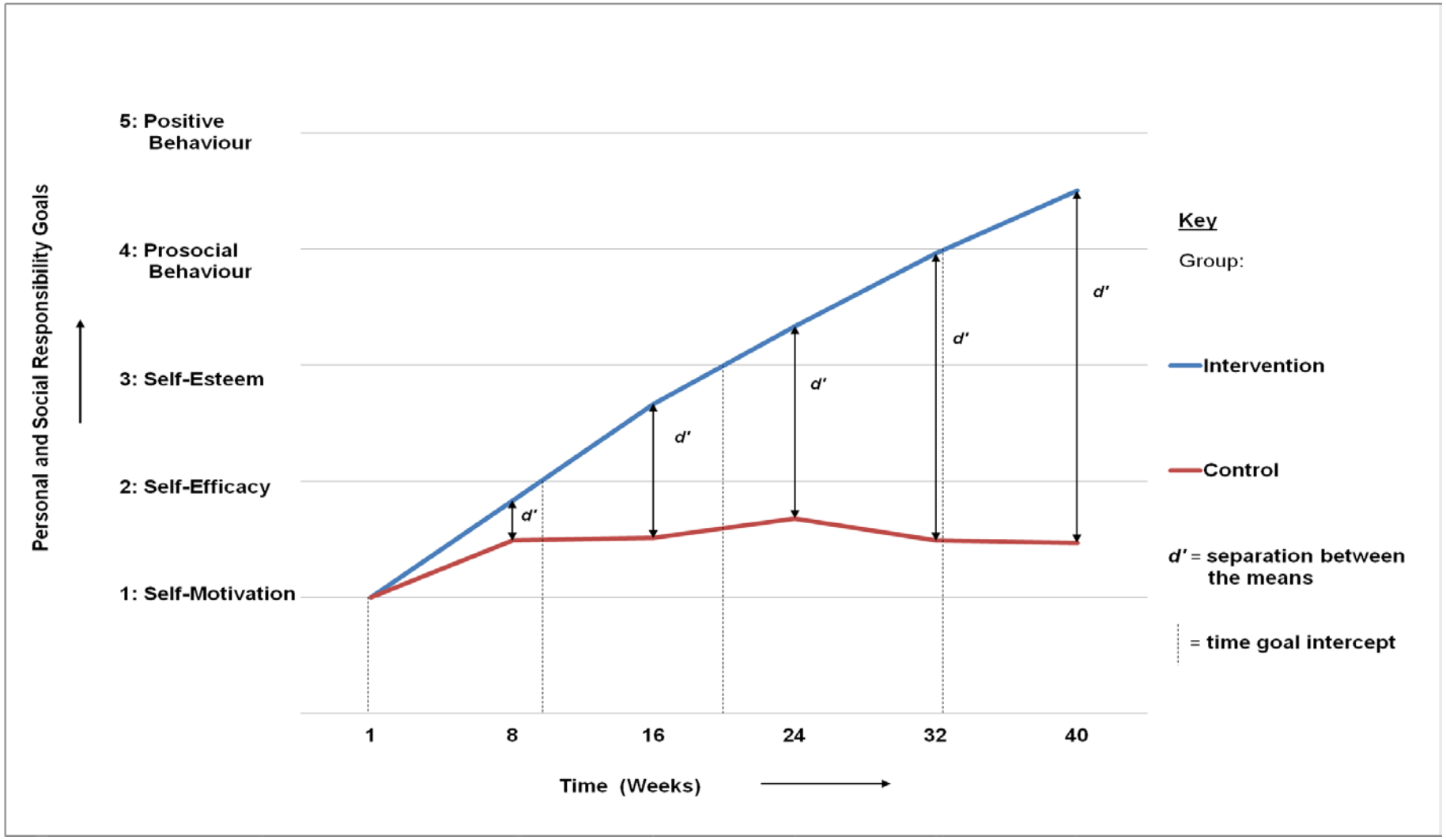


Figure 57: Quasi-scalogram by treatment group – Goals 1 - 5.

Conclusions

a) Was there a scalogram?

The goals of the Hellison model formed a scalogram, replicable at six time points, regardless of whether there were four or five items in the Guttman hierarchy, both for the intervention and control groups. The sequence of the goals found was not in the order proposed by Hellison (2003).

b) Did the participants in the Intervention group, but not in the Control, climb up the scalogram over time?

Having determined a revised stage sequence in the current study, Scalogram Analyses indicated that the intervention group, but not the control, did climb up the scalogram. Participants of the intervention group demonstrated increasing scale scores from week 16, where a significant difference gap emerged between the intervention and control group, which continued across the subsequent time points.

Chapter 6

Discussion

The current study empirically assessed a longitudinal intervention utilising the Teaching Personal and Social Responsibility model developed by Hellison (2003) in a New Zealand primary school as part of the school curriculum. The research literature had acknowledged limitations of contributed works demonstrating tentative findings for the model. A specific criticism noted in the research literature highlighted inconclusive empirical work conducted to examine and confirm model effectiveness. Academic research had also demonstrated the inability of the model to generalise out of the environment where instruction took place, questioning the model's validity. There is also a deficit of international research on the model generated from within school curriculums. Additionally, and specifically for the current study, there is an absence of research examining the effectiveness of the model in a New Zealand primary school.

In addressing these points in the current study, hypotheses were formulated to examine the Teaching Personal and Social Responsibility model developed by Hellison (2003). Essentially, two pertinent questions were identified that an empirical investigation could address.

Revisiting the hypotheses

1) Independently of point in time, the children's responses on Hellison's goals will form a consistent scalogram, meaning that,

2) Over time, participants in an intervention group will progress upwards through the stages in 1.

The first hypothesis was directed at the model's validity. From empirical measures, participant progress was mapped over the course of their involvement in the current study. The analysis of participant rates of change over time demonstrated that the intervention group progressively increased their rates of progress across the goals from study commencement, and also progressively throughout the current study. However, the data demonstrated that although the participants did progress through the goals, they did so in a sequence which differs from the one proposed by the Teaching Personal and Social Responsibility model (Hellison, 2003) outlined in Table 1.

For the first hypothesis, the goal sequence found in the current study demonstrated that the development of self-motivation occurred first, consistently scoring highest throughout the current study. Self-motivation was also closely paired with the rate of development in self-efficacy for the intervention participants. Self-esteem, which was postulated to have occurred first, was third in the sequence of positive change progression. Prosocial behaviour, as relayed by the child participants and positive behaviour, as observed by parents and teachers, occurred as the Hellison (2003) goal order predicted.

The first and second hypotheses are inextricably linked. The first hypothesis sought to determine if the model possessed the necessary properties that enabled the construction of a scalogram. The second hypothesis sought to determine if the application of the model was effective for the participants in the current study. If participants of the intervention group were able to progress along the continuum, by stage progression of the model's five goals in the scalograms, then the second hypothesis could be verified. In a first for the research literature, the use of Guttman (1947, 1950) scaling empirically demonstrated that any participant could advance along the goals in progressive stages of a revised Hellison (2003) model. Thus, the measures used in the current study had successfully formed scalograms, at each of the six time points.

Twelve Coefficients of Reproducibility were generated from the scalograms, constructed from the child self-reporting measures, which in turn were combined with the parent and teacher measure. The averaged Coefficients of Reproducibility over the current study were empirically acceptable. In another first for the research literature, the scalograms demonstrated that the four child self-reporting measures formed a means by which the Hellison (2003) model could be empirically examined. With the addition of the data provided by the parent and teacher objective measure, the scalograms for the child measures were extended at each and every time point, which allowed for an assessment of goal 5 of the Hellison model.

For the second hypothesis specifically, the Scalogram Analysis made evident that the intervention group did empirically progress through each goal of the Hellison (2003) model. Increasing scale scores for the intervention group demonstrated that over time, participants of the intervention group scaled upwards on each of the

measures in the current study. For the assessment of the fifth goal of the model specifically, the parents and teachers initially reported little progression for the participants, as the Hellison model expected. As the current study progressed, the gradual onset of the fifth goal of the model was evident from the Scalogram Analysis of the parents and teachers measure. The current study did demonstrate that the fifth goal of the Hellison (2003) model was feasible, and occurred as the model predicted.

Theoretical implications from the hypotheses

The stage-like premise of the Hellison (2003) model was evident from the analysis. Thus, from a theoretical standpoint, the findings from the current study offer a fresh perspective. In the introduction of this thesis, potential theoretical influences were offered as to the explanations of development for children, which were explored in the context of the Hellison (2003) model.

The intervention participants did take on observational learning. The physical activity component of learning the karate skill set was demonstrated to them by the facilitator. The children participated by practicing their emerging skills, in groups and individually, over many weeks. Concurrently, they were exploring social skills initially set out for them in a new context, and in a new medium; the Hellison model. Over time, children were able to initiate their own tasks and goals, and negotiate with others, in completing the activities of the training sessions. Arguably, the children were making transitions from observational learning to social learning throughout the delivery of the current application of the model. The goals of the Hellison model however are social goals. Development within the application of the model, and

learning new social skills is contingent on the child's understanding and ability to progress through the social goals of the model in order to become more personally and socially responsible.

Piaget (1969) valued social interactions as means of learning, more than did Montessori (1936) who felt that social interaction was a distraction from educational achievement. Both agreed, however, that children be allowed to work on their own tasks whilst the teacher stepped back from instructional tuition. According to Piaget and Montessori's respective theoretical positions, if personal discovery and learning on their own was to occur, the teacher simply being present, for the child's sense of security, is all that is required. The position is similar in the delivery of the Hellison (2003) model whereby after initial instruction is provided, the facilitator gradually withdraws allowing children to explore the physical activities and set their own targets and goals.

Piagetian supporters could make a claim that participation in an application of the Teaching Personal and Social Responsibility model is a 'moderately novel occurrence'. A similar view may be expressed by Montessori (1936) where promoting a child's interest and enthusiasm for a new challenge would then lead to the development of independence, which appears to have been the case in the current study. However, it is a reasonable suggestion, particularly after many weeks of involvement, that participants in any application of the model may not have found it particularly novel, but did perceive value from being involved and participating in a unique experience.

The physical activity components of the training sessions are initially based on modelling by the facilitator, as a demonstration of the karate skills were required. The facilitator also spoke with participants about the theme of each training session in relation to the goals of the Hellison model. Bandura (1986) would therefore argue that social training practices are at the core of any child's ability to become personally and socially responsible. Further, in setting standards to evaluate personal achievements, rating ones abilities, and generally providing a means for self-evaluation is reflective of self-motivated learning, and therefore components of the Hellison (2003) model.

However, Bandura (1986) appears to have set aside that children are able to learn from their own experiences, and that interaction with others is necessary in order to gauge (and perhaps test, in moments of conflict) their development of social goals. Arguably, as Kohlberg (1981) may suggest, the development of socialisation occurs in stages whereby parents and teachers do not teach every outcome of what it may mean to be personally and socially responsible. Kohlberg may, instead, contend that through the child actively engaging with peers, that social experiences promote the development of social goals, as was suggested by the current study.

In the context of the question asked in the introduction, which Figure of 1, 2, or 3 best represents the findings of the current study, indications were apparent throughout the analysis. Initial data from the regression analysis suggested that Figure 3 may have been the closest fit, and in agreement with Bandura's theoretical position; the child participants progressed along the respective measures at an approximately equal rate of progress. At a deeper level of analysis, we saw from multivariate repeated measures and from equality of means tests that participant

progress through the goals was a closer fit to Figure 2. The rate of progress had suggested an apparent distinction between the goals, demonstrating varying levels of increasing difficulty form the rates of change, and arguably therefore, more reflective of a Piagetian theoretical position. As we were looking specifically for verification of stage properties of the model however, further examination from Scalogram Analysis revealed that participants in the current study progressed along the goals in a manner more closely representative of Figure 1, as a revised Hellison model postulated that they should.

Thusly, it is a reasonable speculation that as a theoretical orientation, Hellison's (2003) Teaching Personal and Social Responsibility model is closely aligned with Piagetian thought in terms of a philosophical position. Arguably, there are also specific instances where Bandura's Social Learning theory is apparent in Hellison's (2003) model. Hellison's model is, in the author's opinion, a novel and unique model where participants learnt from exemplified modelling initially, from which children in turn, explored and developed through social interaction and personal discovery in a series of stages, revealed by the revised Hellison model.

Practical implications from the hypotheses

Examining the finding for the first hypothesis in more detail, the construct of self-esteem clearly separated the goals between the earlier onset of personal motivation and self-efficacy, and the later onset of prosocial behaviours for the intervention participants. The onset of self-esteem in the current study was a reminder of a similar finding from the Haire and associates (1966) study. Self-esteem was not the precursor to subsequent indicators that it was predicted to be, but was itself an

outcome of previously held self-perceptions of personal accomplishments. Arguably, based on the finding in the current study, self-motivation and self-efficacy played an earlier role in the development of personal and social responsibility than did self-esteem, which differs from previously held beliefs as to the order of the progressive goal structure of the Hellison (2003) model.

In ascertaining that self-motivation (goal 2 in the Hellison model) was the first goal, and self-efficacy (goal 3 in the Hellison model) the second goal progressed through by the intervention participants of the current study, theoretical underpinnings of the Hellison (2003) model could be cast in new directions. For example, in terms of self-motivation arising first in the goal sequence, the Hellison model may be likened to Maier's (1955) theory of work motivation. Whilst the context differs, Maier's preposition is that task performance is the product of a belief in personal ability coupled with the motivation to achieve, shaped by situational constraints.

In terms of the theory behind the Hellison (2003) model, there is a reasonable comparison between an application of the model, and Maier's position. In essence, participants are challenged with new developmental goals to achieve in an application of the Hellison model. The participant, who is self-motivated to be involved, who in turn, believes in their ability to rise to the challenge of new tasks, is thus exploring their creative and developmental potential that Maier (1955), and arguably Hellison (2003), envisioned. For the participants of the intervention group then, progress in the Hellison (2003) model stemmed from the will to be involved which was tied to a subsequent increase in a sense of achievement, which then led in turn to an increased belief in personal value. A revised theory then would suggest that self-motivation is the principal goal, closely tied to self-efficacy, as sequence

precursors to self-esteem. It may be reasonable to suggest, that from Maier's theoretical position, the order of the goals found in the current study is supported. Therefore, it may be beneficial to revisit and re-evaluate the theoretical premise of the Hellison (2003) model, in terms of the order of the goals, based on the findings of the current study.

In terms of practice, putting the finding for the first hypotheses into another perspective, an explanation comes directly from Hellison (2011). In the course of the current study, the third edition of the Teaching Personal and Social Responsibility model was published (Hellison, 2011). In the most recent edition, the nature of the cumulative levels was reviewed. Hellison states that the goals were formulated to "indicate a progression (though not a strict one)" (Hellison, 2011, p31). Hellison continues by explaining that the goals provide a structure for what he refers to as 'a loose teaching-learning progression' (p32). The progressive premise of the model has been maintained, in theory, for Hellison's third edition (2011). Hellison noted that the progression itself, through the goals of his model, is open to interpretation and not a rigid sequence.

Arguably, Hellison's position may stem from the need for research verifying goal progression and its development before it could be stated conclusively. However, the current study has demonstrated the progressive stage-like premise of the model and therefore provided scope for a re-evaluation of the position. Martinek and associates (2006) have explored the notion of stage development targeting just one goal, the development of leadership and helping others, the fourth goal of the Hellison (2003) model. The current study is an extensive elaboration on the idea behind Martinek and associates' (2006) research by applying it to the Hellison model in its entirety. In

essence, committing to continued research on the stage-like sequence of the Teaching Personal and Social Responsibility model is warranted on the basis of the findings presented in the current study. Additional evidence from a replicated study would extend the present research and further the understanding of stage progression in the Hellison model.

In terms of impact on the *delivery* of the model, the finding of the first hypothesis is of limited consequence. The order of the goals found in the current study was different to those posited by Hellison (2003). An important factor here is that each goal *was* verified, albeit in a different order. The current application taught progressive training sessions as per the Hellison guidelines, in a sequential order that matched the goal structure of the model (Appendix I). Between study commencement and the second test administration, the training sessions had already completed one full rotation. All participants therefore had been exposed to the five goals, and respective training sessions of the model, twice within that timeframe. Thus, the order of the training sessions in the current study likely had minimal, if any, effect on the outcome *sequence* of the goals.

Contribution to research

The current study sought to contribute to the existing literature by addressing the gap in the research that called for a robust empirical investigation of the Hellison (2003) Teaching Personal and Social Responsibility model. In addition, the current study sought to provide possibilities and direction in answering historical criticisms of the model and of the research conducted on it thus far. Having tested the hypotheses for

the current study, additional findings were revealed pertaining to specific issues raised in the research literature.

The choice of medium in the application of the Hellison model

As set out in Chapter Two Methodology, a choice of physical activity was required as it would form the majority (in terms of time) of the content of any training session. Hellison (2003) leaves the decision of the type of medium chosen for the training sessions to the facilitator. Essentially any form of physical activity will suffice and Hellison (2003) refers to the use of basketball, volleyball, martial arts, football, and softball as choices personally used. The key factor is that the facilitator is to be fully conversant with the content of the model, whilst delivering proficient and knowledgeable instruction in the choice of physical activity.

The current application of the model utilised a karate skill set as the choice of physical activity. The author of this study, a proficient martial arts instructor with 38 years of experience, facilitated the application of the model in the current study. The use of a martial art as the physical activity content has been used previously as a selected medium. For example, a martial arts programme where his model was used is specifically cited by Hellison (2003, p73). However, it may be a reasonable speculation that a programme utilising a martial art may have inherent ‘advantages’ over other choices of physical activity. For example, traditional martial arts are synonymous with highly structured activity, discipline, etiquette, and a progressive regimen of physical skills, normally conducted in a dedicated venue referred to as a ‘dōjō’ (formal training hall). It was also necessary, in adherence with Hellison’s (2003) guidelines, to relinquish power from the traditional karate instructor to karate

student relationship. For example, a participant given instructions to be followed throughout a training session is common practice in traditional karate. In comparison, in accordance with the development of their own personal and social responsibility as the Hellison model aspires, a participant is working through their activity tasks at their own direction.

To counter the speculation and any potential confounding power dynamic as Hellison (2003) has highlighted, traditional approaches to teaching a martial art were treated differently in the current study. In many ways, traditional aspects of karate teaching were removed from the physical activity content for the participants. For example, the participants did not wear karate uniforms, a progressive grading system of karate skills was not followed, and the venue was their own school hall. Simply, it was only specifically selected physical karate skills (as detailed in the Methodology and Appendix I) that were maintained. The purpose of the current study was to examine the application of the Hellison model, as opposed to a study of how well the participants acclimatised to a karate school, or perform as karate students.

For the purposes of the current study, the use of a modified karate skills teaching programme, in accordance with Hellison's (2003) guidelines, was effective in delivering the physical activity component of the model.

Empirical assessment of the model

Existing research in the academic literature has demonstrated a predisposition as to establishing whether participants in reality become more personally and socially responsible from participation in an application of the model. Arguably, the historical literature has relied upon the single outcome to determine the model's legitimacy. As

such, the predominance of the existing literature is targeted at the generalisation of the model to other parts of participants' lives as evidence of the model's efficacy. A critical oversight then of the existing research was made evident. In general, participants are postulated not be personally and socially responsible prior to participation in the model. Therefore, any progress from that point towards the final goal of the model must be considered a positive gain irrespective of achieving the final goal of the model by any participant.

To examine the goals of the model empirically in the current study, a choice of which measures to utilise for the assessment of the variables was required. The Hellison model is structured around educational and developmental achievement, and is not a psychological model. For the purposes of application and assessment however, the current study required the Hellison (2003) model to be behaviourally operationalised. In so doing, assessment measures were selected on a best fit basis to the goals and foci of each stage of the Hellison model.

The empirical measures chosen had each demonstrated reliable and valid properties prior to their selection. However, their application in assessing participant change and progress along the goal continuums of the Hellison (2003) model is a first for the literature, and the model. There are numerous additional or alternative objectives, values, and developmental goals that could be associated with youth that may be evaluated. Arguably, the choice of measures was but one set of possibilities in an attempt to address the call for an empirical evaluation of the Teaching Personal and Social Responsibility model. For the purposes of the current study, each measure did demonstrate consistent acceptable reliability over all time points. Data collected from each test administration provided for detailed analysis of participant change

over time whilst participating in the current application of the Hellison model. For academic continuity and comparative purposes, replication using the measures of the current study is recommended. Their associated reliability and validity in relation to their assessment of the Hellison (2003) model may be established as a choice of psychological constructs and measures in subsequent research.

To the best of the author's knowledge, a principal criticism of the model's goals of personal and social responsibility was that there has not been a conclusive independent empirical test verifying the existence of the specific goals within the model. The current study is the first to individually target each of the goals within the model to test their legitimacy. In verifying the existence of each of the five goals, the current study also empirically verified that a participant was able to progressively move along each measured continuum for the five goals of the model. A critical issue simultaneously identified was the length of time, and intervals of measurement, that was required to perceive changes of personal and social responsibility in participants.

Timeframes for change over time

The academic literature has long lamented the want of conclusive evidence of efficacy for the Hellison (2003) model; research time frames may provide some assistance. The current study revealed that short term interventions are unlikely to provide the expected results, from participation, that the model postulates. Over the 40 week duration of the current application of the Hellison (2003) model, measurement data for the intervention group consistently provided evidence of

progressive change over time. The data demonstrated that the positive change occurred gradually and progressively over one scholastic year.

In terms of meaningful differences between the intervention and control, the current study highlighted that it was at the 16 week mark (time point 3) that a clear, statistically significant, separation occurred. Thus, in the current application of the model, 3 months passed before the intervention group began to pull away from the control, based on the data from the measures. The emergence of the separation continued at successive time points. At 24 weeks into the study, the earlier trend at 16 weeks continued and demonstrated that the separation remained evident. At the 32 week marker (time point five), the differences had increased further.

At 40 weeks (time point six), the separation had escalated and continued, and there was still room for progress by the intervention group. Averaged group data had shown that linear trajectories appeared across every empirical measure, and in the scalograms. Further, based on the grouped trajectories, it was illustrated that the group data had not yet reached the maximum capacity to distinguish participant development. With the inclusion of more time in the application of the current study, further gains may well have been demonstrated by the intervention participants.

Therefore, on the basis of the findings in the current study, it is reasonable to conclude that the development of personal and social responsibility occurs over many months. Thus, future applications of the Hellison model should consider similar timeframes as employed by the current study.

Empirical measurement of the model

In conducting an empirical study using reliable and valid measurement, the current study effectively put to rest the argument that the model is unlikely to provide sufficient capacity or opportunity that would allow for a traditional empirical investigation (Martinek, 2000). Martinek explained that due to the practical nature of the model, and that child dynamics are sensitive to the slightest variation, a traditional approach investigating the model may have a detrimental impact upon model delivery during the training sessions. For the current study, the warning from Martinek was well heeded and catered to. The six separate administrations of the measurements employed were conducted during allocated timeslots during the school day, and not on a day when a training session was scheduled. In so doing, there was no interruption to the intervention and no change in schedule of which day the training sessions were conducted.

The current study reviewed the academic literature and had identified the absence of a control group in numerous studies conducted on the Hellison (2003) model. Whilst positive outcomes from participation were often reported, inconclusive and anecdotal evidence meant that contributed research is open to the possibilities of alternative interpretations of their findings. In identifying the gap in the literature for a robust empirical investigation, the inclusion of a control group in the present study answered the call for comparative evidence to be obtained in conjunction with an intervention study. For the current study, due to a limitation in the number of students in the intervention school, an additional school was required to provide the control group. Concerns for a corresponding representation in the control group were addressed having been recruited from an identical decile rating school. In addition, it

was demonstrated from the data across the measures at study commencement that the two groups were empirically similar.

The cooperation from both schools was essential in administrating the empirical measurement protocol. The schools in the current study allowed time within the daily curriculum to enable the testing for the child participants to be conducted. The measurement protocol comprised of four child self-report measures assessing their perception of their individual progress. Equally, the commitment from the parents and teachers in the completion of their assessment measure provided a way of independently testing for the onset and development of personal and social responsibility in the participants. The measure completed each by the participants' respective teacher and parent reported an objective assessment of the child's progress. Whilst the four child self-reporting measures were completed as they saw themselves, the measure from the parents and teachers was an observational assessment.

The current study had effectively put into practice a triangulation of assessment between the child participants, their class teacher, and their respective parent. As it was successful in the current study, such a collaborative approach to research measurement is recommended in future research endeavours of the Teaching Personal and Social Responsibility model.

The task of data collection was a meticulous undertaking. At each of the time points, there was maximum student attendance to complete the administered tests. There was no missing data from the child-self reporting measures during the current study. A complete return rate of the questionnaires from the parents and the teachers was

also recorded at every time point. There were occasions when the day, and time, chosen for test administration had to be flexible with the school. It was noted by the researcher that the current study was given priority over many day to day considerations of a school setting. It was evident that the parents and teachers had recognised the current study as a worthwhile endeavour to which they had given their full support.

All of the measures utilised in the current study demonstrated acceptable empirical equivalence at the commencement of the study for both groups. An important feature for the current study to establish, it served to illustrate the similarity of the two sampled groups prior to the implementation of Hellison's (2003) Teaching Personal and Social Responsibility model. The educational and social similarity of the schools from which the participants were recruited was provided by a decile rating ascribed by the New Zealand Ministry of Education. However, it was important to be able to independently verify that both groups were similar across the constructs measured. In so doing, concerns over any differences or subsequent change over the course of the study, that may have been attributed to differences between the groups prior to study commencement, could be minimised.

Regression analysis of the collected data demonstrated that comparative differences existed between the intervention group and the control group across all the measures. The data demonstrated that the intervention group experienced greater rates of change than the control group across all the administered measures in the course of the current study. The differences over time in the rate of change across the trajectories demonstrated an increased rate of positive growth, across all measures, for the intervention group. In comparison, the scores across the

measures for the control group were constant, with minor statistically non-significant fluctuations, over the course of the study.

In comparing the data from the multivariate repeated analysis of the child self-reporting measures, the finding demonstrated that for the intervention group participants, the application of the Hellison (2003) model in the current study was effective. Statistical power for repeated measures multivariate analysis, a concern in the current study due to the number of participants as raised in the Methodology (p35), was demonstrated as acceptable. The combination of the number of variables, and the repeated measurement of them over the six time points, had effectively provided a robust empirical design that produced acceptable statistical power, as Fairweather (1991), and Peterman and Bradford (1987) indicated it should.

According to the data from their four self-reporting measures, the intervention participants progressed along the first four goals of the Hellison (2003) model. For the fifth goal, a comparison of parent and teacher responses, between the intervention and control conditions, was conducted to independently perceive any increase in observed positive behaviour of the child participants. Over the six time points, a reported increase in positive behaviour would verify if participants had effectively demonstrated the fifth goal of the Hellison (2003) model 'Outside the Training Venue', in effect '*Trying these ideas in other areas of life*'. Independent *t*-tests, comparing the parents and teachers equality of means, were conducted to identify statistically significant differences between the control and intervention groups. The data confirmed that the parents and teachers reported significantly greater positive behaviour in the intervention group than of the control group over the course of the current study. The use of independent *t*-tests served as a suitable

comparative assessment of the responses from the measure of positive behaviour in the current study.

Of the intervention students, the majority did progress along the revised continuum of the Hellison model. However, this was not the case with every student that took part. During the course of the current study, there were two students in particular that had difficulty with consistent engagement with the training sessions. Hellison (2003) contends that the majority of participants can improve their 'day-to-day consistency' (p30), and some will vary from one training session to the next in the course of the development, but variation can be expected. However, where participants are unable to progress, then an alternate step(s) are required. As it was in the current study, two students with previously undiagnosed medical conditions were placed in the intervention primary school at the beginning of the year. It was revealed from specialist services, during the course of the current study, that one child was diagnosed with foetal-alcohol syndrome, and the other, with type 1 diabetes.

The two children did not consistently self-report progress across the application timeframe, and often their objective assessments of their behaviour did not reflect a significant increase in positive behaviours. To the credit of both children however, these two children attempted to be involved and follow the training sessions. Where, on occasion, either of these two children were no longer able to participate, the intervention school had a teacher aide available for dedicated care outside of the training venue.

To recap, the empirical methodology employed in the current study had provided compelling data from reliable measures to analyse differing rates of change for the

intervention and control conditions. The methodology had also highlighted that a longitudinal study with six test intervals provided sufficient data for analysis. Using participant self-evaluation measures, combined with observational data from parents and teachers, was an effective approach to data generation and collection. Given the previously discussed timeframes where change over time occurred during the 40 week application of the model, a pre-post design would have been unable to provide data for such analysis. A pre-post design also would have been unable to distinguish the progressive stage properties of the Hellison (2003) model.

Scalogram utilisation to examine stage progression properties of the model

Having previously outlined the utilisation of Guttman (1950) scaling, the current study recognises the significant result obtained from Scalogram Analysis which formed an important part of the assessment protocol. The current study investigated the feasibility of the Hellison (2003) model for possessing progressive stage-development properties, having identified that the historical literature had thus far overlooked the opportunity. Whilst examining for global change in self-perceptions by the participants over the course of the current study, the assessment using Scalogram Analysis of the goal sequence of the Hellison (2003) model allowed for a discrete analysis of each goal of the model over time. A four-item scalogram was demonstrated for the four child self-report measures. When combining the parent and teacher measure and the child self-report measures together, a five-item quasi-scalogram was formed.

The Scalogram Analysis showed that the rate, and timing, of progression across the individual measures by the intervention participants highlighted two points. Firstly,

individual progression through the goals of the Hellison model was demonstrated by the rate of increasing scores across the measures. The analysis showed that the development of, and differentiation between, the goals of the Hellison (2003) model could be confirmed. It was possible then to demonstrate over time, at a group level, when each goal of the model was progressed through by the intervention participants. The ability to make such a specific determination has not been previously available, as demonstrated by inconclusive empirical evidence in the academic literature.

Secondly, averaging the data from the Positive Behavior Scale completed by the parents and teachers provided an objective assessment of participant change over time. The five-item quasi-scalogram confirmed that from the parents and teacher viewpoint, they were able to discern in the intervention participants, that increased change in positive behaviours over time had occurred. The inclusion of the parent and teacher data in the scalogram provided a reliable, objective, assessment of the participants, revealing evidentiary change in positive behaviour and attitude that the fifth goal of the Hellison (2003) model predicts.

The scalograms formed across the time points were temporally reliable having met the averaged Coefficient of Reproducibility criterion. The scalograms had also established a revised goal structure for the Hellison model, which in turn, demonstrated the validity for the Hellison (2003) model. In comparing the data from the Kruskal-Wallis analysis for the intervention and control conditions, the significant differences between the groups can be attributed to the intervention and thus eliminate the possibility of maturational effects. The scalograms provided evidence

that the Hellison (2003) model was effective, and beneficial, for the intervention participants.

The current study had successfully revealed a method by which progress through each of the goals of the Hellison (2003) model could be empirically determined. In a first for the academic literature using Scalogram Analysis, the current study had established that the Teaching Personal and Social Responsibility model can be interpreted, measured, and examined as an attitude scale for the purposes of future research.

Generalisation of the model in the current study

The current study investigated the Hellison (2003) model for the composition of five goals of personal and social responsibility as the model proposed. However, perhaps the single most prevailing criticism from the academic research is that participants have not conclusively demonstrated the final goal of the model. Goal five states that participants are able to display their developed personal and social responsibility outside of the venue where instruction took place. However, the literature has not conclusively stated that goal five of the model is achievable, or that any participant could progress and improve to a point where goal five was demonstrated to an observable level by others. The current study then had devised an empirical means that could effectively answer both these points.

Over the course of the current study, the class teacher and the parent of every participant completed the Positive Behavior Scale, relaying their perception of positive behaviour in the participants. In having both the teachers and the parents complete the assessment of the participants, the data from each was able to be

compared between them simultaneously both for impartiality and empirical equivalence, but primarily to ascertain participant progress through goal five of the model. In the attempt to answer the most prevalent question of the model arising in the academic literature, the current study empirically verified the fifth goal of the Hellison (2003) model.

From the observational measure completed by the parents and teachers, empirical tests of independent means indicated that the difference between the groups was significant. Their observations of the intervention group participants confirmed that the majority of the children had demonstrated goal 5 of the Hellison (2003) model. However, the narrow range and limited variety in responses for the measure, when compared with the control group, demonstrated that the adult responders of the intervention group may have been biased in their assessment of the children. The initial regression data from the Positive Behavior Scale initially highlighted a potential flaw in the equivalence of the control and intervention group teachers and parents. Namely, that they believed that the children had benefited more favourably, in terms of initial scores and the degree of positive change, over the course of the current study and they were not truly objective in their assessment. However, in examining the data of the Positive Behavior Scale more critically, the differences emerge during the course of the intervention and not at study outset. Initial equivalence was made manifest between the respective groups of adult responders, by the comparison of initial intercepts, across the subscales of the Positive Behavior Scale at study outset.

The use of the Positive Behavior Scale administered to two sets of observers provided an important and valuable result. For comparative purposes in validity, its

use in a similar manner in future research examining generalisation of the Hellison (2003) model is recommended.

Limitations of the current study

Whilst the current study may triumph a number of successes and make a valuable contribution to the academic literature, there are limitations and provisos that require consideration. Firstly, whilst the groups were complete class cohorts, and were typical of the mainstream school class composition in New Zealand, the number of participants in each group was small, in empirical research terms. In this regard, the small group size limits the degree of generalisability of the results, restricting chiefly only to the participants in the particular sample. However, the variation in the results when comparing the two groups is indisputable. The result gained provides a significant source from which conclusions and directions can both guide and facilitate future research. It would also be beneficial to replicate the current study outside of the New Zealand context for comparison.

Secondly, the sample groups were recruited from equivalent decile one schools, as defined by New Zealand's Ministry of Education. As such, the recruited groups are representative only of that demographic. To be able to put the result gained from the current study into a global perspective, additional research conducted in differing decile schools, as well as private schools, would provide additional outcomes for comparison. In changing the context of the intervention, with participants of ostensibly differing socioeconomic backgrounds that decile ratings indicate, it may offer opportunities in examining intervention impacts for participants across the educational profile.

Thirdly, the primary school participants in the current study were from a narrow age range, averaging 9.7 years. Continued research with differing child age groups may be useful in determining variations across age ranges, and to determine if the findings of the current study generalise to other age bands. For example, in terms of age and school environment, as children reach 10 years of age, it is commonplace in New Zealand that a progression from a primary school setting to an intermediate school setting occurs. Further research targeting the change in age, with the change in school environment, may offer additional research opportunities for applications of the Hellison (2003) model. Such a study has not yet been conducted in New Zealand.

Finally, the current study acknowledges an identified remaining question surrounding the Hellison (2003) model. Having participated in the current study, the question as to what extent do participants maintain or develop their new found levels of personal and social responsibility post study conclusion remains unanswered. For the current study, there was no follow up analysis of the participating cohorts. The question remained outside of the scope of the present study, with one notable exception for the author. Two years post intervention, two child participants from the intervention group recognised the author at some distance in a public shopping complex. Both of whom are now finishing their intermediate school year prior to the start of high school, ran to catch the author. Having then brought the author back to their respective families in person, time was spent relaying their life events since the study completed. The children, now in essence young adolescents, departed leaving the author with family members. Here, the author was thanked for the contribution made to their children's lives, but most significantly by their own volition, that their children

continue to demonstrate a significant behavioural difference at home as a result of their participation in the present study.

Future directions

The current study has successfully demonstrated methodological considerations for empirical evaluation that can be utilised in future research of the Teaching Personal and Social Responsibility model. In addition, a principal innovation of the current study was the examination of the individual goals of the Hellison (2003) model. The academic literature has been predominantly focused upon an outcome result of an observable increase in personal and social responsibility in participants. The result from the present study signifies that participants can also be examined at a discrete level for incremental change over time for each of the goals in the Hellison (2003) model. Arguably, there is also scope, for a comparative investigation for each of the goals of the model in isolation, as a series of independent goals.

The model was developed with small groups of participants and Hellison (2003) suggests that in his experience group numbers are customarily less than twenty. A potential conflict then between mainstream class sizes in New Zealand schools, which are typically higher, with the number of group participants typically associated in interventions by Hellison (2003), is noted. However, the current study has successfully demonstrated that an intervention with a larger cohort is feasible. In so doing, potentially negative factors such as only dealing with partial numbers of classroom participants, or self-selecting individuals into an optional activity for example, as the only means of conducting an intervention study using the Hellison (2003) model, can be dismissed. Future research, whilst remaining mindful of the

experience and advice from Hellison (2003), need not necessarily be restricted to a small group of participants. There is no guideline within the model however for a level of tolerance as to the maximum number of participants for any one intervention.

Having successfully delivered the intervention in the current study to complete class cohorts, a number of possible future research directions have been discussed, some additional research questions arise. Principal amongst these would be establishing the feasibility of introducing the model into main-stream schooling. Whilst school regulatory and educational requirements remain to be catered to, the possibility for an entire school delivery of the model would be a significant step toward the want to graduate personally and socially responsible students into society expressed by New Zealand's Ministry of Education (2007).

Studies here could address issues such as multiple class sizes, initiate complete school streaming between educational subjects as well as classroom settings, but would also include teacher training and support that a school wide study would require. Perhaps the most significant obstacle would be the resistance of existing teaching practice that has been found in historical research which also would have to be catered for (Mrugala, 2002). As it was for the present study, a guide to initiate such work does not yet exist but the opportunity has been identified.

Conclusion

The intervention of current study was conducted in a solitary school over the period of one scholastic year. Whilst the current study has demonstrated empirical strength and significant findings, the study stands alone without corroborative empirical evidence from any other research. In delivering the present intervention study, the

findings from the work answer many previously identified criticisms. Predominantly of these was the question for empirical validity of the Hellison (2003) model. In reiterating Hartmann (2003) who made the summation that it was not that the model does not work, there is a lack of evidence to support that it does. Noting the limitations of the current study, the effectiveness of the Hellison (2003) model has been empirically demonstrated. In accepting that the current study has created a precedent in the research of the Hellison (2003) model, the gap in the research literature narrows, and future research now has new directions.

In contemplating new directions, the current study has contributed an alternative technique in evaluating the delivery of the Teaching Personal and Social Responsibility model for future research. The current study successfully established that the Hellison (2003) model can be gauged and examined as an attitude using Guttman scaling. An attitude scale derived from participant scores can then be objectively compared to parent and teacher perspectives, or any objective observer. Each goal of the model thusly can be measured and analysed. The contribution provides an empirical basis to formulate detailed research that specifically answers the long lasting call for a means to empirically examine the Hellison (2003) model, and do so for each goal of the model, as opposed to one single outcome.

The current study has made a significant contribution to the research literature, and in so doing, provided opportunities for school aged children and their development in the future. Arguably, elements of what John and Evelyn Dewey (1915) hoped for are present in the Hellison (2003) model. As progressive educators look to provide means and ways to deliver meaningful education, so increases the demands for curricular diversity and innovation. There now exists a reasonable basis to consider

Hellison's (2003) Teaching Personal and Social Responsibility model as an inclusive option in the developing role of main-stream education. In providing an empirically validated assessment for the efficacy of the Hellison (2003) model, further empirical research with a view to incorporation into educational curriculums is warranted.

In conclusion, the present thesis has described the rationale, development, and findings of empirically investigating Hellison's (2003) Teaching Personal and Social Responsibility model. The Hellison (2003) model is a valid programme for teaching personal and social responsibility in primary school aged children in New Zealand. The application of the model in the current study was effective, and benefited the participants of the intervention group. It is hoped that the present study be replicated, and broadened, so that the body of empirical evidence increases and contributes further to the understanding of development of personal and social responsibility in school aged children.

References

Andrews, J. A., Hops, H., Ary, D., Lichtenstein, E., & Tildesley, E. (1991). The construction, validation and use of a Guttman scale of adolescent substance use: An investigation of family relationships. *Journal of Drug Issues, 21*(3), 557-572.

Bandura, A. (1977). *Social learning theory.* Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology, 52*(1), 1-26.

Bandura, A., Caprara, G. V., Barbaranelli, C., Gerbino, M., & Pastorelli, C. (2003). Role of affective self−regulatory efficacy in diverse spheres of psychosocial functioning. *Child Development, 74*(3), 769-782.

Berk, L. E., & Winsler, A. (1995). *Scaffolding children's learning: Vygotsky and early childhood education.* Washington, DC: National Association for the Education of Young Children.

Biddle, S., Akande, D., Armstrong, N., Ashcroft, M., Brooke, R., & Goudas, M. (1996). The Self-Motivation Inventory modified for Children: Evidence on psychometric properties and its use in physical exercise. *International Journal of Sport Psychology*, *27*(3), 237-250.

Blascovich, J., & Tomaka, J. (1991). Measures of self-esteem. *Measures of Personality and Social Psychological Attitudes, 1*, 115-160.

Caprara, G. V., & Pastorelli, C. (1989). Toward a reorientation of research on aggression. *European Journal of Personality, 3*(2), 121-138.

Caprara, G. V., & Pastorelli, C. (1993). Early emotional instability, prosocial behaviour, and aggression: Some methodological aspects. *European Journal of Personality*, *7*(1), 19-36.

Caprara, G. V., Capanna, C., Steca, P., & Paciello, M. (2005). Misura e Determinanti Personali Della Prosocialità. Un approccio sociale cognitivo. *Giornale Italiano Di Psicologia, 32*(2), 287-307.

Cohen, J. (1988). *Statistical power analysis for the behavioural sciences.* New Jersey: Lawrence Erlbaum Associates, Inc.

Colby, B. N. (1987). Well-Being: A theoretical program. *American Anthropologist, 89*(4), 879-895.

Crain, W. (2011). *Theories of development: Concepts and applications*. Boston, MA: Prentice Hall.

De Minzi, M., Lemos, V., & Mesurado, B. (2011). Relationship among children's perception of parental relationship and parental empathy and prosocial behaviour during childhood (English). *Avances En Psicologia Latinoamericana, 29*(2), 330-343.

Dewey, J., & Dewey, E. (1915). *Schools of to-morrow.* New York: E.P. Dutton and Company.

Dishman, R. K., Ickes, W. W., Morgan, W. P., Lavallee, D., Williams, J. M., & Jones, M. V. (2008). Self-motivation and adherence to habitual physical activity. In D. Lavallee, J. M. Williams, & M. V. Jones (Eds.), *Key studies in sport and exercise psychology* (74-92). Maidenhead, BRK England: Open University Press.

Edwards, A. L. (1957). *Techniques of attitude scale construction*. Englewood Cliffs, NJ: Prentice-Hall.

Epps, S. R., Park, S. E., Huston, A. C., & Ripke, M. (2003, March). *Psychometric analyses of the Positive Behavior Scale in the New Hope Project and the Panel Study of Income Dynamics*. Paper presented at the Positive Youth Indicators Conference for Child Trends, Washington, DC. Retrieved from http://www.gse.harvard.edu/faculty_research/profiles/cv/sylvia_epps.pdf.

Escartí, A., Gutiérrez, M., Pascual, C., & Llopis, R. (2010). Implementation of the Personal and Social Responsibility model to improve self-efficacy during physical education classes for primary school children. *International Journal of Psychology and Psychological Therapy*, *10*(3), 387-402.

Fairweather, P. G. (1991). Statistical power and design requirements for environmental monitoring. *Australian Journal of Marine and Freshwater Research, 42*, 555-67.

Fleming, J. S., & Courtney, B. E. (1984). The dimensionality of self-esteem: II. Hierarchical facet model for revised measurement scales. *Journal of Personality and Social Psychology, 46(*2), 404.

Gennetian, L. A., & Miller, C. (2002). Children and welfare reform: A view from an experimental welfare program in Minnesota. *Child Development*, *73*(2), 601-620.

Glass, G. V. (1997). Interrupted time-series quasi-experiments. *Complimentary Methods for Research in Education, 2*, 589-608.

Gordon, B. (2010). *Teaching personal and social responsibility through physical education: An examination of the Teaching Personal and Social Responsibility model when taught in a New Zealand secondary school.* Saarbrucken, Germany: Lambert Academic Publishing.

Gould, D., & Carson, S. (2008). Life skills development through sport: Current status and future directions. *International Review of Sport and Exercise Psychology*, *1*(1), 58-78.

Gratton, C., & Jones, I. (2004). *Research methods for sport studies*. London: Routledge.

Guttman, L. L. (1944). A basis for scaling qualitative data. *American Sociological Review, 9*, 139-150.

Guttman, L. L. (1947). On Festinger's evaluation of scale analysis. *Psychological Bulletin Measurement, 44*, 451-465.

Guttman, L. L. (1950). Relation of Scalogram Analysis to other techniques. *Measurement and Prediction, 4*, 172-212.

Hagborg, W. J. (1993). The Rosenberg Self−Esteem Scale and Harter's Self−Perception Profile for Adolescents: A concurrent validity study. *Psychology in the Schools, 30*(2), 132-136.

Haire, M., Ghiselli, E. E., & Porter, L. W. (1966). *Managerial thinking: An international study.* Oxford: John Wiley & Sons.

Hammond-Diedrich, K. C., & Walsh, D. (2006). Empowering youth through a responsibility-based cross-age teacher program: An investigation into impact and possibilities. *Physical Educator*, *63*(3), 134.

Hartmann, D. (2003). Theorizing sport as social intervention: A view from the grassroots. *Quest, 55*(2), 118-140.

Hellison, D. R. (1983). Teaching self-responsibility (and more). *Journal of Physical Education, Recreation and Dance, 54*, 23-28.

Hellison, D. R. (1985). *Goals and strategies for teaching physical education*. Champaign, IL: Human Kinetics.

Hellison, D. R. (1991). The whole person in physical education scholarship: Toward integration. *Quest, 43*(3), 307-318.

Hellison, D. R. (2003). *Teaching responsibility through physical activity* (2nd ed.). Champaign, IL: Human Kinetics.

Hellison, D. R. (2011). *Teaching responsibility through physical activity* (3rd ed.). Champaign, IL: Human Kinetics.

Ho, R. (2006). *Handbook of univariate and multivariate data analysis and interpretation with SPSS.* Florida: CRC Press.

Huang, C., & Dong, N. (2012). Factor structures of the Rosenberg Self-Esteem Scale. *European Journal of Psychological Assessment, 28*(2), 132-138.

Kellam, S. G., Ling, X., Merisca, R., Brown, C. H., & Ialongo, N. (1998). The effect of the level of aggression in the first grade classroom on the course and malleability of aggressive behavior into middle school. *Development and Psychopathology, 10*(2), 165-185.

Kohlberg, L. (1981). *The philosophy of moral development: Moral stages and the idea of justice: Vol.1. Essays on moral development.* New York: Harper & Row.

Laker, A. (2000). *Beyond the boundaries of physical education*. New York: Routledge.

Lee, O., & Martinek, T. (2009). Navigating two cultures: An investigation of cultures of a responsibility-based physical activity program and school. *Research Quarterly for Exercise and Sport, 80*(2), 230-240.

Linver, M. R., Roth, J. L., & Brooks-Gunn, J. (2009). Patterns of adolescents' participation in organized activities: Are sports best when combined with other activities? *Developmental Psychology, 45*(2), 354-367.

Loland, S. (2006). Morality, medicine, and meaning: Towards an integrated justification of physical education. *Quest, 58*(1), 60-70.

Maier, N. R. F. (1955). *Psychology in industry: A psychological approach to industrial problems.* Boston: Houghton Mifflin.

Marshall, S. J., & Biddle, S. J. H. (2001). The Transtheoretical Model of behavior change: A meta-analysis of applications to physical activity and exercise. *Annals of Behavioral Medicine, 23,* 229–246.

Martinek, T. (2000). Program evaluation. In D. Hellison, N. Cutforth, J. Kallusky, T. Martinek, M. Parker, & J. Stiehl (Eds.), *Serving underserved youth through physical activity: Toward a model for school-university collaboration* (pp. 211-228). Champaign, IL: Human Kinetics.

Martinek, T., & Schilling, T. (2003). Developing compassionate leadership in underserved youths. *Journal of Physical Education, Recreation & Dance, 74*(5), 33-39.

Martinek, T., Schilling, T., & Hellison, D. (2006). The development of compassionate and caring leadership among adolescents. *Physical Education and Sport Pedagogy, 11*(2), 141-157.

Maslow, A. (1968). *Toward a psychology of being* (2nd ed.). New York: Van Nostrand Reihold.

Ministry of Education. (2007). *The New Zealand Curriculum*. Wellington, New Zealand: Learning Media.

Montessori, M. (1936). *The secret of childhood* (M.J. Costelloe, trans.). New York: Ballantine Books, 1966.

Montessori, M. (1948). *From childhood to adolescence* (A.M. Joosten, trans.). New York: Schocken, 1973.

Motl, R., Dishman, R., Felton, G., & Pate, R. (2003). Self-motivation and physical activity among black and white adolescent girls. *Medicine and Science in Sports and Exercise, 35*(1), 128-136.

Mrugala, K. (2002). *An exploratory study of responsibility model practitioners.* Unpublished doctoral dissertation: University of Illinois at Chicago.

Muris, P. (2001). A brief questionnaire for measuring self-efficacy in youths. *Journal of Psychopathology and Behavioural Assessment, 23*(3), 145–149.

Muris, P. (2002). Relationships between self-efficacy and symptoms of anxiety disorders and depression in a normal adolescent sample. *Personality and Individual Differences, 32*(2), 337–348.

Nunnally, J. C. (1978). *Psychometric Theory*. New York: McGraw-Hill.

Olson, C. L. (1976). On choosing a test statistic in multivariate analysis of variance. *Psychological Bulletin, 83*, 579-586.

Pascual, C., Escartí, A., Llopis, R., Gutíerrez, M., Marín, D., & Wright, P. M. (2011). Implementation fidelity of a program designed to promote personal and social responsibility through physical education: A comparative case study. *Research Quarterly for Exercise and Sport*, *82*(3), 499-511.

Peterman, R. M., & Bradford, M. J. (1987). Statistical power of trends in fish abundance. *Canadian Journal of Fisheries and Aquatic Sciences, 44*(11), 1879-1889.

Piaget, J. (1969). *Science of education and the psychology of the child* (D.Coltman, trans.). New York: Viking, 1970.

Polit, D. F. (1998). *The Positive Behavior Scale*. Saratoga Springs, NY: Humananalysis.

Quint, J. C., Bos, J. M., & Polit, D. F. (1997). *New Chance: Final report on a comprehensive program for young mothers in poverty and their children*. New York: Manpower Demonstration Research Corporation.

Robson, C. (1993). *Real world research: A resource for social scientists and practitioner-researchers*. Oxford, UK: Blackwell Publishers.

Schmitt, D. P., & Allik, J. (2005). Simultaneous administration of the Rosenberg Self-Esteem Scale in 53 nations: Exploring the universal and culture-specific features of global self-esteem. *Journal of Personality and Social Psychology, 89*(4), 623-642.

Shayer, M., & Beasley, F. (1987). Does instrumental enrichment work? *British Educational Research Journal, 13*(2), 101-119.

Shorkey, C. T., & Whiteman, V. L. (1977). Development of the Rational Behavior Inventory: Initial validity and reliability. *Educational and Psychological Measurement*, *37*(2), 527-534.

Siedentop, D. (1994). *Sport education: Quality PE through positive sport experiences.* Champaign, IL: Human Kinetics.

Singer, J. D., & Willett, J. B. (2003). *Applied longitudinal data analysis: Modeling change and event occurrence*. New York: Oxford University Press.

Smith, D., & Bar-Eli, M. (Eds.). (2007). *Essential readings in sport and exercise psychology.* Champaign, IL: Human Kinetics.

Stouffer, S. A., Guttman, L., Suchman, E. A., Lazarsfeld, P. F., Star, S. A., & Clausen, J. A. (1950). *Measurement and prediction*. New Jersey: Princeton University Press.

Suldo, S. M., Shaunessy, E., & Hardesty, R. (2008). Relationships among stress, coping, and mental health in high−achieving high school students. *Psychology in the Schools*, *45*(4), 273-290.

Walsh, D. (2008). Helping youth in underserved communities envision possible futures: An extension of the Teaching Personal and Social Responsibility model. *Research Quarterly for Exercise and Sport, 79*(2), 209-221.

Walsh, D., Ozaeta, J., & Wright, P. M. (2010). Transference of responsibility model goals to the school environment: Exploring the impact of a coaching club program. *Physical Education and Sport Pedagogy, 15*(1), 15-28.

Wentzel, K. R. (1991). Social competence at school: Relation between social responsibility and academic achievement. *Review of Educational Research, 61*(1), 1-24.

Wright, P. M., & Burton, S. (2008). Implementation and outcomes of a responsibility-based physical activity program integrated into an intact high school physical education class. *Journal of Teaching in Physical Education*, *27*(2), 138-154.

Wright, P. M., & Li, W. (2009). Exploring the relevance of positive youth development in urban physical education. *Physical Education and Sport Pedagogy, 14*(3), 241-251.

Wright, P., White, K., & Gaebler-Spira, D. (2004). Exploring the relevance of the Personal and Social Responsibility model in adapted physical activity: A collective case study. *Journal of Teaching in Physical Education, 23*(1), 71-81.

Wright, P. M., Li, W., Ding, S., & Pickering, M. (2010). Integrating a personal and social responsibility program into a Wellness course for urban high school students: Assessing implementation and educational outcomes. *Sport, Education and Society*, *15*(3), 277-298.

Wylie, R. C. (1989). *Measures of self-concept.* Lincoln NE, USA: University of Nebraska Press.

Appendix A

Teacher Information Sheet

Evaluation of the Teaching Personal and Social Responsibility programme (T.P.S.R.).

INFORMATION SHEET for TEACHERS

Researcher Introduction

Hello, I am Michael Hayes Smith a M.Sc. (Psychology) graduate and Ph.D. candidate with Massey University at Albany. I have 22 years applicable martial art and teaching experience. I am supported in this project by Dr. Richard Fletcher and Prof. Stuart Carr, two highly competent and skilled supervisors at Massey University who are experienced with research and projects in this field.

The project is an evaluation of an in-school educational programme. We aim to assess its effectiveness, contribute to literature, and provide potential options for educational development in New Zealand for primary school aged children. The Teaching Personal and Social Responsibility programme (T.P.S.R.) is to be located in two schools in Auckland.

Project Description and Invitation

The T.P.S.R. programme has demonstrated effectiveness addressing the educational development of programme participants in other countries, but has not yet been trialled here in New Zealand. A proven model, as is the aim of this work, acceptable to Governmental and Non-Governmental agencies can provide options for educational change without committing additional scholastic resources such as time, personnel, and finances.

The T.P.S.R. programme is to be administered in two participant schools over one scholastic year. As a participant in this study, your views, contributions and observations are part of this work. Questionnaires will be completed at pre-set intervals throughout this period to gain your feedback. Data administration and collection from this will be completed at school, remain anonymous, kept secure, and be destroyed in due course in accordance with all rules and regulations. Your willingness to be involved with this project is paramount and earnestly invited.

Participant Identification and Recruitment

This programme is tailored for year 6 primary school children from Auckland. No pre-selection criteria apply as the programme is made available to all year 6 students at the schools direction and choice. The two schools will identify the programme participants and recruitment will be made by these schools and will direct participants into the programme at their discretion. No discomfort or risk to any participant as a result of participation is expected.

Project Procedures

The participants in schools will be part of a weekly physical education programme for a one hour class, once a week. The programme focuses on the development of physical motor skills, karate self-defence skills, and the participant's ability to work in conjunction with other students. The same

participants will also complete questionnaires asking for their feedback on the programme and their involvement in it. These will be completed at six-weekly intervals.

As a teacher in connection with each of the in-school participants, you will be asked to complete questionnaires about their individual involvement and progress in the programme as well. This will enable valuable feedback. This will take approximately 20 minutes every 6 weeks of the programme.

Data Management

Each participant will be assigned an independent alpha-numeric code known only to the researcher. All of the information and questionnaires, administration and collection, will be completed at school, remain anonymous, kept secure, and will be destroyed within five years. The final publication of the research is expected during 2010 and a summary will be made available to all participants upon request.

Participant's Rights

As a participant in this study, you have the right to:

- *decline to answer any particular question;*
- *withdrawal from the programme at any time;*
- *ask any questions about the study at any time during participation;*
- *provide information on the understanding that your name will not be used;*
- *be given access to a summary of the project findings when it is concluded;*
- *please note that the completion and return of the questionnaires implies your consent.*

Project Contacts

Researcher:

- *Michael Smith Ph. 021 250 0998.*
  Michael.Smith.8@uni.massey.ac.nz

Supervision Team:

- *Dr. Richard Fletcher Ph. (09) 414 0800.*
  R.B.Fletcher@massey.ac.nz

- *Professor Stuart Carr Ph. (09) 414 0800.*
  S.C.Carr@massey.ac.nz

Committee Approval Statement

This project has been reviewed and approved by the Massey University Human Ethics Committee: Northern, Application 09/004. If you have any concerns about the conduct of this research, please contact Dr Denise Wilson, Chair, Massey University Human Ethics Committee: Northern, telephone 09 414 0800 x9070, email humanethicsnorth@massey.ac.nz.

Appendix B

Teacher Consent Form

Evaluation of the Teaching Personal and Social Responsibility programme (T.P.S.R.).

PARTICIPANT CONSENT FORM - Teacher

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree to participate in this study under the conditions set out in the Information Sheet.

I agree to share information regarding the child participants for the purposes of the T.P.S.R. programme with Michael Smith. I understand the information will be kept confidential at all times.

Signature: ..... **Date:** .....

Full Name - printed .....

Appendix C

Child Participant Information Sheet

Involvement and Evaluation of the Teaching Personal and Social Responsibility programme in school (T.P.S.R.).

INFORMATION SHEET FOR PARTICIPANTS (you).

Who am I?
Hello, I am Michael Smith a graduate and Doctorial candidate with Massey University at Albany. I have 22 years martial art and teaching experience. Nice to meet you.

Why am I here?
As part of the physical education classes at your school this year, I will be sharing Karate, self-defence and personal awareness training with you. You are able to take part once a week, in the afternoons, straight after lunch for an hour.

What will you have to do?
Take part, get involved, and enjoy. Remember that this is still part of the P.E. classes in school. You will get to learn some martial art skills and learn some practical self-defence safety.

Also, from time to time, I will ask you to answer some questionnaires about the classes, what you think of them, and how you think you are doing. It will take about ten minutes to fill out the questionnaires. It is your choice to do them.

What happens to all this Information?
All of the questionnaires, and all your information that you choose to share, is kept safe at all times. No one else has access to them. When the school year finishes, a final report about this programme is made to your school, your parents, and to you if you wish. At no time will your name be used in any publication.

You have rights
In taking part, you have the right to:

- *not to answer any particular question on the questionnaires;*
- *ask any questions about the study at any time during taking part;*
- *provide information knowing that your name will not be used;*
- *be given a summary of the things we find out when it is finished;*
- *and please note that completing and returning questionnaires means it's ok for me to use them to evaluate and provide feedback about the work being done.*

What happens if I have other questions?
All questions are good. Feel free to ask myself, or your teacher. Remember, respectful questions will always give you respectful answers.

Making Contact
You will see me in school often and you will be able to talk with me in class every school week. Outside of this time, if you need to make contact with me, please talk with your teacher first.

Committee Approval Statement

This project has been reviewed and approved by the Massey University Human Ethics Committee: Northern, Application 09/004. If you have any concerns about the conduct of this research, please contact Dr Denise Wilson, Chair, Massey University Human Ethics Committee: Northern, telephone 09 414 0800 x9070, email humanethicsnorth@massey.ac.nz.

Appendix D

Child Participant Consent

Evaluation of the Teaching Personal and Social Responsibility programme in school (T.P.S.R.).

PARTICIPANT CONSENT FORM - Individual

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree to participate in this study under the conditions set out in the Information Sheet.

Signature: ..... **Date:** .....

Full Name - printed .....

Appendix E

Parent Participant Information Sheet

Evaluation of the Teaching Personal and Social Responsibility programme (T.P.S.R.).

INFORMATION SHEET for PARENTS

Who am I?

Hello, I am Michael Hayes Smith a M.Sc. (Psychology) graduate and Ph.D. candidate with Massey University at Albany. I have 22 years applicable martial art and teaching experience. I am supported in this project by Dr. Richard Fletcher and Professor Stuart Carr from Massey University. Our contact details are located on the next page.

What is it all about?

The project is an evaluation of an in-school educational programme. I hope to provide potential options for educational development in New Zealand for primary school aged children. The programme focuses on the development of physical motor skills, karate self-defence skills, and the children's ability to work in conjunction with others.

What are we doing?

The children in schools will be part of a weekly physical education (P.E.) programme for a one hour class, once a week. The same children will also complete questionnaires asking for their feedback on the programme and their involvement in it. These will be completed at six-weekly intervals. We do require your consent for your child to participate in this programme. I will also be asking from your child's school, permission to share information between myself and your child's teacher regarding their progress in the programme and ask for your consent to do this. No costs or fees for this programme will be charged, it is free.

As a parent or caregiver in connection with one of the in-school participants, you will also be asked to complete questionnaires from time to time about their involvement and progress in the programme as well. This will enable valuable feedback and for you to actively contribute to the programme and your child's progress. Your willingness to be involved with this project is paramount and earnestly invited.

What happens to my information? Will I be identified?

No identification of any person, you or your child, will be made. Each participant will be assigned an independent alpha-numeric code known only to myself; your identity will remain at all times confidential. Completing the questionnaires will be done at a time and location of your choosing, remain anonymous, kept secure, and will be destroyed within five years. The final publication of the research is expected during 2010 and a summary will be made available to all participants upon request.

Participant's Rights

As a participant in this study, you have the right to:

- *decline to answer any particular question;*
- *withdrawal from the programme at any time;*
- *ask any questions about the study at any time during participation;*
- *provide information on the understanding that your name will not be used;*
- *be given access to a summary of the project findings when it is concluded;*
- *please note that the completion and return of the questionnaires implies your consent.*

Project Contacts

Researcher:

- *Michael Smith Ph. 021 250 0998.*
  Michael.Smith.8@uni.massey.ac.nz

Supervision Team:

- *Dr. Richard Fletcher Ph. (09) 414 0800.*
  R.B.Fletcher@massey.ac.nz

- *Professor Stuart Carr Ph. (09) 414 0800.*
  S.C.Carr@massey.ac.nz

Committee Approval Statement

This project has been reviewed and approved by the Massey University Human Ethics Committee: Northern, Application 09/004 If you have any concerns about the conduct of this research, please contact Dr Denise Wilson, Chair, Massey University Human Ethics Committee: Northern, telephone 09 414 0800 x9070, email humanethicsnorth@massey.ac.nz.

Appendix F

Parent Participant Consent

Evaluation of the in-school Teaching Personal and Social Responsibility programme (T.P.S.R.).

PARTICIPANT CONSENT FORM - Parent

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree to my child (please print name of your child here) participating in the T.P.S.R. programme at school.

I agree to participate in this study under the conditions set out in the Information Sheet.

I agree to allow my child's school and teachers to share information with Michael Smith for the T.P.S.R. programme. I understand the information will be kept confidential at all times.

Signature: ..... **Date:** .....

Full Name - printed .....

Appendix G

Teacher Confidentiality Agreement

Evaluation of the Teaching Personal and Social Responsibility programme.

CONFIDENTIALITY AGREEMENT

I ..... (Full Name - printed)

agree to keep confidential all information concerning the project .....

I will not retain or copy any information involving the project.

Signature: ..... **Date:** .....

Appendix H: Karate Authorisation

GKR NEW ZEALAND Ltd

9A Joval Pl • Manukau • Auckland New Zealand • Tel: +64 (0) 21 323 061 • Fax: +64 (9) 532 8680 • E: zacbon@xtra.co.nz
ZONE DIRECTORS OFFICE

Date: **31/10/2008**

To Whom It May Concern:

Michael Hayes Smith
Instructor: Go Kan Ryu Karate Do.

Michael is a Branch Instructor in the Auckland region, responsible for the Glenfield Primary School dojo. Michael also relieves at other branches as and when the need arises, continually providing quality tuition and guidance to students from all walks of life.

Michael is governed by a strong moral, social and work ethic which are displayed in his teaching and commitment to students and fellow instructors alike. Michael has an extensive martial arts and instructorship background spanning three decades, and is qualified to provide tuition and referee both nationally and internationally.

We fully support and endorse Michael, his Ph.D. aspirations and intentions, for such a significant endeavour. We look forward to this outcome with enthusiasm, his continued and developing involvement both in our organisation, and to future endeavours that he applies himself.

Sensei Paul Hart.
Regional Instructor and Manager, Auckland.

Sensei Antonie de Bruin.
Senior Instructor and Zone Director for New Zealand.

1 Hour Session Plan: 1

Theme: Respect

Counselling Time

Awareness Talk:

- to open the lesson, today is about the basic formalities, the basic punch, and the first block.
- is the opportunity to remind students about their responsibilities that day. Respect for others, respect for self, control of what we say and how it is said. Also a focus on peaceful negotiation, right to be included, treating one another as equals.

Lesson: **Teaching the skill set –**

Bow (Rei)

Standing Stance (Heiko Dachi)

Stomach Punch (Chudan Tsuki)

Head Punch (Jodan Tsuki)

Head Block (Age Uke)

Partner Drills – Mirroring each other

Group Drills – Working together

Single Drills – Independent practice

Group Meeting

Reflection Time

1 Hour Session Plan: 2

Theme: Respect

Counselling Time

Awareness Talk:

- to open the lesson, today is about some new stances, a punch and the first kick skill.
- is the opportunity to remind students about their responsibilities that day. Respect for others, respect for self, control of what we say and how it is said. Also a focus on peaceful negotiation, right to be included, treating one another as equals.

Lesson: **Teaching the skill set –**

Long Fighting Stance (Zenkutsu Dachi)

Sumo Stance (Shiko Dachi)

Short Punch (Shita Tsuki)

Front Kick (Mae Geri)

Partner Drills – Mirroring each other

Group Drills – Working together

Single Drills – Independent practice

Group Meeting

Reflection Time

1 Hour Session Plan: 3

Theme: Participation

Counselling Time

Awareness Talk:

- to open the lesson, todays is about another new stance, a new strike, block and the powerful round kick.
- is the opportunity to remind students about their responsibilities that day. Responsibility for self-motivation, participation, involvement, concentration, task achievement, goal awareness.

Lesson: **Teaching the skill set –**

Horse Stance (Kiba Dachi)

Round Elbow (Mawashi Empi)

Lower Level Block (Gadan Barai)

Round Kick (Muwashi Geri)

Partner Drills – Mirroring each other

Group Drills – Working together

Single Drills – Independent practice

Group Meeting

Reflection Time

1 Hour Session Plan: 4

Theme: Participation

Counselling Time

Awareness Talk:

- to open the lesson, the short fighting and the back leaning stances, a new block and the side kick.
- is the opportunity to remind students about their responsibilities that day. Responsibility for self-motivation, participation, involvement, concentration, task achievement, goal awareness.

Lesson: **Teaching the skill set –**

Short Fighting Stance (Han Zenkutsu Dachi)

Back Leaning Stance (Kokutsu Dachi)

Outside Block (Soto Uke)

Side Kick (Yoko Geri)

Partner Drills – Mirroring each other

Group Drills – Working together

Single Drills – Independent practice

Group Meeting

Reflection Time

1 Hour Session Plan: 5

Theme: Self-Direction

Counselling Time

Awareness Talk:

- to open the lesson, today is about stringing the basics together into a pattern. The first kata formats.
- is the opportunity to remind students about their responsibilities that day. Self planning, reflective positive self-choices, self-supervision of personal needs and interests in context of goals of the physical training. Working towards long-term achievement awareness.

Lesson: **Teaching the skill set –**

1st Kata (Taigyuku Shodan) (Foot Work Only)

1st Kata (Taigyuku Shodan) (Complete)

2nd Kata (Taigyuku Nidan) (Foot Work Only)

Partner Drills – Mirroring each other

Group Drills – Working together

Single Drills – Independent practice

Group Meeting

Reflection Time

1 Hour Session Plan: 6

Theme: Self-Direction

Counselling Time

Awareness Talk:

- to open the lesson, today's is the cat stance, a new block, strike and the back kick.
- is the opportunity to remind students about their responsibilities that day. Self planning, reflective positive self-choices, self-supervision of personal needs and interests in context of goals of the physical training. Working towards long-term achievement awareness.

Lesson: **Teaching the skill set –**

Cat Stance (Nekoashi Dachi)

Front Back Fist (Uraken Uchi)

Sweeping Block (Gedan Uke)

Back Kick (Ushiro Geri)

Partner Drills – Mirroring each other

Group Drills – Working together

Single Drills – Independent practice

Group Meeting

Reflection Time

1 Hour Session Plan: 7

Theme: Caring

Counselling Time

Awareness Talk:

- to open the lesson, today is mostly about the advanced blocks and the side back fist.
- is the opportunity to remind students about their responsibilities that day. Awareness that any individual is able to make positive contributions every day. Listening and responding, understanding that that strength can be found in recognising the needs and feelings of others.

Lesson: **Teaching the skill set –**

Side Back Fist (Yoko Uraken Uchi)

Inside Block (Uchi Uke)

Double Block (Chuge Uke)

Hooking Block (Kake Uke)

Partner Drills – Mirroring each other

Group Drills – Working together

Single Drills – Independent practice

Group Meeting

Reflection Time

1 Hour Session Plan: 8

Theme: Caring

Counselling Time

Awareness Talk:

- to open the lesson, today is about the hour glass stance, a new strike, a block, and partner drills facing one another for comparisons and exchanging feedback between partners.

- is the opportunity to remind students about their responsibilities that day. Awareness that any individual is able to make positive contributions every day. Listening and responding, understanding that that strength can be found in recognising the needs and feelings of others.

Lesson: **Teaching the skill set –**

Hour Glass Stance (Sanchin Dachi)

Ridge Hand (Haito Uchi)

Round Block (Mawashi Uke)

Partner Drills – Mirroring each other

Group Drills – Working together

Single Drills – Independent practice

Group Meeting

Reflection Time

1 Hour Session Plan: 9

Theme: Outside the Training Venue

Counselling Time

Awareness Talk:

- to open the lesson, today is about the rising elbow, the knife hands, and partner drills facing one another for comparisons and exchanging feedback between partners.

- is the opportunity to remind students about their responsibilities that day. Taking all that you know and applying it at home, school, on the street. Understanding their role in personal well-being and that of others. What it means to be a role model to others.

Lesson: **Teaching the skill set –**

Rising Elbow (Hijiate)

Inside Knife Hand (Soto Shuto Uchi)

Outside Knife Hand (Uchi Shuto Uchi)

Partner Drills – Mirroring each other

Group Drills – Working together

Single Drills – Independent practice

Group Meeting

Reflection Time

1 Hour Session Plan: 10

Theme: Outside the Training Venue

Counselling Time

Awareness Talk:

- to open the lesson, today is about the etiquette, the execution, and the focus of the formal kata. This is the last learning step in their karate skill set.

- is the opportunity to remind students about their responsibilities that day. Taking all that you know and applying it at home, school, on the street. Understanding their role in personal well-being and that of others. What it means to be a role model to others.

Lesson: **Teaching the skill set –**

1st Kata (Taigyuku Shodan) (Complete)

2nd Kata (Taigyuku Nidan) (Foot Work Only)

2nd Kata (Taigyuku Nidan) (Complete)

Partner Drills – Mirroring each other

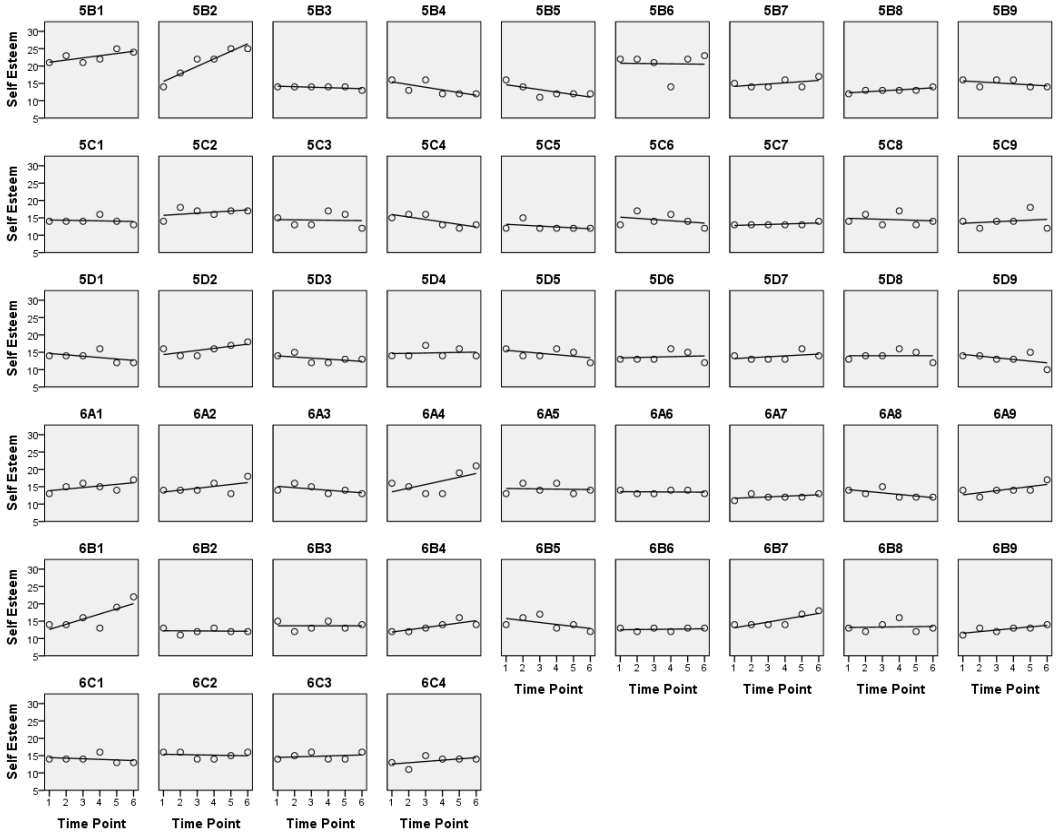
Group Drills – Working together

Single Drills – Independent practice

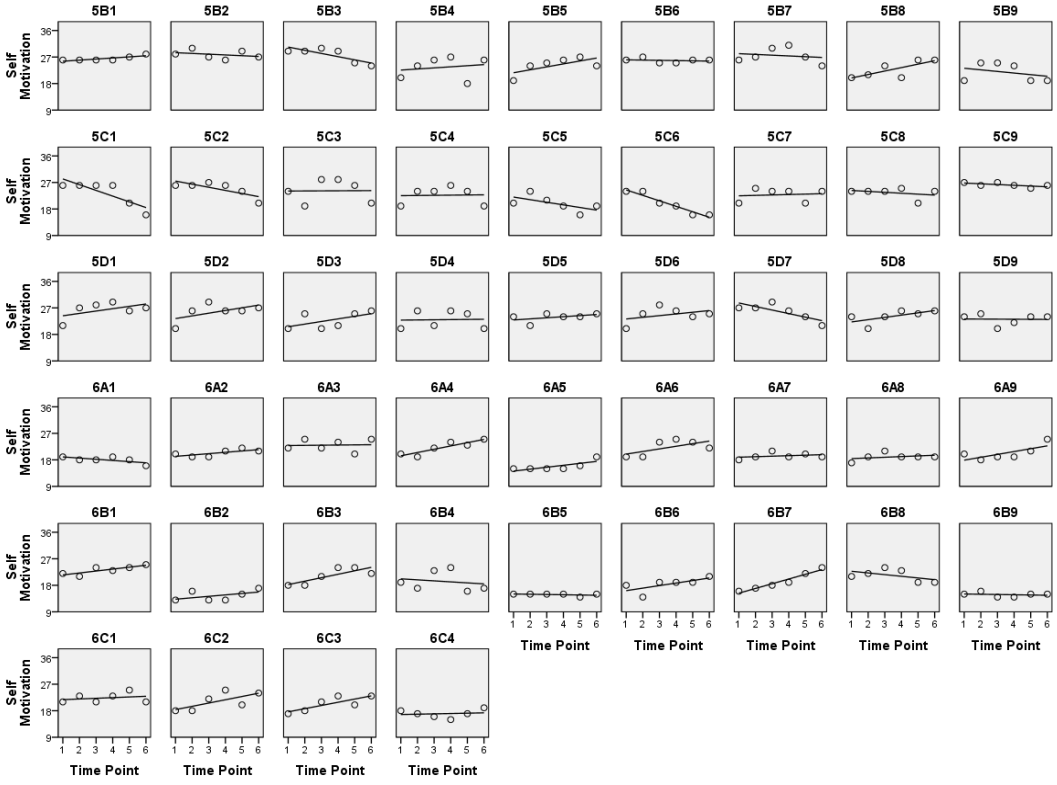
Group Meeting

Reflection Time

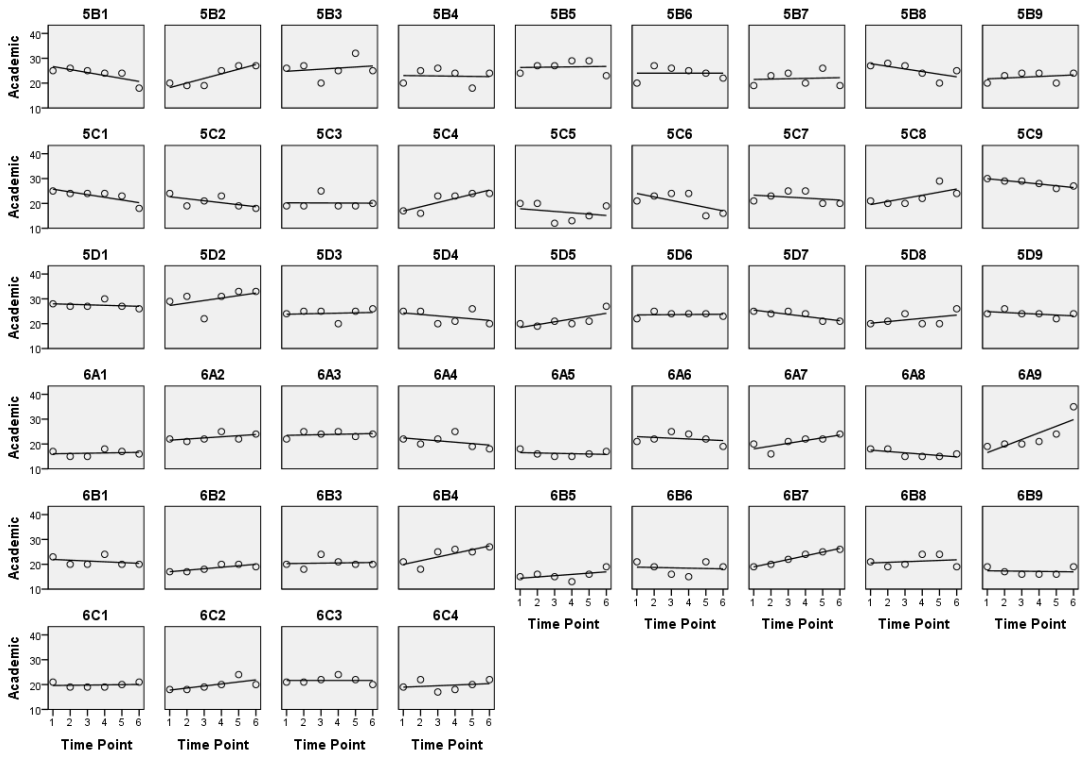
Appendix J: Individual fitted OLS trajectories



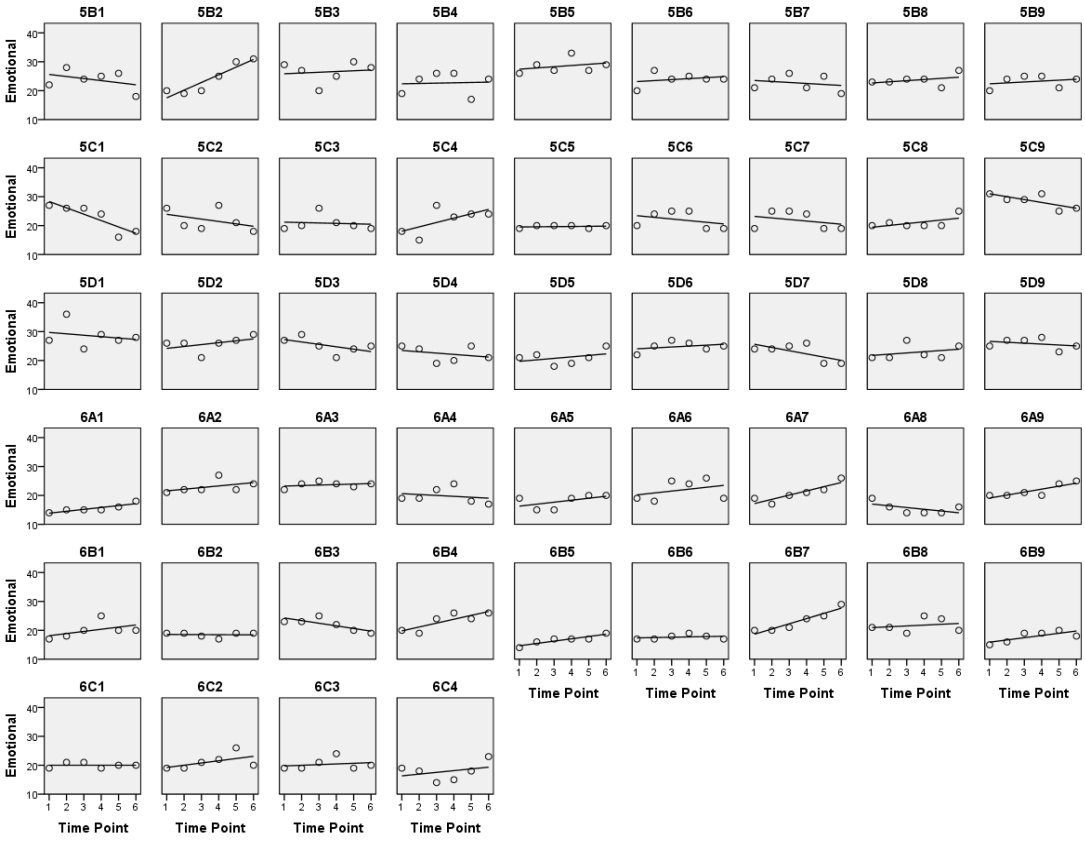
Control S-ES fitted OLS trajectories.



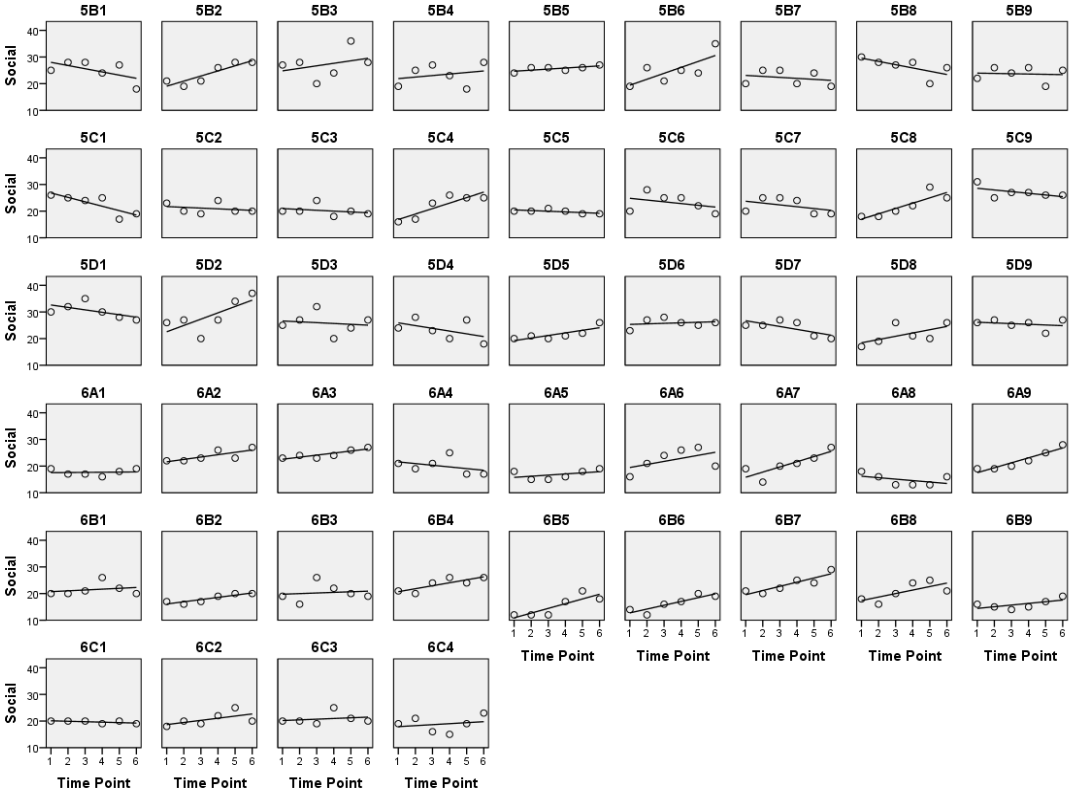
Control SMI-C9 fitted OLS trajectories.



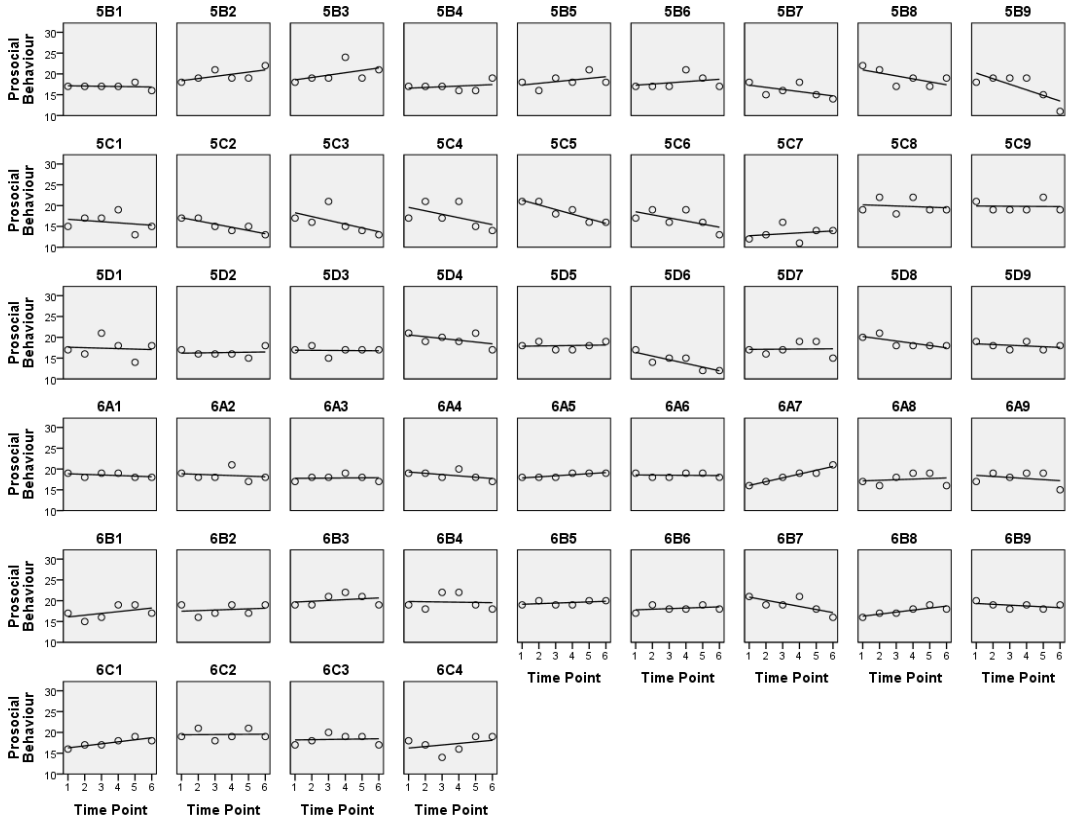
Control SEQ-C (Academic subscale) fitted OLS trajectories.



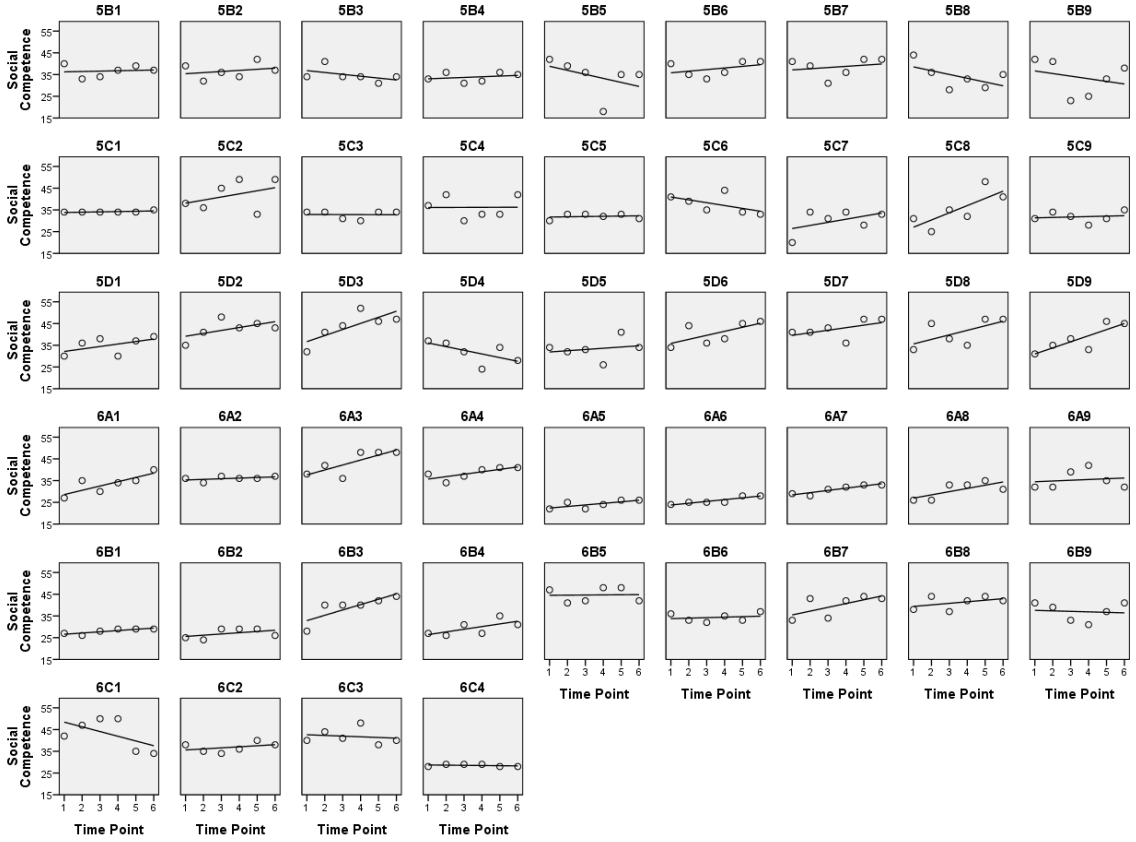
Control SEQ-C (Emotional subscale) OLS trajectories.



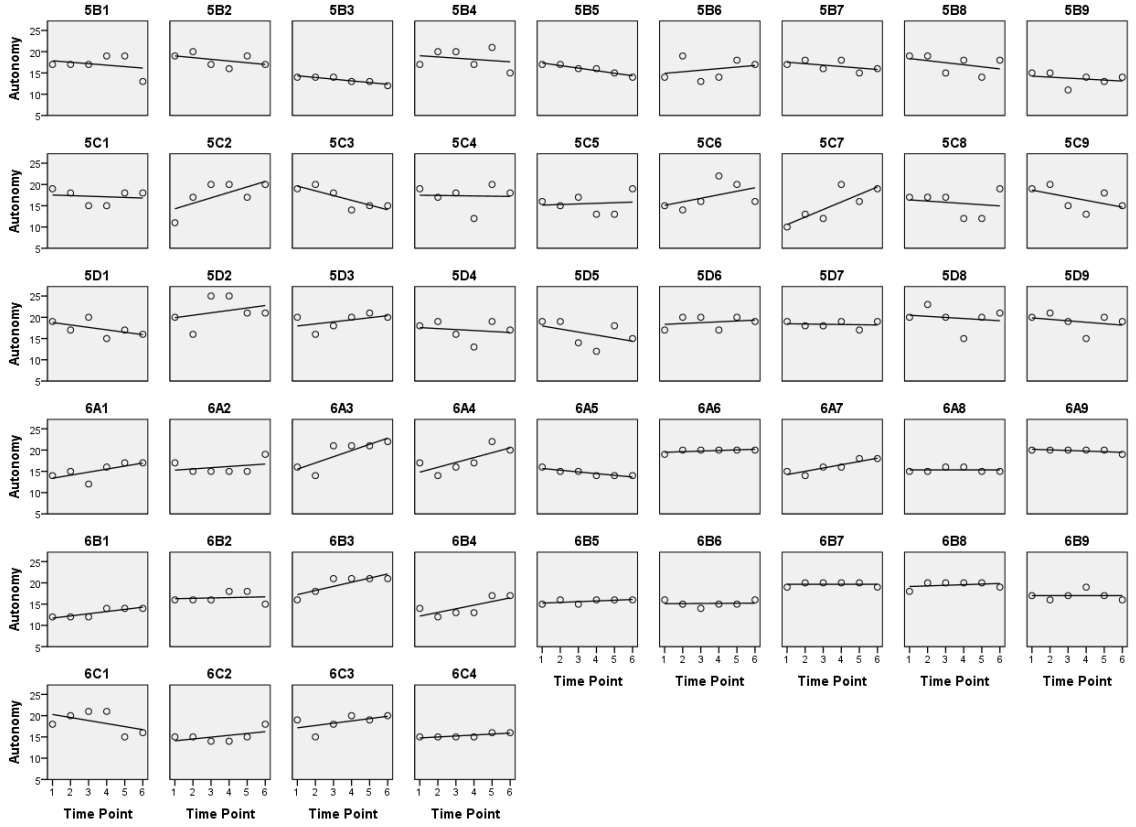
Control SEQ-C (Social subscale) OLS trajectories.



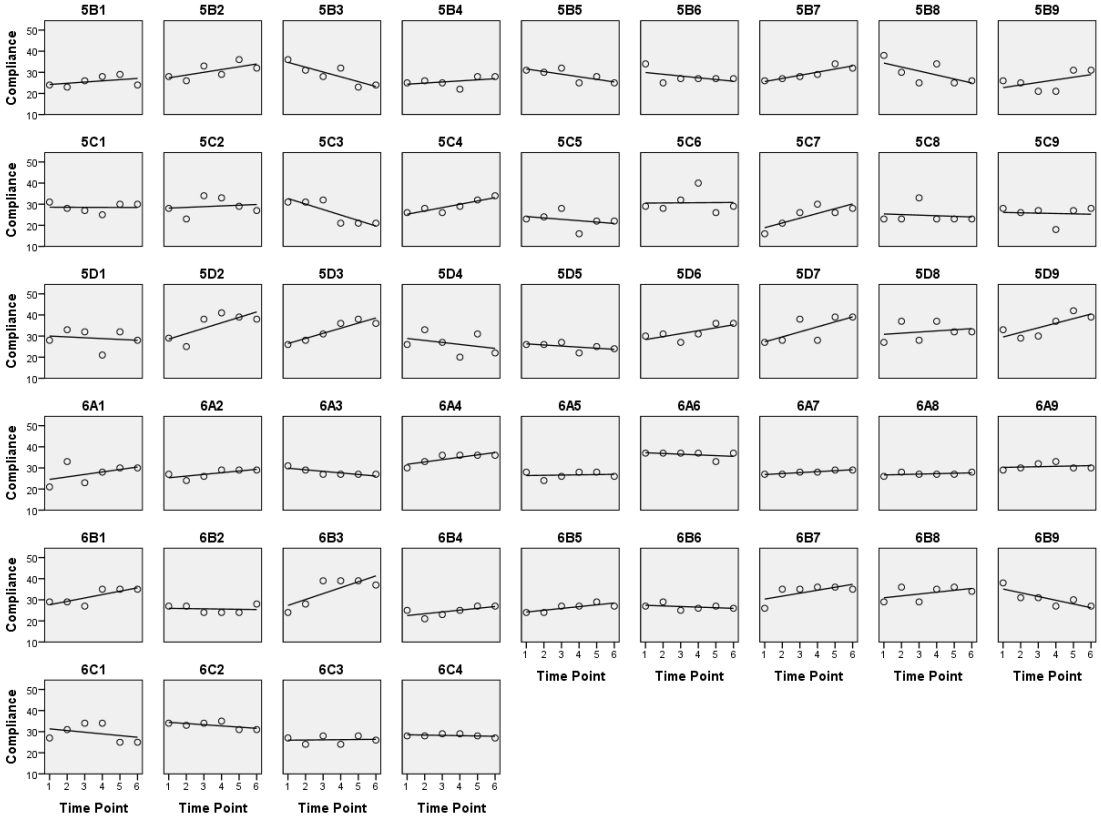
Control PBS fitted OLS trajectories.



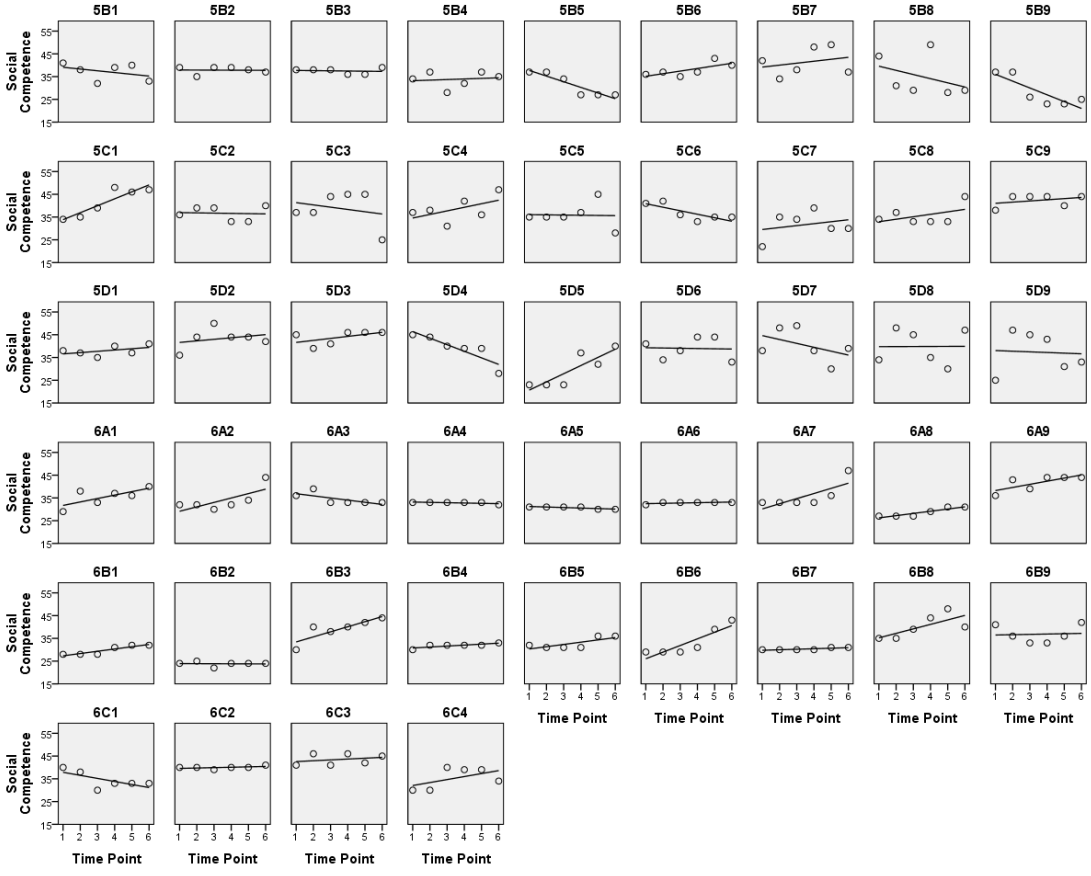
Control Positive Behavior Scale(T) fitted OLS trajectories for Social Competence.



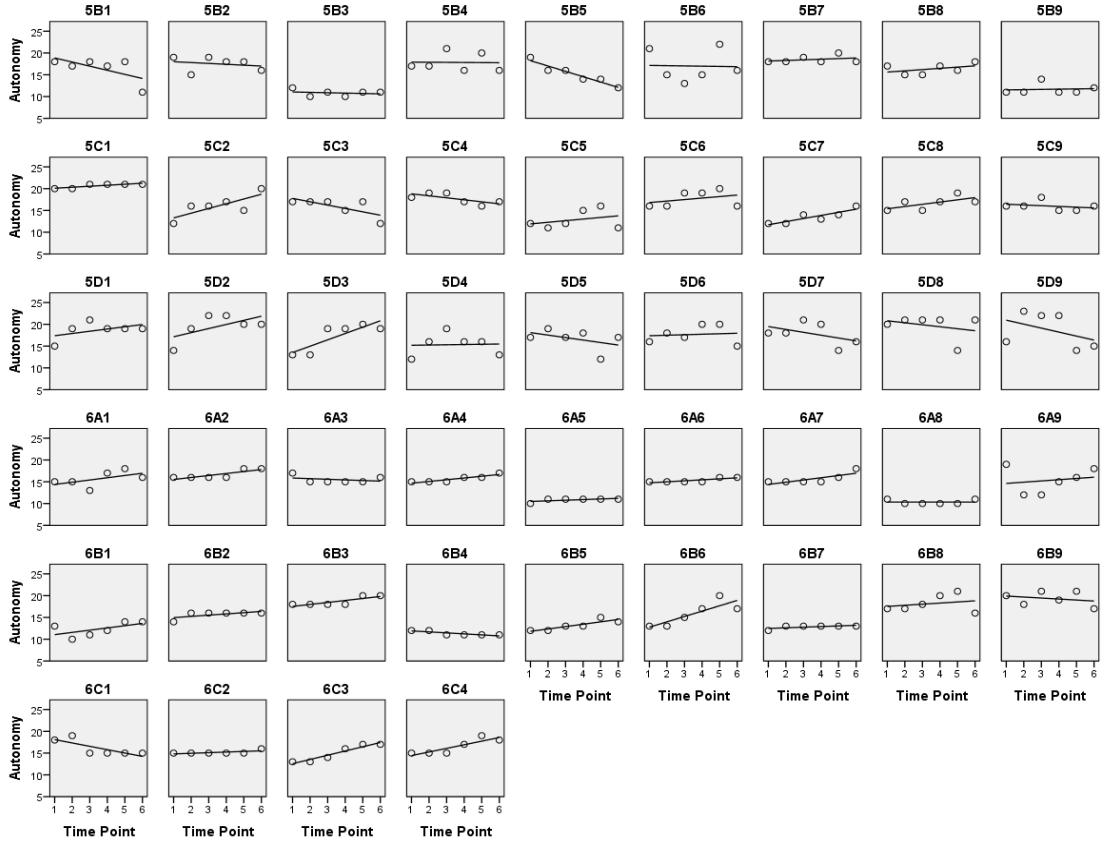
Control Positive Behavior Scale(T) fitted OLS trajectories for Autonomy.



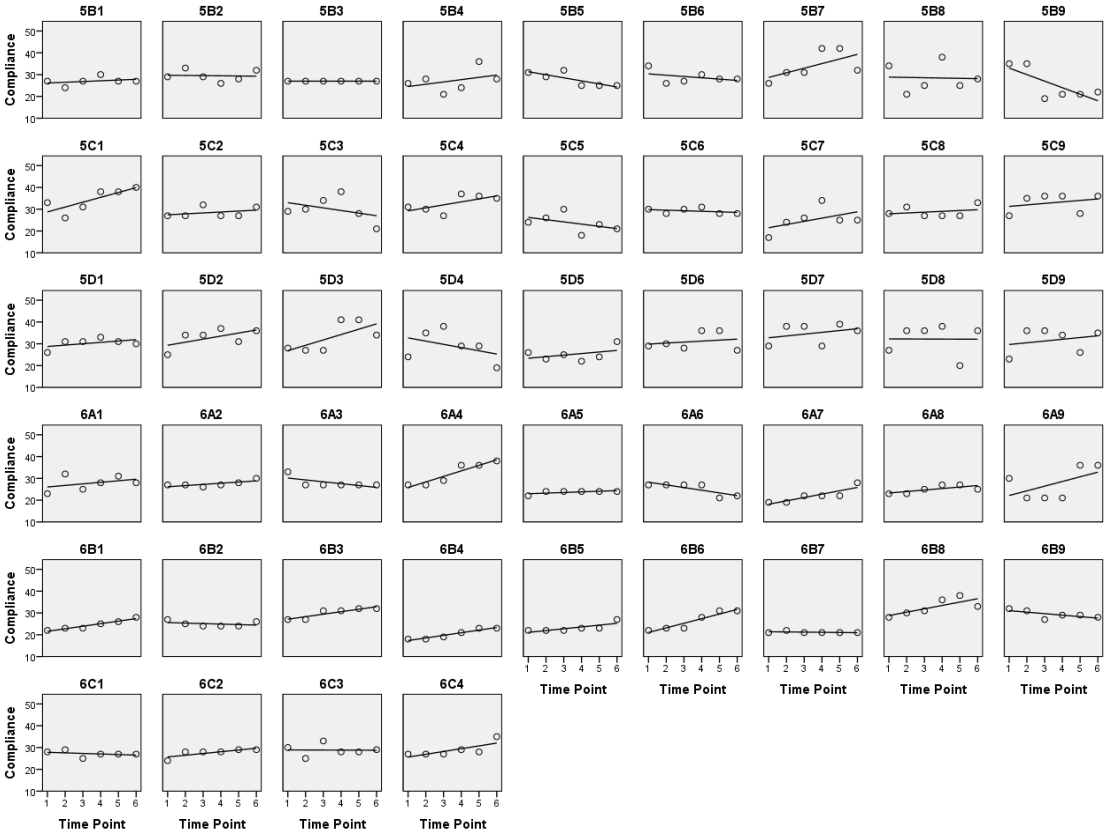
Control Positive Behavior Scale(T) fitted OLS trajectories for Compliance.



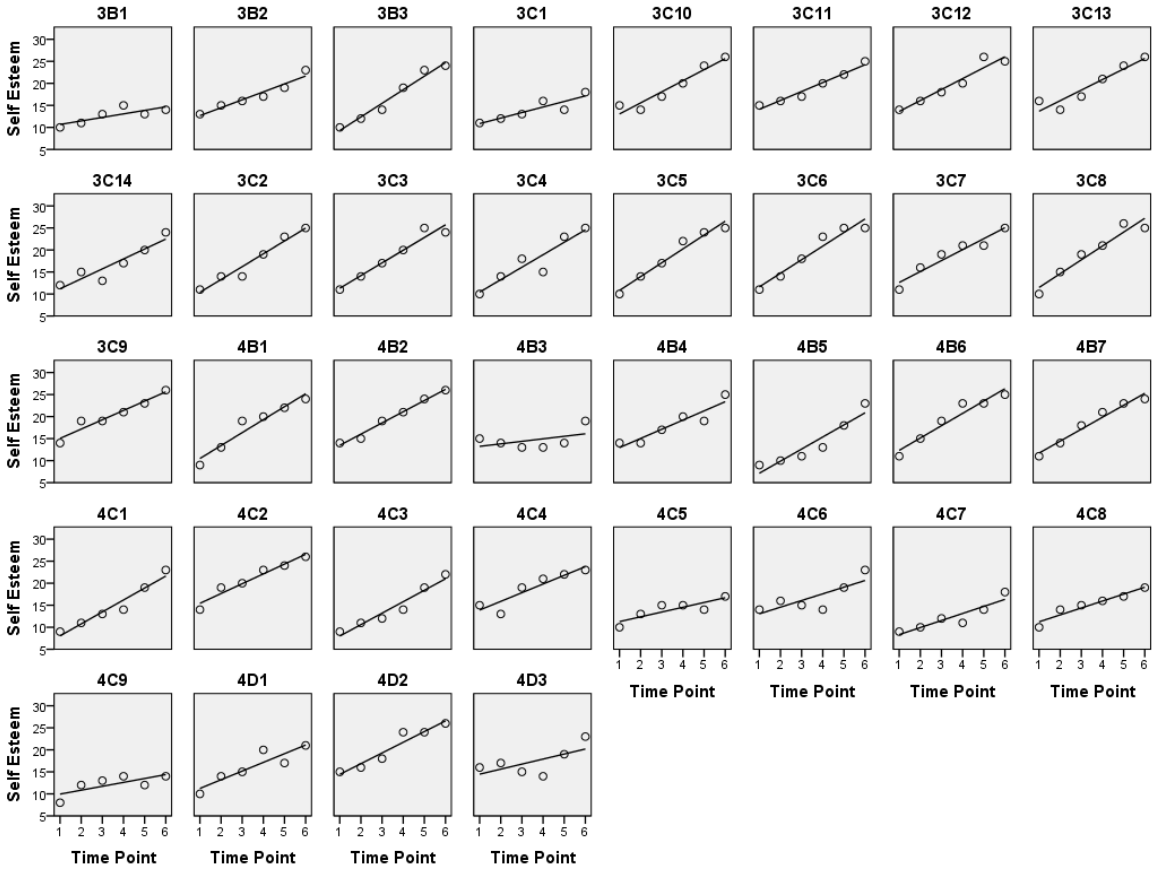
Control Positive Behavior Scale(P) fitted OLS trajectories for Social Competence.



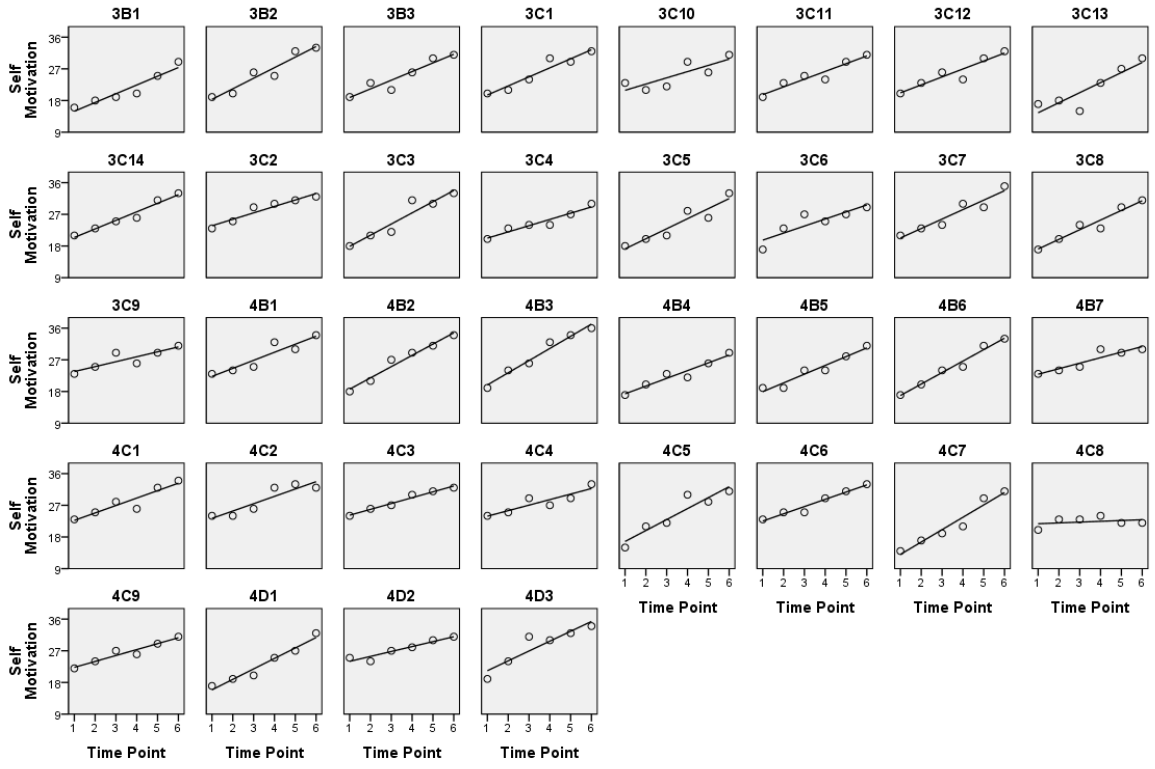
Control Positive Behavior Scale(P) fitted OLS trajectories for Autonomy.



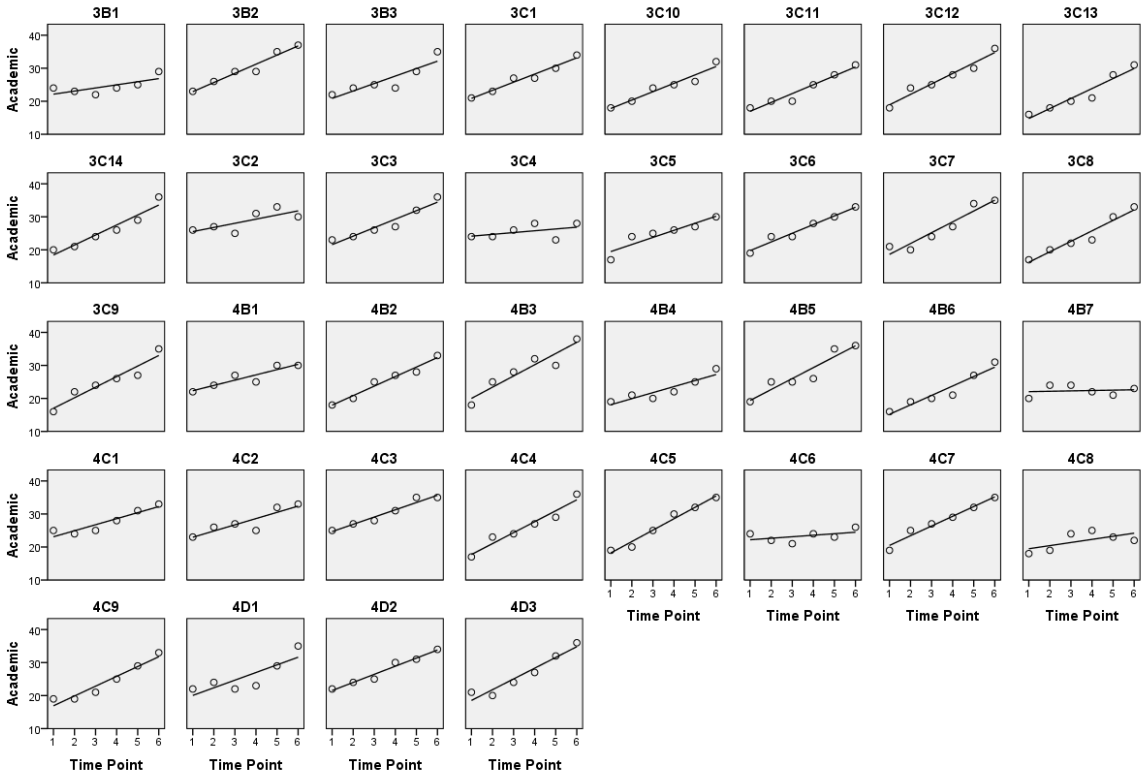
Control Positive Behavior Scale(P) fitted OLS trajectories for Compliance.



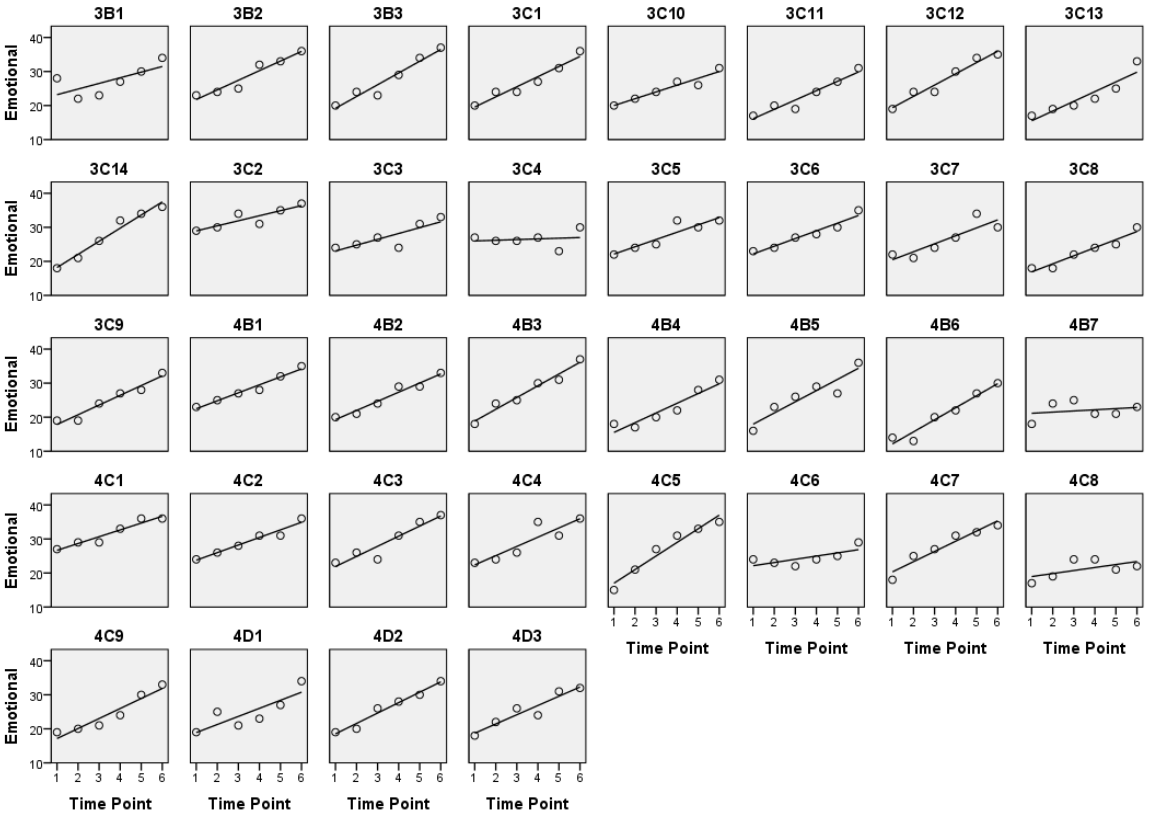
Intervention S-ES fitted OLS trajectories.



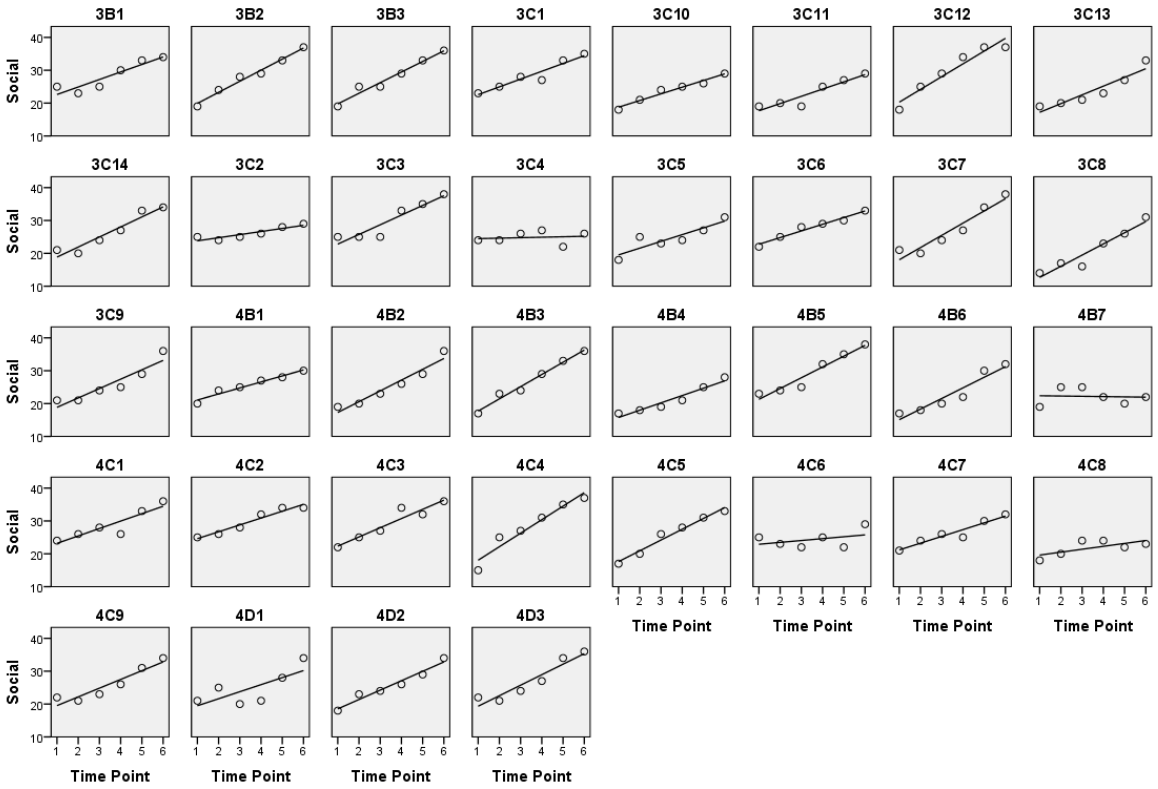
Intervention SMI-C9 fitted OLS trajectories.



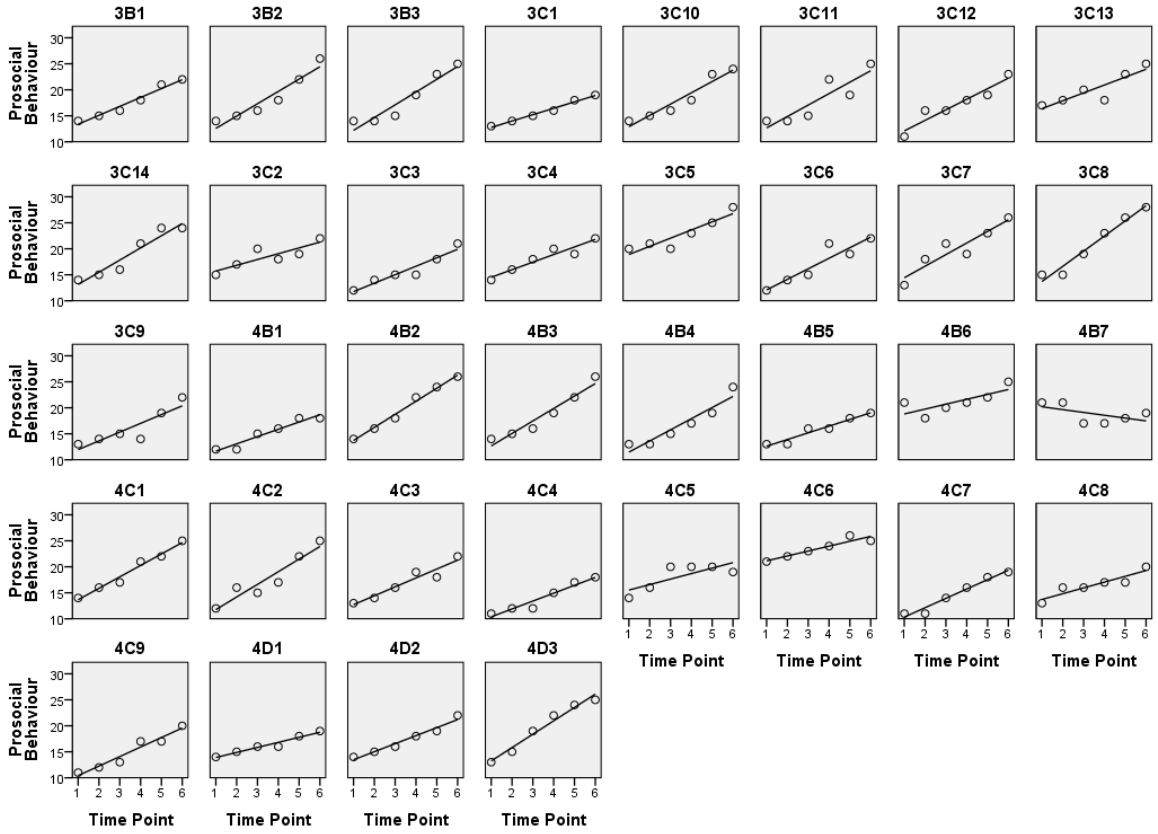
Intervention SEQ-C (Academic subscale) fitted OLS trajectories.



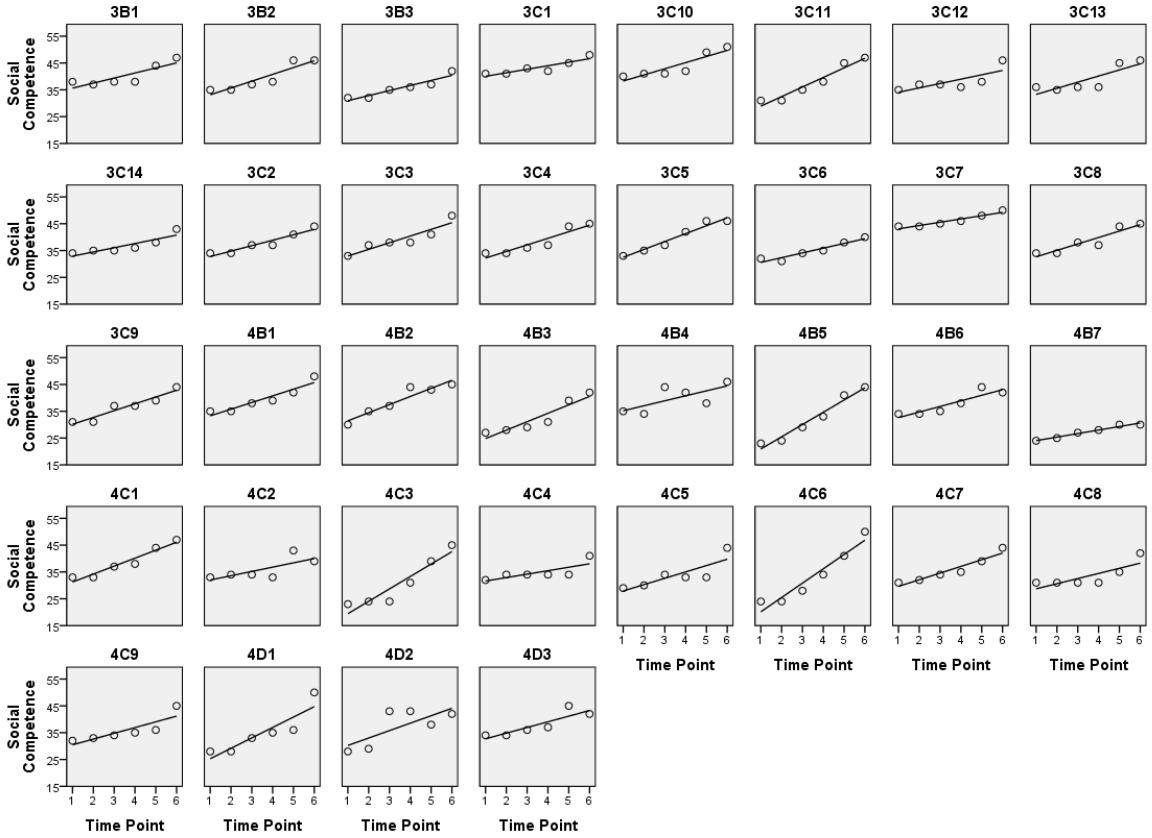
Intervention SEQ-C (Emotional subscale) OLS trajectories.



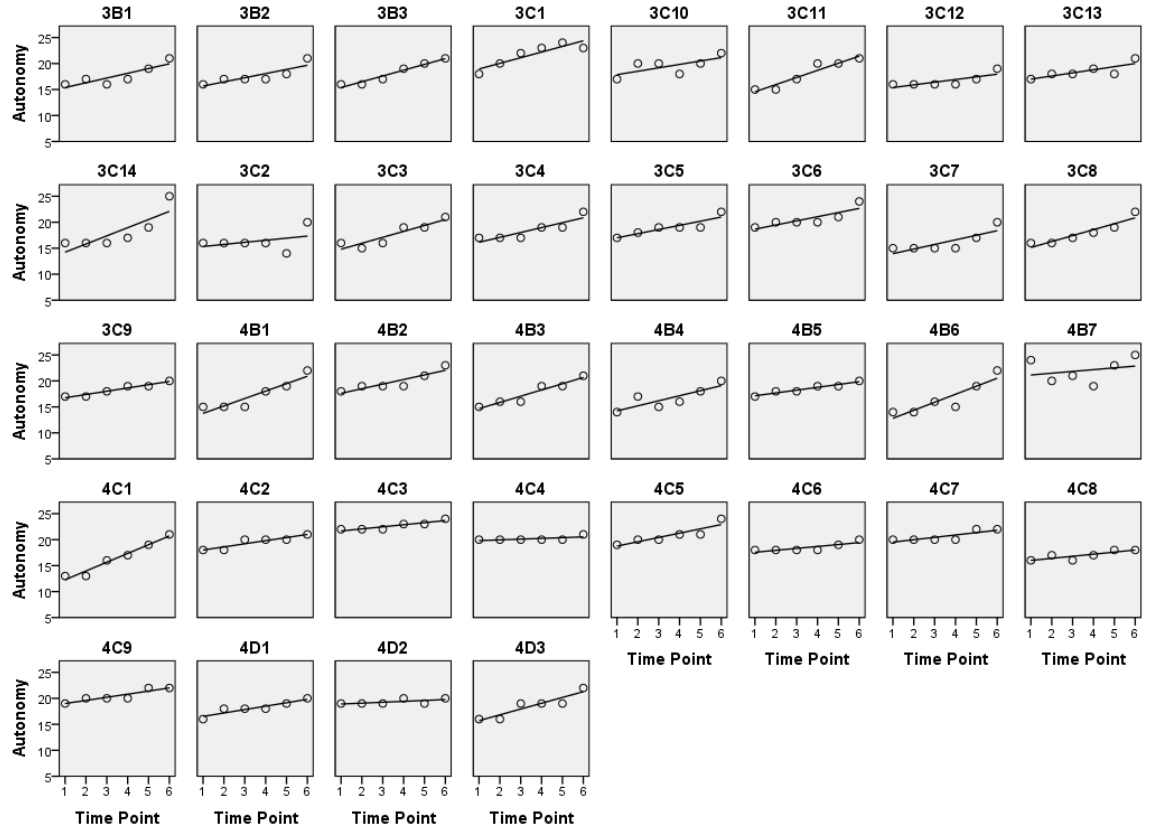
Intervention SEQ-C (Social subscale) OLS trajectories.



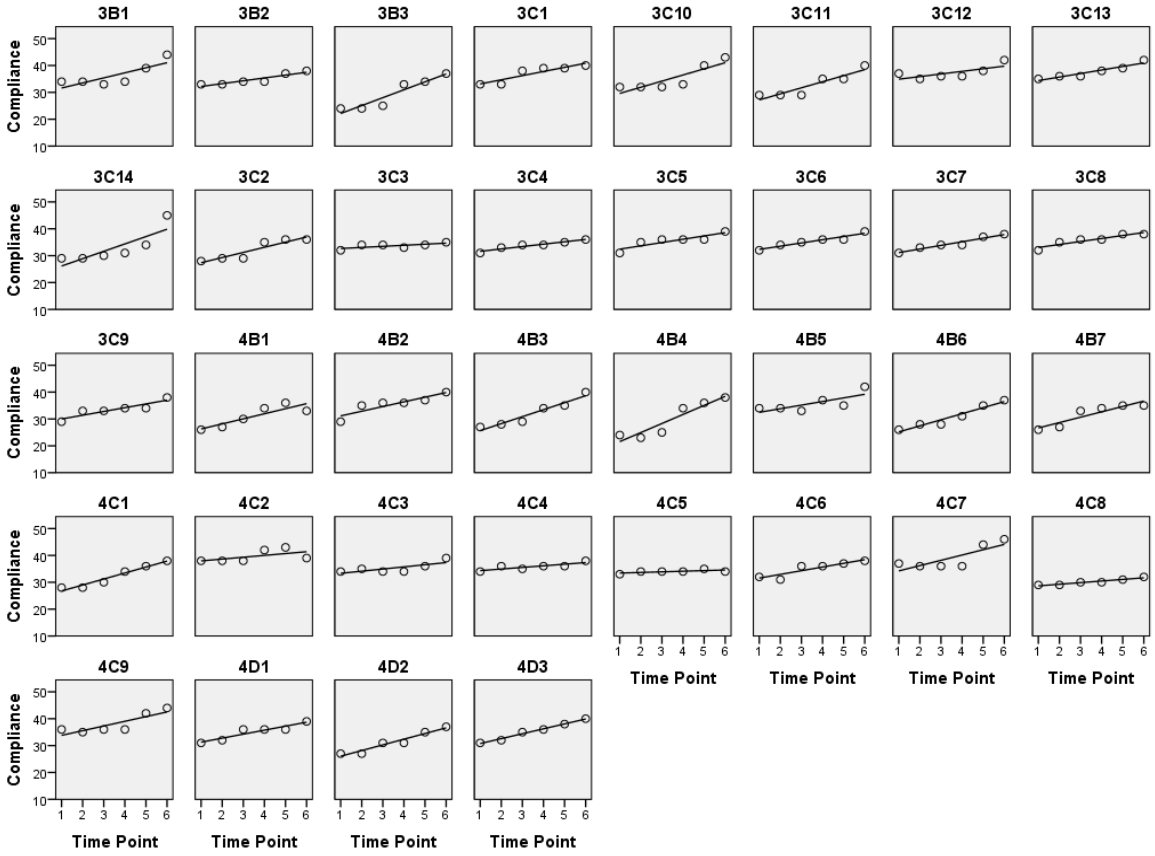
Intervention PBS fitted OLS trajectories.



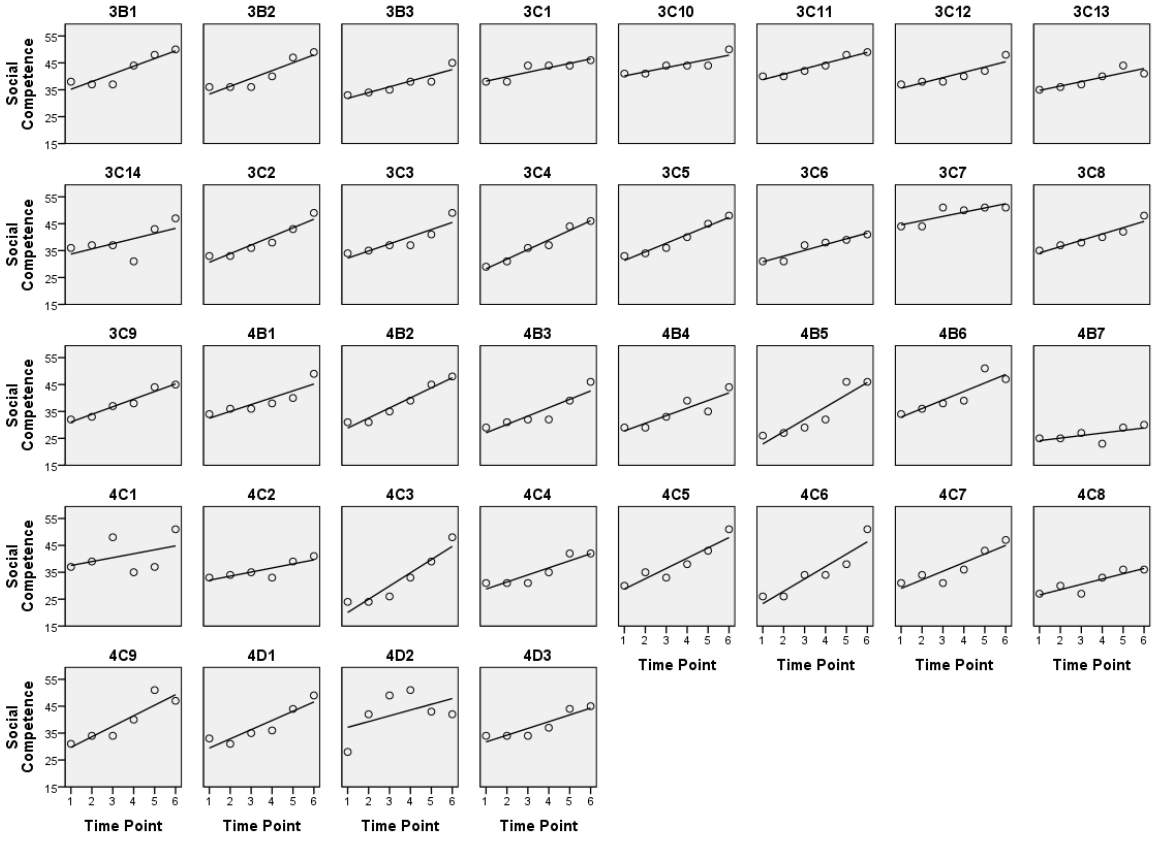
Intervention Positive Behavior Scale(T) fitted OLS trajectories for Social Competence.



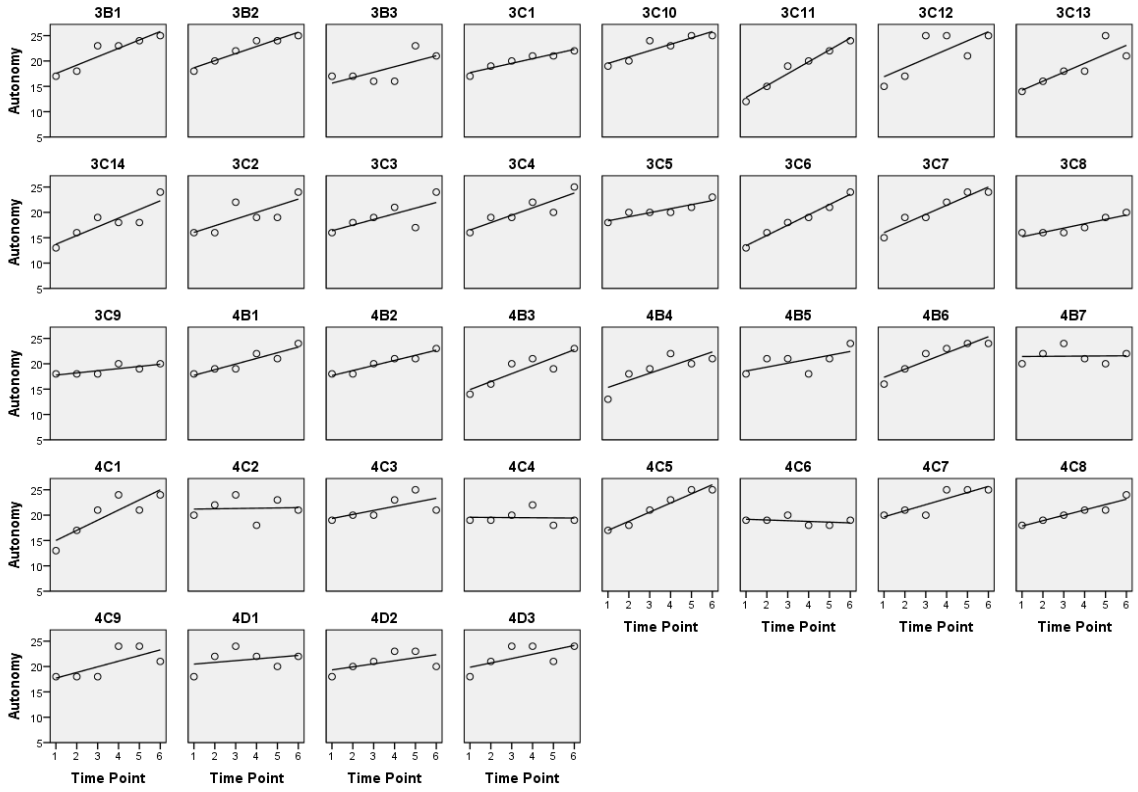
Intervention Positive Behavior Scale(T) fitted OLS trajectories for Autonomy.



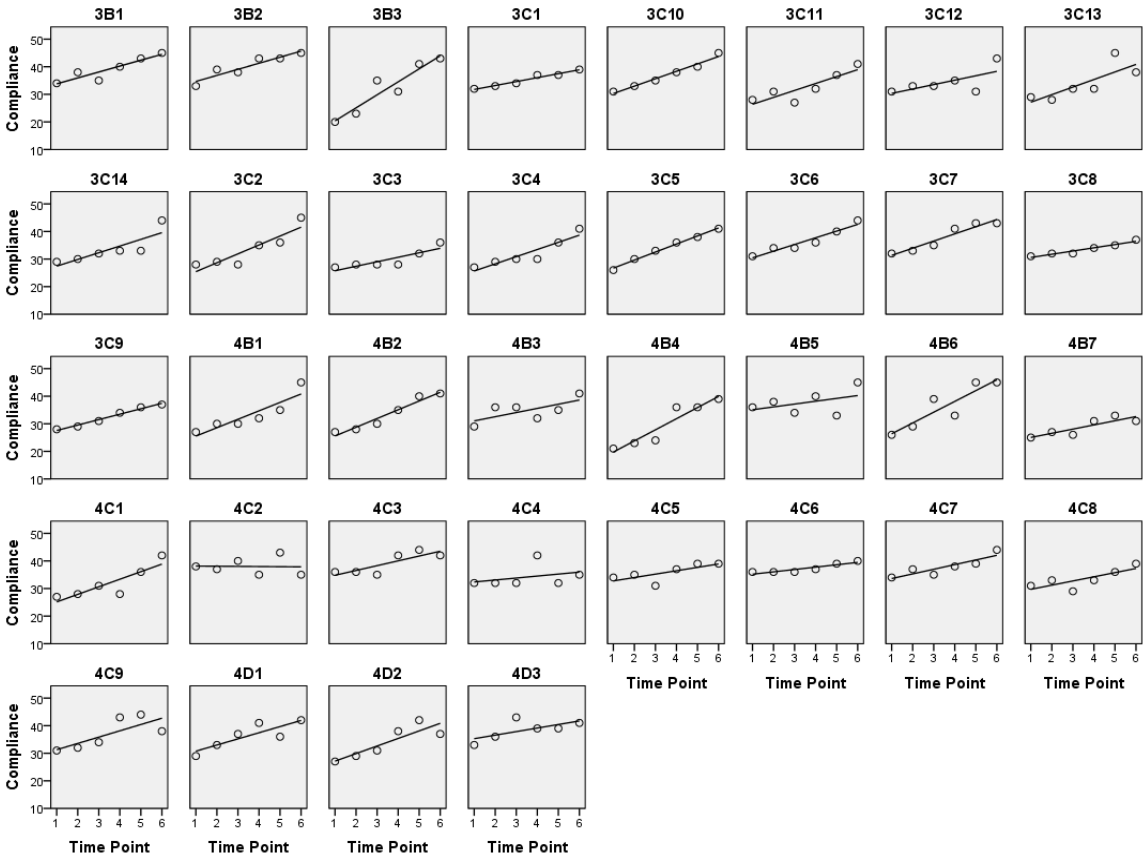
Intervention Positive Behavior Scale(T) fitted OLS trajectories for Compliance.



Intervention Positive Behavior Scale(P) fitted OLS trajectories for Social Competence.



Intervention Positive Behavior Scale(P) fitted OLS trajectories for Autonomy.



Intervention Positive Behavior Scale(P) fitted OLS trajectories for Compliance.

Appendix K: OLS Regressions

Table 22
Control results from exploratory OLS regression models for the PBS, SMI-C9, and S-ES measures.

	PBS						SMI-C9						SE-S					
	Initial Status		Rate of Change				Initial Status		Rate of Change				Initial Status		Rate of Change			
ID	Estimate	Error	Estimate	Error	R^2	Residual Variance	Estimate	Error	Estimate	Error	R^2	Residual Variance	Estimate	Error	Estimate	Error	R^2	Residual Variance
5B1	11.87	0.68	-0.20	0.17	0.25	0.53	25.20	0.49	0.37	0.12	0.69	0.27	22.07	1.40	0.31	0.36	0.16	2.28
5B2	18.20	1.24	0.23	0.32	0.11	1.77	28.73	1.45	-0.26	0.37	0.11	2.42	22.33	1.59	0.43	0.41	0.22	2.90
5B3	18.00	1.99	0.57	0.51	0.24	4.57	31.47	1.52	-1.09	0.39	0.66	2.68	14.87	0.72	0.23	0.19	0.27	0.60
5B4	11.40	0.97	-0.26	0.25	0.21	1.09	22.20	3.76	0.37	0.96	0.04	16.27	18.80	0.42	0.20	0.11	0.47	0.20
5B5	15.07	1.29	0.74	0.33	0.56	1.92	20.67	2.15	1.00	0.55	0.45	5.33	19.13	1.77	-0.37	0.45	0.14	3.60
5B6	17.00	1.65	0.29	0.42	0.10	3.14	26.13	0.77	-0.09	0.20	0.05	0.68	21.67	1.94	0.01	0.50	0.00	4.33
5B7	15.07	0.82	-0.69	0.21	0.73	0.78	28.40	2.65	-0.26	0.68	0.03	8.09	21.00	0.93	0.01	0.24	0.00	1.00
5B8	21.33	1.51	-1.14	0.39	0.69	2.62	18.73	1.91	1.17	0.49	0.59	4.20	18.53	1.18	0.23	0.30	0.12	1.60
5B9	15.20	0.49	-0.63	0.12	0.86	0.27	23.73	3.08	-0.54	0.79	0.11	10.92	19.53	1.35	0.23	0.35	0.10	3.78
5C1	12.40	0.90	-0.69	0.23	0.69	0.94	30.13	2.43	-1.94	0.62	0.71	6.82	19.13	1.15	0.20	0.30	0.10	1.53
5C2	12.67	0.59	-0.43	0.15	0.67	0.40	28.53	1.70	-1.06	0.44	0.60	3.32	23.73	1.11	-0.54	0.28	0.48	1.42
5C3	19.20	2.34	-0.91	0.60	0.37	6.34	24.07	4.08	0.03	1.05	0.00	19.20	19.80	0.78	0.20	0.20	0.20	0.70
5C4	20.40	2.61	-0.83	0.67	0.28	7.87	22.47	3.06	0.06	0.79	0.00	10.82	18.33	2.16	0.57	0.56	0.21	5.40
5C5	22.40	1.17	-1.26	0.30	0.81	1.59	22.93	2.14	-0.89	0.55	0.39	5.28	19.80	1.26	-0.09	0.32	0.02	1.84
5C6	11.73	0.34	-0.40	0.09	0.84	0.13	26.33	0.98	-1.86	0.25	0.93	1.12	21.80	1.24	-0.37	0.32	0.25	1.77
5C7	12.20	0.85	0.09	0.22	0.04	0.84	22.33	2.30	0.14	0.59	0.01	6.12	15.53	1.07	0.66	0.27	0.59	1.32
5C8	21.00	1.99	-0.43	0.51	0.15	4.57	24.60	1.73	-0.31	0.44	0.11	3.44	20.67	0.73	-0.14	0.19	0.13	0.62
5C9	19.60	1.43	-0.03	0.37	0.02	2.37	27.07	0.60	-0.26	0.15	0.41	0.42	19.53	1.35	0.23	0.35	0.10	2.10
5D1	17.73	2.42	-0.11	0.62	0.01	6.78	23.53	2.47	0.80	0.63	0.28	7.03	17.67	1.59	0.57	0.41	0.33	2.90
5D2	14.33	0.59	-0.57	0.15	0.78	0.40	22.47	2.58	0.91	0.66	0.32	7.68	19.33	1.74	0.71	0.45	0.39	3.48
5D3	15.00	1.17	-0.57	0.30	0.48	1.57	19.73	2.33	0.89	0.60	0.35	6.28	19.47	1.35	-0.23	0.35	0.10	2.10
5D4	20.33	1.31	-0.29	0.34	0.15	1.98	22.80	3.09	0.06	0.79	0.00	10.99	19.13	1.26	0.06	0.32	0.01	1.82
5D5	17.73	1.22	0.03	0.31	0.02	1.70	22.53	1.35	0.37	0.35	0.22	2.10	19.20	1.40	0.37	0.36	0.21	2.27
5D6	14.87	0.30	-0.63	0.08	0.94	0.10	22.67	2.53	0.57	0.65	0.16	7.40	18.07	0.89	0.46	0.23	0.50	0.92
5D7	17.07	1.67	0.03	0.43	0.01	3.20	29.87	1.75	-1.20	0.45	0.64	3.53	16.93	1.29	0.54	0.33	0.40	1.92
5D8	20.73	0.89	-0.54	0.23	0.58	0.92	21.47	1.77	0.77	0.45	0.42	3.60	16.87	1.42	0.66	0.36	0.45	2.32
5D9	18.60	0.87	-0.17	0.22	0.13	0.87	23.27	1.91	-0.03	0.49	0.00	4.20	18.73	0.78	0.17	0.20	0.15	0.70
6A1	16.67	1.51	-0.86	0.39	0.55	2.62	19.40	0.83	-0.40	0.21	0.47	0.80	23.67	4.16	0.29	1.07	0.02	19.98
6A2	19.00	1.41	-0.14	0.36	0.04	2.29	18.73	0.89	0.46	0.23	0.50	0.92	19.33	1.95	0.57	0.50	0.24	4.40
6A3	17.60	0.57	-0.03	0.15	0.01	0.37	22.80	2.08	0.06	0.53	0.00	4.99	19.73	2.50	0.17	0.64	0.02	7.20
6A4	19.60	0.90	-0.31	0.23	0.31	0.94	18.27	1.05	1.11	0.27	0.81	1.28	20.80	3.16	1.06	0.81	0.30	11.49
6A5	12.73	0.49	-0.69	0.13	0.88	0.28	13.53	1.07	0.66	0.27	0.59	1.32	20.53	0.53	-0.06	0.14	0.04	0.32
6A6	17.07	0.78	-0.83	0.20	0.81	0.70	19.07	2.14	0.89	0.55	0.39	5.28	15.33	0.54	0.01	0.14	0.00	0.33
6A7	14.73	2.45	0.74	0.63	0.26	6.92	18.73	1.02	0.17	0.26	0.10	1.20	19.33	0.64	0.29	0.16	0.43	0.48
6A8	13.53	0.30	-0.77	0.08	0.96	0.10	18.20	1.24	0.23	0.32	0.11	1.77	21.27	1.40	-0.31	0.36	0.16	2.28
6A9	12.20	0.49	-0.63	0.12	0.86	0.27	16.93	1.79	0.97	0.46	0.53	3.70	18.53	1.01	0.51	0.26	0.50	1.18
6B1	16.87	0.77	-0.49	0.20	0.60	0.68	20.87	0.84	0.66	0.22	0.70	0.82	19.27	1.05	0.69	0.27	0.62	1.28
6B2	17.07	1.67	0.03	0.43	0.01	3.20	12.80	1.57	0.49	0.40	0.27	2.84	18.60	1.60	0.11	0.41	0.02	2.94
6B3	19.47	1.33	0.20	0.34	0.08	2.03	17.07	1.67	1.17	0.43	0.65	3.20	20.07	1.53	0.17	0.39	0.05	2.70
6B4	19.80	1.70	-0.09	0.44	0.01	3.34	20.53	3.46	-0.34	0.89	0.04	13.82	14.87	2.10	1.23	0.54	0.56	5.10
6B5	19.00	0.50	0.14	0.13	0.24	0.29	15.13	0.39	-0.09	0.10	0.15	0.18	25.47	3.46	-0.94	0.89	0.22	13.82
6B6	12.60	0.87	-0.17	0.22	0.13	0.87	15.33	1.77	0.86	0.45	0.47	3.62	13.53	1.01	1.09	0.26	0.81	1.18
6B7	21.60	1.34	-0.74	0.35	0.54	2.09	13.73	0.74	1.60	0.19	0.95	0.63	18.07	0.78	1.03	0.20	0.87	0.70
6B8	16.47	0.53	-0.66	0.14	0.86	0.32	23.33	1.84	-0.57	0.47	0.27	3.90	22.33	5.42	0.43	1.39	0.02	33.90
6B9	20.60	1.30	-0.89	0.33	0.64	1.94	15.13	0.77	-0.09	0.20	0.05	0.68	22.80	1.97	-0.66	0.51	0.30	4.49
6C1	12.93	1.22	-0.03	0.31	0.02	1.70	21.53	1.64	0.23	0.42	0.07	3.10	16.80	1.40	0.63	0.36	0.43	2.27
6C2	19.40	1.27	0.03	0.33	0.02	1.87	17.27	2.24	1.11	0.57	0.48	5.78	16.27	1.59	1.26	0.41	0.70	2.92
6C3	18.00	1.32	0.01	0.34	0.01	2.00	16.53	1.52	1.09	0.39	0.66	2.68	21.67	1.61	-0.29	0.41	0.11	2.98
6C4	13.60	0.57	-0.17	0.15	0.26	0.37	16.60	1.46	0.11	0.37	0.02	2.44	26.00	3.87	-0.86	0.99	0.16	17.29

Table 23
Control results from exploratory OLS regression models for the SEQ-C subscales.

	Academic						Social						Emotional					
	Initial Status		Rate of Change				Initial Status		Rate of Change				Initial Status		Rate of Change			
ID	Estimate	Error	Estimate	Error	R^2	Residual Variance	Estimate	Error	Estimate	Error	R^2	Residual Variance	Estimate	Error	Estimate	Error	R^2	Residual Variance
5B1	27.87	1.87	-1.20	0.48	0.61	4.03	29.20	3.18	-1.20	0.82	0.35	11.70	26.33	3.35	-0.71	0.86	0.15	12.98
5B2	16.33	1.89	1.86	0.49	0.79	4.12	17.13	1.78	1.91	0.46	0.81	3.68	14.87	2.04	2.66	0.52	0.87	4.82
5B3	24.33	3.94	0.43	1.01	0.04	17.90	23.87	5.21	0.94	1.34	0.11	31.32	25.60	3.73	0.26	0.96	0.02	16.09
5B4	23.13	3.25	-0.09	0.83	0.03	12.18	21.33	4.15	0.57	1.07	0.07	19.90	22.27	3.93	0.11	1.01	0.00	17.78
5B5	26.20	2.61	0.09	0.67	0.04	7.84	24.27	0.74	0.40	0.19	0.53	0.63	27.00	2.48	0.43	0.64	0.10	7.07
5B6	24.00	2.71	0.01	0.70	0.01	8.50	17.20	3.81	2.23	0.98	0.56	16.77	22.80	2.28	0.34	0.58	0.08	5.99
5B7	21.33	3.03	0.14	0.78	0.01	10.62	23.47	2.81	-0.37	0.72	0.06	9.10	23.87	2.76	-0.34	0.71	0.06	8.82
5B8	28.87	2.25	-1.06	0.58	0.46	5.82	30.80	2.68	-1.23	0.69	0.44	8.27	22.27	1.89	0.40	0.49	0.14	4.13
5B9	21.40	1.96	0.31	0.50	0.09	4.44	24.07	2.84	-0.11	0.73	0.01	9.28	22.07	2.14	0.31	0.55	0.08	5.28
5C1	26.80	1.57	-1.09	0.40	0.64	2.84	28.47	2.15	-1.66	0.55	0.69	5.32	30.53	2.29	-2.20	0.59	0.78	6.03
5C2	23.47	1.98	-0.80	0.51	0.38	4.53	22.00	2.01	-0.29	0.52	0.07	4.64	24.73	3.57	-0.83	0.92	0.17	14.70
5C3	20.27	2.50	-0.03	0.64	0.05	7.20	21.27	2.03	-0.31	0.52	0.08	4.78	21.33	2.73	-0.14	0.70	0.01	8.62
5C4	15.27	1.93	1.69	0.49	0.74	4.28	14.80	2.18	2.06	0.56	0.77	5.49	16.53	3.57	1.51	0.92	0.41	14.68
5C5	18.40	3.62	-0.54	0.93	0.08	15.09	20.73	0.60	-0.26	0.15	0.41	0.42	19.47	0.53	0.06	0.14	0.04	0.32
5C6	25.40	3.20	-1.40	0.82	0.42	11.80	25.47	3.33	-0.66	0.86	0.13	12.82	24.00	2.88	-0.57	0.74	0.13	9.57
5C7	23.73	2.31	-0.40	0.59	0.10	6.13	24.40	2.78	-0.69	0.71	0.19	8.94	23.73	3.08	-0.54	0.79	0.11	10.92
5C8	18.27	2.62	1.26	0.67	0.47	7.92	15.00	2.28	2.00	0.59	0.74	6.00	18.80	1.68	0.63	0.43	0.35	3.27
5C9	30.67	0.64	-0.71	0.16	0.82	0.48	29.20	1.81	-0.63	0.46	0.31	3.77	32.00	1.74	-1.00	0.45	0.56	3.50
5D1	28.20	1.38	-0.20	0.35	0.07	2.20	33.53	2.41	-0.91	0.62	0.35	6.68	30.20	4.09	-0.49	1.05	0.05	19.34
5D2	26.33	3.82	1.00	0.98	0.21	16.83	20.20	4.34	2.37	1.12	0.53	21.77	23.53	2.43	0.66	0.62	0.22	6.82
5D3	23.67	2.21	0.14	0.57	0.02	5.62	26.93	4.09	-0.31	1.05	0.02	19.28	28.07	2.32	-0.83	0.60	0.33	6.20
5D4	24.93	2.65	-0.60	0.68	0.16	8.13	26.93	3.51	-1.03	0.90	0.25	14.20	23.93	2.62	-0.46	0.67	0.10	7.92
5D5	17.33	2.00	1.14	0.51	0.55	4.62	18.27	1.38	0.97	0.35	0.65	2.20	19.20	2.34	0.51	0.60	0.15	6.34
5D6	23.47	1.07	0.06	0.27	0.01	1.32	25.13	1.75	0.20	0.45	0.05	3.53	23.73	1.69	0.31	0.43	0.12	3.28
5D7	26.33	0.98	-0.86	0.25	0.74	1.12	27.80	2.05	-1.09	0.53	0.52	4.84	26.73	2.33	-1.11	0.60	0.46	6.28
5D8	19.53	2.34	0.66	0.60	0.23	6.32	17.20	3.06	1.23	0.78	0.38	10.77	21.33	2.53	0.43	0.65	0.10	7.40
5D9	25.20	1.13	-0.34	0.29	0.26	1.49	26.40	1.88	-0.26	0.48	0.07	4.09	26.93	1.81	-0.31	0.46	0.10	3.78
6A1	15.93	1.24	0.11	0.32	0.03	1.78	17.47	1.26	0.06	0.32	0.01	1.82	13.20	0.65	0.66	0.17	0.80	0.49
6A2	21.07	1.29	0.46	0.33	0.32	1.92	20.73	1.40	0.89	0.36	0.60	2.28	21.00	1.99	0.57	0.51	0.24	4.57
6A3	23.33	1.18	0.14	0.30	0.05	1.62	21.80	0.82	0.77	0.21	0.77	0.77	23.07	1.02	0.17	0.26	0.10	1.20
6A4	23.00	2.39	-0.57	0.61	0.18	6.57	22.20	2.91	-0.63	0.75	0.15	9.77	20.93	2.68	-0.31	0.69	0.05	8.28
6A5	16.67	1.18	-0.14	0.30	0.05	1.62	15.33	1.59	0.43	0.41	0.22	2.90	15.60	2.07	0.69	0.53	0.29	4.94
6A6	23.27	2.14	-0.31	0.55	0.08	5.28	18.33	3.68	1.14	0.94	0.27	15.62	19.53	3.46	0.66	0.89	0.12	13.82
6A7	16.93	1.81	1.11	0.46	0.59	3.78	13.87	2.43	1.94	0.62	0.71	6.82	15.73	1.45	1.46	0.37	0.79	2.42
6A8	18.07	1.11	-0.54	0.28	0.48	1.42	16.73	1.96	-0.54	0.50	0.23	4.42	17.60	1.69	-0.60	0.43	0.32	3.30
6A9	13.87	3.58	2.66	0.92	0.68	14.82	15.67	1.18	1.86	0.30	0.90	1.62	18.07	1.22	1.03	0.31	0.73	1.70
6B1	22.27	1.81	-0.31	0.46	0.10	3.78	20.40	2.36	0.31	0.61	0.06	6.44	17.40	2.48	0.74	0.64	0.25	7.09
6B2	16.40	0.83	0.60	0.21	0.66	0.80	15.27	0.78	0.83	0.20	0.81	0.70	18.60	0.87	-0.03	0.22	0.00	0.87
6B3	20.20	2.05	0.09	0.53	0.01	4.84	19.53	3.50	0.23	0.90	0.02	14.10	25.20	1.42	-0.91	0.37	0.61	2.34
6B4	18.47	2.12	1.49	0.54	0.65	5.18	19.60	1.46	1.11	0.37	0.69	2.44	18.47	1.70	1.34	0.44	0.70	3.32
6B5	13.87	1.78	0.51	0.46	0.24	3.68	9.13	2.10	1.77	0.54	0.73	5.10	13.87	0.68	0.80	0.17	0.84	0.53
6B6	19.00	2.60	-0.14	0.67	0.01	7.79	11.33	1.44	1.43	0.37	0.79	2.40	17.27	0.82	0.11	0.21	0.07	0.78
6B7	17.47	0.39	1.49	0.10	0.98	0.18	18.00	1.49	1.57	0.38	0.81	2.57	16.87	1.15	1.80	0.30	0.90	1.53
6B8	20.27	2.36	0.26	0.61	0.04	6.42	16.07	2.51	1.31	0.64	0.51	7.28	20.67	2.37	0.29	0.61	0.05	6.48
6B9	17.47	1.52	-0.09	0.39	0.01	2.68	13.80	1.40	0.63	0.36	0.43	2.27	15.13	1.35	0.77	0.35	0.55	2.10
6C1	19.53	1.01	0.09	0.26	0.03	1.18	20.27	0.42	-0.17	0.11	0.39	0.20	20.00	0.93	0.02	0.24	0.00	1.00
6C2	16.93	1.67	0.83	0.43	0.48	3.20	17.87	2.09	0.80	0.54	0.36	5.03	18.47	2.30	0.77	0.59	0.30	6.10
6C3	21.67	1.42	0.01	0.37	0.01	2.33	19.93	2.17	0.26	0.56	0.05	5.42	19.53	2.00	0.23	0.51	0.05	4.60
6C4	18.67	2.08	0.29	0.53	0.07	4.98	17.53	3.03	0.37	0.78	0.05	10.60	15.73	3.11	0.60	0.80	0.12	11.13

Table 24
Control results from exploratory OLS regression models for the PBS (T) subscales.

	Social Competence						Autonomy						Compliance					
	Initial Status		Rate of Change				Initial Status		Rate of Change				Initial Status		Rate of Change			
ID	Estimate	Error	Estimate	Error	R^2	Residual Variance	Estimate	Error	Estimate	Error	R^2	Residual Variance	Estimate	Error	Estimate	Error	R^2	Residual Variance
5B1	36.07	2.82	0.17	0.73	0.01	9.20	18.20	2.18	-0.34	0.56	0.09	5.49	23.67	2.26	0.57	0.58	0.19	5.90
5B2	34.87	3.57	0.51	0.92	0.07	14.68	19.40	1.41	-0.40	0.36	0.23	2.30	26.07	2.84	1.31	0.73	0.45	9.28
5B3	37.67	3.03	-0.86	0.78	0.23	10.62	14.73	0.34	-0.40	0.09	0.84	0.13	37.00	2.66	-2.29	0.68	0.74	8.14
5B4	32.73	2.14	0.31	0.55	0.08	5.28	19.33	2.37	-0.29	0.61	0.05	6.48	23.87	2.12	0.51	0.54	0.18	5.18
5B5	40.67	7.93	-1.86	2.04	0.17	72.62	17.93	0.34	-0.60	0.09	0.92	0.13	32.80	2.03	-1.23	0.52	0.58	4.77
5B6	35.07	3.28	0.74	0.84	0.16	12.42	14.53	2.48	0.37	0.64	0.08	7.10	30.73	2.82	-0.83	0.73	0.25	9.20
5B7	36.60	4.38	0.54	1.12	0.06	22.09	17.87	1.07	-0.34	0.27	0.28	1.32	24.13	1.37	1.49	0.35	0.82	2.18
5B8	40.27	4.96	-1.74	1.27	0.32	28.42	18.87	2.01	-0.49	0.52	0.18	4.68	36.27	4.24	-1.89	1.09	0.43	20.78
5B9	37.87	8.14	-1.20	2.09	0.08	76.53	14.47	1.50	-0.23	0.39	0.08	2.60	21.53	4.02	1.23	1.03	0.26	18.60
5C1	33.67	0.32	0.14	0.08	0.43	0.12	17.67	1.77	-0.14	0.45	0.02	3.62	28.60	2.35	-0.03	0.60	0.00	6.37
5C2	36.67	6.64	1.43	1.71	0.15	50.90	13.00	2.66	1.29	0.68	0.47	8.14	27.80	4.16	0.34	1.07	0.03	19.99
5C3	32.93	1.91	-0.03	0.49	0.00	4.20	20.73	1.40	-1.11	0.36	0.70	2.28	35.27	3.04	-2.60	0.78	0.74	10.63
5C4	36.07	5.24	0.03	1.35	0.00	31.70	17.53	2.92	-0.06	0.75	0.00	9.82	23.67	1.44	1.57	0.37	0.82	2.40
5C5	31.60	1.30	0.11	0.33	0.03	1.94	15.00	2.43	0.14	0.62	0.01	6.79	24.80	3.84	-0.66	0.99	0.10	16.99
5C6	42.27	3.76	-1.31	0.96	0.32	16.28	14.27	2.82	0.83	0.73	0.25	9.20	30.47	5.17	0.06	1.33	0.00	30.82
5C7	25.00	4.89	1.43	1.26	0.24	27.57	8.80	2.33	1.77	0.60	0.69	6.27	16.60	3.03	2.26	0.78	0.68	10.59
5C8	23.73	5.45	3.31	1.40	0.58	34.28	16.67	3.01	-0.29	0.77	0.03	10.48	25.67	4.21	-0.29	1.08	0.02	20.48
5C9	31.13	2.56	0.20	0.66	0.02	7.53	19.47	2.38	-0.80	0.61	0.30	6.53	26.27	3.97	-0.17	1.02	0.01	18.20
5D1	31.00	3.52	1.14	0.90	0.29	14.29	19.33	3.34	0.57	0.86	0.33	2.90	30.40	4.59	-0.40	1.18	0.03	24.30
5D2	37.80	3.72	1.34	0.96	0.33	15.99	19.33	3.34	0.57	0.86	0.10	12.90	26.00	4.42	2.57	1.14	0.56	22.57
5D3	33.87	4.47	2.80	1.15	0.60	23.03	17.47	1.66	0.49	0.43	0.25	3.18	24.00	1.88	2.43	0.48	0.86	4.07
5D4	37.73	4.03	-1.69	1.04	0.40	18.78	17.80	2.33	-0.23	0.60	0.04	6.27	29.80	4.88	-0.94	1.25	0.12	27.49
5D5	31.33	4.87	0.57	1.25	0.05	27.40	18.67	2.71	-0.71	0.70	0.21	8.48	26.80	1.57	-0.51	0.40	0.29	2.84
5D6	34.00	3.93	1.86	1.01	0.46	17.79	18.13	1.48	0.20	0.38	0.06	2.53	26.93	2.49	1.40	0.64	0.55	7.13
5D7	38.40	3.71	1.17	0.95	0.27	15.87	18.53	0.84	-0.06	0.22	0.02	0.82	24.87	4.28	2.37	1.10	0.54	21.10
5D8	33.53	5.11	2.09	1.31	0.39	30.18	20.73	2.70	-0.26	0.69	0.03	8.42	30.27	4.31	0.54	1.11	0.06	21.42
5D9	28.20	3.57	2.80	0.92	0.70	14.70	20.20	2.08	-0.34	0.53	0.09	4.99	27.40	3.34	2.17	0.86	0.62	12.87
6A1	26.60	2.69	1.97	0.69	0.67	8.37	12.67	1.46	0.71	0.38	0.47	2.48	23.40	4.20	1.17	1.08	0.23	20.37
6A2	35.00	1.00	0.29	0.26	0.24	1.14	15.00	1.65	0.29	0.42	0.10	3.14	24.53	1.48	0.80	0.38	0.53	2.53
6A3	35.33	3.54	2.29	0.91	0.61	14.48	14.07	1.96	1.46	0.50	0.68	4.42	30.60	0.97	-0.74	0.25	0.69	1.09
6A4	34.60	1.85	1.11	0.47	0.58	3.94	13.67	2.00	1.14	0.51	0.55	4.62	30.60	1.46	1.11	0.37	0.69	2.44
6A5	21.67	1.31	0.71	0.34	0.53	1.98	16.07	0.34	-0.40	0.09	0.84	0.13	26.27	1.69	0.11	0.43	0.02	3.28
6A6	22.93	0.78	0.83	0.20	0.81	0.70	19.33	0.32	0.14	0.08	0.43	0.12	37.53	1.56	-0.34	0.40	0.15	2.82
6A7	27.40	0.87	1.03	0.22	0.84	0.87	13.47	0.72	0.77	0.19	0.81	0.60	26.40	0.27	0.46	0.07	0.91	0.09
6A8	25.47	2.74	1.49	0.70	0.53	8.68	15.33	0.54	0.01	0.14	0.00	0.33	26.47	0.68	0.20	0.17	0.25	0.53
6A9	34.13	4.40	0.34	1.13	0.02	22.32	20.33	0.32	-0.14	0.08	0.43	0.12	30.07	1.53	0.17	0.39	0.05	2.70
6B1	26.00	0.70	0.57	0.18	0.71	0.57	11.20	0.55	0.51	0.14	0.77	0.34	26.07	2.31	1.60	0.59	0.65	6.13
6B2	25.00	2.10	0.57	0.54	0.22	5.07	16.20	1.26	0.09	0.32	0.02	1.84	26.07	1.93	-0.11	0.49	0.01	4.28
6B3	30.40	3.37	2.46	0.86	0.67	13.09	16.27	1.22	0.97	0.31	0.71	1.70	24.53	4.22	2.80	1.08	0.63	20.53
6B4	25.20	2.68	1.23	0.69	0.44	8.27	11.33	1.51	0.86	0.39	0.55	2.62	21.67	1.77	0.86	0.45	0.47	3.62
6B5	44.47	3.46	0.06	0.89	0.00	13.82	15.07	0.42	0.17	0.11	0.39	0.20	23.33	1.18	0.86	0.30	0.67	1.62
6B6	33.53	2.00	0.23	0.51	0.05	4.60	15.07	0.78	0.03	0.20	0.01	0.70	27.67	1.31	-0.29	0.34	0.15	1.98
6B7	33.73	3.89	1.74	1.00	0.43	17.42	19.67	0.54	0.01	0.14	0.00	0.33	28.93	2.96	1.40	0.76	0.46	10.13
6B8	38.67	2.79	0.71	0.72	0.20	8.98	19.00	0.83	0.14	0.21	0.10	0.79	30.07	2.98	0.89	0.77	0.25	10.28
6B9	37.80	4.34	-0.23	1.12	0.01	21.77	17.00	1.14	0.02	0.29	0.00	1.50	36.87	2.39	-1.77	0.61	0.68	6.60
6C1	50.60	6.20	-2.17	1.59	0.32	44.37	21.00	2.31	-0.71	0.59	0.27	6.14	32.13	4.11	-0.80	1.06	0.13	19.53
6C2	35.13	2.12	0.49	0.54	0.17	5.18	13.67	1.28	0.43	0.33	0.30	1.90	35.00	1.34	-0.57	0.34	0.41	2.07
6C3	42.93	3.70	-0.31	0.95	0.03	15.78	16.60	1.64	0.54	0.42	0.29	3.09	25.87	1.90	0.09	0.49	0.01	4.18
6C4	28.80	0.55	-0.09	0.14	0.09	0.34	14.53	0.30	0.23	0.08	0.69	0.10	28.67	0.73	-0.14	0.19	0.13	0.62

Table 25
Control results from exploratory OLS regression models for the PBS (P) subscales.

	Social Competence						Autonomy						Compliance					
	Initial Status		Rate of Change				Initial Status		Rate of Change				Initial Status		Rate of Change			
ID	Estimate	Error	Estimate	Error	R^2	Residual Variance	Estimate	Error	Estimate	Error	R^2	Residual Variance	Estimate	Error	Estimate	Error	R^2	Residual Variance
5B1	39.87	3.62	-0.77	0.93	0.15	15.10	19.80	2.18	-0.94	0.56	0.41	5.49	25.80	1.86	0.34	0.48	0.11	3.99
5B2	37.93	1.67	-0.03	0.43	0.00	3.20	18.20	1.67	-0.20	0.43	0.05	3.20	29.80	2.69	-0.09	0.69	0.00	8.34
5B3	37.80	1.26	-0.09	0.32	0.02	1.84	11.13	0.77	-0.09	0.20	0.05	0.68	26.47	0.53	0.06	0.14	0.04	0.32
5B4	32.93	3.54	0.26	0.91	0.02	14.42	17.93	2.22	-0.03	0.57	0.00	5.70	23.47	4.87	1.06	1.25	0.15	27.32
5B5	40.20	2.05	-2.49	0.53	0.85	4.84	19.47	0.72	-1.23	0.19	0.92	0.60	32.73	2.00	-1.40	0.51	0.65	4.63
5B6	34.00	2.14	1.14	0.55	0.52	5.29	17.20	3.78	-0.06	0.97	0.00	16.49	30.93	2.74	-0.60	0.70	0.15	8.63
5B7	38.33	6.15	0.86	1.58	0.07	43.62	18.00	0.83	0.14	0.21	0.10	0.79	26.60	5.42	2.11	1.39	0.37	33.94
5B8	41.40	8.78	-1.83	2.25	0.14	88.87	15.33	1.13	0.29	0.29	0.19	1.48	29.00	6.60	-0.14	1.70	0.00	50.29
5B9	39.00	3.78	-3.00	0.97	0.70	16.50	11.47	1.26	0.06	0.32	0.01	1.82	36.00	5.06	-3.00	1.30	0.57	29.50
5C1	30.80	2.71	3.06	0.70	0.83	8.49	19.87	0.30	0.23	0.08	0.69	0.10	26.53	3.43	2.23	0.88	0.61	13.60
5C2	37.07	3.26	-0.11	0.84	0.00	12.28	12.20	1.70	1.09	0.44	0.61	3.34	27.00	2.29	0.43	0.59	0.12	6.07
5C3	42.33	7.84	-1.00	2.01	0.06	70.83	18.53	1.50	-0.77	0.39	0.50	2.60	34.20	5.52	-1.20	1.42	0.15	35.20
5C4	33.00	4.80	1.57	1.23	0.29	26.57	19.27	0.89	-0.46	0.23	0.50	0.92	27.87	3.10	1.37	0.80	0.43	11.10
5C5	36.13	5.68	-0.09	1.46	0.00	37.18	11.53	2.10	0.37	0.54	0.11	5.10	27.27	3.80	-1.03	0.98	0.22	16.70
5C6	42.40	2.30	-1.54	0.59	0.63	6.09	16.47	1.82	0.34	0.47	0.12	3.82	30.07	1.29	-0.26	0.33	0.13	1.92
5C7	28.67	5.82	0.86	1.50	0.08	39.12	11.00	0.75	0.71	0.19	0.78	0.64	20.07	4.87	1.46	1.25	0.25	27.42
5C8	31.87	4.02	1.09	1.03	0.22	18.68	14.87	1.21	0.51	0.31	0.41	1.68	27.53	2.57	0.37	0.66	0.07	7.60
5C9	40.53	2.58	0.51	0.66	0.13	7.68	16.60	1.09	-0.17	0.28	0.09	1.37	30.60	4.26	0.69	1.09	0.09	20.94
5D1	36.00	1.99	0.57	0.51	0.24	4.57	16.87	1.78	0.51	0.46	0.24	3.68	28.13	2.10	0.63	0.54	0.25	5.10
5D2	40.93	4.49	0.69	1.15	0.08	23.28	16.20	2.46	0.94	0.63	0.36	6.99	27.93	3.62	1.40	0.93	0.36	15.13
5D3	40.73	2.68	0.89	0.69	0.29	8.28	12.07	1.84	1.46	0.47	0.70	3.92	24.40	5.11	2.46	1.31	0.47	30.09
5D4	49.27	2.84	-2.89	0.73	0.80	9.28	15.13	2.60	0.06	0.67	0.00	7.82	34.20	6.64	-1.49	1.70	0.16	50.84
5D5	17.07	3.96	3.60	1.02	0.76	18.13	18.67	2.26	-0.57	0.58	0.19	5.90	22.67	3.01	0.71	0.77	0.18	10.48
5D6	39.40	5.01	-0.11	1.29	0.00	28.94	17.27	2.14	0.11	0.55	0.01	5.28	29.40	4.07	0.46	1.04	0.05	19.09
5D7	46.33	6.61	-1.71	1.70	0.20	50.48	20.13	2.34	-0.66	0.60	0.23	6.32	31.93	4.53	0.83	1.16	0.11	23.70
5D8	39.73	8.05	0.03	2.07	0.00	74.70	21.27	2.78	-0.46	0.71	0.09	8.92	32.27	7.40	-0.03	1.90	0.00	63.20
5D9	38.33	9.24	-0.29	2.37	0.00	98.48	21.87	3.86	-0.91	0.99	0.18	17.18	28.87	5.70	0.80	1.46	0.07	37.53
6A1	30.20	2.85	1.51	0.73	0.52	9.34	13.87	1.52	0.51	0.39	0.30	2.68	25.33	3.29	0.71	0.84	0.15	12.48
6A2	27.20	3.66	1.94	0.94	0.52	15.49	15.07	0.60	0.46	0.15	0.69	0.42	25.60	0.97	0.54	0.25	0.54	1.09
6A3	37.80	1.86	-0.94	0.48	0.49	3.99	16.00	0.83	-0.14	0.21	0.10	0.79	31.00	1.93	-0.86	0.49	0.43	4.29
6A4	33.33	0.32	-0.14	0.08	0.43	0.12	14.27	0.34	0.40	0.09	0.84	0.13	23.27	1.72	2.54	0.44	0.89	3.42
6A5	31.47	0.30	-0.23	0.08	0.69	0.10	10.33	0.32	0.14	0.08	0.43	0.12	22.67	0.64	0.29	0.16	0.43	0.48
6A6	32.33	0.32	0.14	0.08	0.43	0.12	14.53	0.30	0.23	0.08	0.69	0.10	29.47	1.77	-1.23	0.45	0.65	3.60
6A7	27.93	3.83	2.26	0.98	0.57	16.92	13.87	0.77	0.51	0.20	0.63	0.68	16.60	1.64	1.54	0.42	0.77	3.09
6A8	25.27	0.78	0.97	0.20	0.85	0.70	10.33	0.54	0.01	0.14	0.00	0.33	22.60	1.30	0.69	0.33	0.51	1.94
6A9	36.87	2.30	1.37	0.59	0.57	6.10	14.33	3.01	0.29	0.77	0.03	10.48	20.00	6.54	2.14	1.68	0.29	49.29
6B1	26.33	0.85	1.00	0.22	0.84	0.83	10.53	1.37	0.51	0.35	0.35	2.18	20.40	0.57	1.17	0.15	0.94	0.37
6B2	23.93	1.02	-0.03	0.26	0.00	1.20	14.67	0.64	0.29	0.16	0.43	0.48	25.80	1.24	-0.23	0.32	0.11	1.77
6B3	31.20	2.60	2.23	0.67	0.74	7.77	17.07	0.60	0.46	0.15	0.69	0.42	26.00	1.06	1.14	0.27	0.82	1.29
6B4	30.33	0.59	0.43	0.15	0.67	0.40	12.13	0.30	-0.23	0.08	0.69	0.10	16.13	0.68	1.20	0.17	0.92	0.53
6B5	29.33	1.70	1.00	0.44	0.57	3.33	11.27	0.60	0.54	0.15	0.75	0.42	20.27	1.22	0.83	0.31	0.64	1.70
6B6	23.13	2.90	2.91	0.74	0.79	9.68	11.53	1.50	1.23	0.39	0.72	2.60	18.93	1.40	2.11	0.36	0.90	2.28
6B7	29.53	0.30	0.23	0.08	0.69	0.10	12.33	0.32	0.14	0.08	0.43	0.12	21.47	0.39	-0.09	0.10	0.15	0.18
6B8	33.27	3.69	1.97	0.95	0.52	15.70	17.27	1.96	0.26	0.50	0.06	4.42	27.27	2.54	1.54	0.65	0.58	7.42
6B9	36.33	4.02	0.14	1.03	0.00	18.62	20.13	1.64	-0.23	0.42	0.07	3.10	31.73	1.40	-0.69	0.36	0.47	2.28
6C1	39.20	2.87	-1.34	0.74	0.45	9.49	18.87	1.18	-0.77	0.30	0.62	1.60	28.07	1.29	-0.26	0.33	0.13	1.92
6C2	39.40	0.57	0.17	0.15	0.26	0.37	14.67	0.32	0.14	0.08	0.43	0.12	24.87	1.15	0.80	0.30	0.65	1.53
6C3	42.20	2.42	0.37	0.62	0.08	6.77	11.60	0.57	0.97	0.15	0.92	0.37	28.93	2.75	-0.03	0.71	0.00	8.70
6C4	30.73	4.09	1.31	1.05	0.28	19.28	13.60	0.87	0.83	0.22	0.78	0.87	24.33	2.08	1.29	0.53	0.59	4.98

Table 26
Intervention results from exploratory OLS regression models for PBS, SMI-C9, and S-ES measures.

	PBS						SMI-C9						SE-S					
	Initial Status		Rate of Change				Initial Status		Rate of Change				Initial Status		Rate of Change			
ID	Estimate	Error	Estimate	Error	R^2	Residual Variance	Estimate	Error	Estimate	Error	R^2	Residual Variance	Estimate	Error	Estimate	Error	R^2	Residual Variance
3B1	11.67	0.64	1.71	0.16	0.96	0.48	12.47	1.52	2.49	0.39	0.91	2.68	12.40	0.90	0.31	0.23	0.31	0.94
3B2	10.20	1.40	2.37	0.36	0.92	2.27	15.33	1.70	3.00	0.44	0.92	3.33	10.87	0.95	1.80	0.24	0.93	1.03
3B3	9.73	1.45	2.46	0.37	0.92	2.42	16.40	1.64	2.46	0.42	0.90	3.09	8.00	1.36	2.71	0.35	0.94	2.14
3C1	11.53	0.30	1.23	0.08	0.98	0.10	17.00	1.49	2.57	0.38	0.92	2.57	9.60	1.17	1.26	0.30	0.81	1.59
3C10	10.73	1.22	2.17	0.31	0.92	1.70	19.13	2.39	1.77	0.61	0.68	6.60	11.20	1.68	2.37	0.43	0.88	3.27
3C11	10.47	2.19	2.20	0.56	0.79	5.53	17.47	1.33	2.20	0.34	0.91	2.03	16.80	0.49	1.63	0.12	0.98	0.27
3C12	9.60	0.90	2.11	0.23	0.95	0.94	17.93	1.59	2.26	0.41	0.88	2.92	11.13	1.37	2.49	0.35	0.93	2.18
3C13	14.87	1.52	1.51	0.39	0.79	2.68	11.67	2.81	2.86	0.72	0.80	9.12	11.93	1.96	2.26	0.50	0.83	4.42
3C14	10.80	1.31	2.34	0.34	0.92	1.99	18.00	0.96	2.43	0.25	0.96	1.07	9.60	1.85	2.11	0.47	0.83	3.94
3C2	14.60	1.30	1.11	0.33	0.74	1.94	21.93	1.02	1.83	0.26	0.92	1.20	8.13	1.35	2.77	0.35	0.94	2.10
3C3	10.13	0.98	1.63	0.25	0.91	1.10	14.73	2.02	3.17	0.52	0.90	4.70	9.07	1.29	2.74	0.33	0.94	1.92
3C4	13.07	0.89	1.46	0.23	0.91	0.92	18.47	0.98	1.77	0.25	0.93	1.10	7.60	2.16	2.83	0.55	0.87	5.37
3C5	17.33	1.28	1.57	0.33	0.85	1.90	14.33	2.00	2.86	0.51	0.89	4.62	8.33	1.07	3.00	0.28	0.97	1.33
3C6	10.07	1.53	2.03	0.39	0.87	2.70	17.67	2.15	2.00	0.55	0.77	5.33	8.53	1.52	3.09	0.39	0.94	2.68
3C7	12.20	1.68	2.23	0.43	0.87	3.27	17.60	1.60	2.69	0.41	0.91	2.94	12.13	0.84	2.06	0.22	0.96	0.82
3C8	10.80	1.08	2.91	0.28	0.97	1.34	14.40	1.34	2.74	0.35	0.94	2.09	8.33	1.64	3.14	0.42	0.93	3.12
3C9	10.27	1.69	1.69	0.43	0.79	3.28	22.27	1.51	1.40	0.39	0.77	2.63	12.93	1.05	2.11	0.27	0.94	1.28
4B1	10.27	0.74	1.40	0.19	0.93	0.63	20.00	1.78	2.29	0.46	0.86	3.64	7.53	1.56	2.94	0.40	0.93	2.82
4B2	11.20	0.55	2.51	0.14	0.99	0.34	15.47	1.15	3.20	0.30	0.97	1.53	10.93	0.60	2.54	0.15	0.99	0.42
4B3	10.27	1.19	2.40	0.31	0.94	1.63	16.40	1.17	3.46	0.30	0.97	1.59	14.07	2.33	0.31	0.60	0.06	6.28
4B4	9.33	1.36	2.14	0.35	0.90	2.12	15.13	1.15	2.20	0.30	0.93	1.53	10.87	1.52	2.09	0.39	0.88	2.68
4B5	11.33	0.64	1.29	0.16	0.94	0.48	15.47	1.21	2.49	0.31	0.94	1.68	4.40	1.88	2.74	0.48	0.89	4.09
4B6	17.87	1.56	0.94	0.40	0.58	2.82	13.60	0.97	3.26	0.25	0.98	1.09	9.53	1.48	2.80	0.38	0.93	2.53
4B7	20.73	1.59	-0.54	0.41	0.31	2.92	21.33	1.28	1.57	0.33	0.85	1.90	9.00	1.00	2.71	0.26	0.97	1.14
4C1	11.47	0.68	2.20	0.17	0.98	0.53	20.60	1.60	2.11	0.41	0.87	2.94	5.33	1.31	2.71	0.34	0.94	1.98
4C2	7.93	1.24	2.69	0.32	0.95	1.78	21.20	1.82	2.09	0.47	0.83	3.84	13.20	1.05	2.23	0.27	0.94	1.27
4C3	11.00	1.00	1.71	0.26	0.92	1.14	22.53	0.53	1.66	0.14	0.97	0.32	6.07	1.45	2.46	0.37	0.92	2.42
4C4	8.87	0.77	1.51	0.20	0.94	0.68	22.33	1.44	1.57	0.37	0.82	2.40	12.60	1.83	1.83	0.47	0.79	3.87
4C5	14.47	1.70	1.06	0.44	0.60	3.32	13.60	2.27	3.11	0.58	0.88	5.94	10.20	1.26	1.09	0.32	0.74	1.84
4C6	20.20	0.65	0.94	0.17	0.89	0.49	20.47	0.84	2.06	0.22	0.96	0.82	11.53	2.22	1.51	0.57	0.64	5.68
4C7	8.53	0.68	1.80	0.17	0.96	0.53	9.53	1.66	3.51	0.43	0.94	3.18	7.40	1.50	1.46	0.38	0.78	2.59
4C8	12.60	0.90	1.11	0.23	0.85	0.94	21.53	1.35	0.23	0.35	0.10	2.10	9.67	0.89	1.57	0.23	0.92	0.90
4C9	8.60	0.87	1.83	0.22	0.94	0.87	20.60	0.90	1.69	0.23	0.93	0.94	10.40	1.06	0.60	0.27	0.55	1.30
4D1	12.93	0.42	0.97	0.11	0.95	0.20	12.93	1.22	2.97	0.31	0.96	1.70	9.27	1.79	1.97	0.46	0.82	3.70
4D2	11.93	0.60	1.54	0.15	0.96	0.42	22.60	0.83	1.40	0.21	0.91	0.80	17.27	0.34	1.40	0.09	0.98	0.13
4D3	10.67	0.89	2.57	0.23	0.97	0.90	18.53	2.29	2.80	0.59	0.85	6.03	14.27	2.58	0.97	0.66	0.35	7.70

Table 27
Intervention results from exploratory OLS regression models for the SEQ-C subscales.

	Academic						Social						Emotional					
	Initial Status		Rate of Change				Initial Status		Rate of Change				Initial Status		Rate of Change			
ID	Estimate	Error	Estimate	Error	R^2	Residual Variance	Estimate	Error	Estimate	Error	R^2	Residual Variance	Estimate	Error	Estimate	Error	R^2	Residual Variance
3B1	22.67	2.46	0.71	0.63	0.24	6.98	20.33	1.86	2.29	0.48	0.85	3.98	21.53	3.33	1.66	0.86	0.48	12.82
3B2	21.53	0.84	2.66	0.22	0.97	0.82	16.53	0.98	3.37	0.25	0.98	1.10	18.93	1.53	2.83	0.39	0.93	2.70
3B3	18.60	2.30	2.26	0.59	0.79	6.09	16.53	1.18	3.23	0.30	0.97	1.60	15.73	1.72	3.46	0.44	0.94	3.42
3C1	18.40	0.97	2.46	0.25	0.96	1.09	20.20	1.40	2.37	0.36	0.92	2.27	16.60	1.43	2.97	0.37	0.94	2.37
3C1	15.27	1.29	2.54	0.33	0.94	1.92	16.73	0.78	2.03	0.20	0.96	0.70	18.00	1.14	2.00	0.29	0.92	1.50
3C1	14.27	1.24	2.69	0.32	0.95	1.78	15.47	1.62	2.20	0.42	0.87	3.03	13.40	1.50	2.74	0.38	0.93	2.59
3C1	15.73	1.38	3.17	0.35	0.95	2.20	16.40	2.07	3.89	0.53	0.93	4.94	16.07	1.40	3.31	0.36	0.95	2.28
3C1	11.73	1.67	3.03	0.43	0.93	3.20	14.53	1.93	2.66	0.50	0.88	4.32	12.67	2.21	2.86	0.57	0.86	5.62
3C1	15.40	1.71	3.03	0.44	0.92	3.37	15.80	1.74	3.06	0.45	0.92	3.49	14.33	1.36	3.86	0.35	0.97	2.12
3C2	26.13	1.98	1.20	0.51	0.58	4.53	22.53	1.01	1.09	0.26	0.81	1.18	27.47	1.52	1.49	0.39	0.78	2.68
3C3	19.00	1.49	2.57	0.38	0.92	2.57	19.87	2.15	2.94	0.55	0.88	5.32	21.33	2.18	1.71	0.56	0.70	5.48
3C4	25.87	2.30	0.23	0.59	0.04	6.10	24.33	1.89	0.14	0.49	0.02	4.12	25.80	2.32	0.20	0.60	0.03	6.20
3C5	17.33	1.77	2.14	0.45	0.85	3.62	17.47	2.04	2.06	0.52	0.79	4.82	20.00	1.81	2.14	0.47	0.84	3.79
3C6	17.13	0.98	2.63	0.25	0.96	1.10	20.73	0.78	2.03	0.20	0.96	0.70	19.93	1.11	2.26	0.28	0.94	1.42
3C7	15.33	1.97	3.29	0.51	0.91	4.48	14.33	2.18	3.71	0.56	0.92	5.48	18.13	2.52	2.34	0.65	0.77	7.32
3C8	13.07	1.53	3.17	0.39	0.94	2.70	9.27	1.89	3.40	0.49	0.92	4.13	14.53	1.18	2.37	0.30	0.94	1.60
3C9	13.80	1.91	3.20	0.49	0.91	4.20	16.00	2.14	2.86	0.55	0.87	5.29	15.00	1.24	2.86	0.32	0.95	1.79
4B1	20.73	1.36	1.60	0.35	0.84	2.13	19.27	0.78	1.83	0.20	0.95	0.70	20.13	0.84	2.34	0.22	0.97	0.82
4B2	15.07	1.05	2.89	0.27	0.97	1.28	14.00	1.65	3.29	0.42	0.94	3.14	16.60	1.12	2.69	0.29	0.96	1.44
4B3	16.60	2.34	3.40	0.60	0.89	6.30	14.00	1.00	3.71	0.26	0.98	1.14	15.40	1.34	3.46	0.35	0.96	2.09
4B4	16.27	1.53	1.83	0.39	0.84	2.70	13.53	1.18	2.23	0.30	0.93	1.60	12.67	1.89	2.86	0.49	0.90	4.12
4B5	16.07	2.24	3.31	0.57	0.89	5.78	18.00	1.65	3.29	0.42	0.94	3.14	14.67	2.55	3.29	0.65	0.86	7.48
4B6	12.33	1.64	2.86	0.42	0.92	3.12	11.87	2.00	3.23	0.51	0.91	4.60	8.60	1.64	3.54	0.42	0.95	3.09
4B7	21.93	1.69	0.11	0.43	0.02	3.28	22.47	2.58	-0.09	0.66	0.00	7.68	20.80	2.55	0.34	0.65	0.06	7.49
4C1	21.27	1.38	1.83	0.35	0.87	2.20	20.93	2.06	2.26	0.53	0.82	4.92	24.67	1.07	2.00	0.28	0.93	1.33
4C2	21.07	1.93	1.89	0.49	0.78	4.28	22.53	1.01	2.09	0.26	0.94	1.18	21.53	0.98	2.23	0.25	0.95	1.10
4C3	22.47	0.95	2.20	0.24	0.95	1.03	19.53	1.75	2.80	0.45	0.91	3.53	18.93	2.02	2.97	0.52	0.89	4.70
4C4	14.40	1.60	3.31	0.41	0.94	2.94	13.93	2.14	4.11	0.55	0.93	5.28	19.67	2.55	2.71	0.65	0.81	7.48
4C5	14.73	1.11	3.46	0.28	0.97	1.42	14.33	1.13	3.29	0.29	0.97	1.48	13.00	1.86	4.00	0.48	0.95	4.00
4C6	21.73	1.59	0.46	0.41	0.24	2.92	22.33	2.53	0.57	0.65	0.16	7.40	21.20	1.74	0.94	0.45	0.53	3.49
4C7	17.53	1.07	2.94	0.27	0.97	1.32	19.13	1.26	2.06	0.32	0.91	1.82	17.33	1.70	3.00	0.44	0.92	3.33
4C8	18.53	2.25	0.94	0.58	0.40	5.82	18.73	1.81	0.89	0.46	0.48	3.78	18.07	2.33	0.89	0.60	0.35	6.28
4C9	13.93	1.53	2.97	0.39	0.93	2.70	16.87	1.82	2.66	0.47	0.89	3.82	14.20	1.74	2.94	0.45	0.92	3.49
4D1	17.73	2.98	2.31	0.77	0.70	10.28	17.33	3.80	2.14	0.97	0.55	16.62	16.53	3.03	2.37	0.78	0.70	10.60
4D2	19.07	0.89	2.46	0.23	0.97	0.92	15.67	1.18	2.86	0.30	0.96	1.62	15.47	1.07	3.06	0.27	0.97	1.32
4D3	15.27	1.72	3.26	0.44	0.93	3.42	16.13	2.09	3.20	0.54	0.90	5.03	16.00	1.78	2.71	0.46	0.90	3.64

Table 28
Intervention results from exploratory OLS regression models for the PBS (T) subscales.

	Social Competence						Autonomy						Compliance					
	Initial Status		Rate of Change				Initial Status		Rate of Change				Initial Status		Rate of Change			
ID	Estimate	Error	Estimate	Error	R^2	Residual Variance	Estimate	Error	Estimate	Error	R^2	Residual Variance	Estimate	Error	Estimate	Error	R^2	Residual Variance
3B1	33.73	2.24	1.89	0.57	0.73	5.78	14.40	1.30	0.89	0.33	0.64	1.94	25.47	1.77	2.77	0.45	0.90	3.60
3B2	30.60	2.10	2.54	0.54	0.85	5.09	14.87	0.95	0.80	0.24	0.73	1.03	23.67	1.95	2.57	0.50	0.87	4.40
3B3	29.07	1.24	1.89	0.32	0.90	1.78	13.73	0.82	1.31	0.21	0.91	0.78	19.47	1.89	2.63	0.48	0.88	4.10
3C1	38.73	1.24	1.31	0.32	0.81	1.78	19.20	0.78	0.80	0.20	0.80	0.70	31.60	1.34	1.54	0.35	0.83	2.09
3C10	36.00	2.11	2.29	0.54	0.82	5.14	19.20	1.24	0.23	0.32	0.11	1.77	27.33	2.46	2.29	0.63	0.77	6.98
3C11	25.33	1.72	3.57	0.44	0.94	3.40	13.20	0.82	1.37	0.21	0.91	0.77	24.93	1.84	2.26	0.47	0.85	3.92
3C12	32.47	2.65	1.63	0.68	0.59	8.10	14.40	0.97	0.74	0.25	0.69	1.09	34.93	1.11	0.54	0.28	0.48	1.42
3C13	31.00	2.81	2.29	0.72	0.71	9.14	16.40	0.83	0.60	0.21	0.66	0.80	26.40	1.64	2.46	0.42	0.90	3.09
3C14	31.33	1.59	1.57	0.41	0.79	2.90	12.67	2.06	1.57	0.53	0.69	4.90	24.73	2.32	2.17	0.60	0.77	6.20
3C2	30.73	1.22	2.03	0.31	0.91	1.70	14.93	1.29	0.54	0.33	0.40	1.92	26.80	1.40	1.77	0.36	0.86	2.27
3C3	30.47	2.01	2.49	0.52	0.85	4.68	13.67	0.98	1.14	0.25	0.84	1.12	28.27	0.49	1.11	0.13	0.95	0.28
3C4	29.73	1.84	2.46	0.47	0.87	3.92	13.93	1.05	1.11	0.27	0.81	1.28	27.00	0.96	1.43	0.25	0.89	1.07
3C5	29.53	1.26	2.94	0.32	0.95	1.82	15.47	0.77	0.91	0.20	0.84	0.68	23.80	2.08	2.34	0.53	0.83	4.99
3C6	28.80	1.05	1.77	0.27	0.92	1.27	14.13	1.01	0.91	0.26	0.76	1.18	23.20	1.47	1.94	0.38	0.87	2.49
3C7	41.87	0.72	1.23	0.19	0.92	0.60	13.07	1.24	0.89	0.32	0.66	1.78	28.93	1.72	2.26	0.44	0.87	3.42
3C8	30.27	1.77	2.40	0.46	0.87	3.63	13.87	1.37	1.09	0.35	0.70	2.18	21.87	1.64	2.23	0.42	0.87	3.10
3C9	27.60	1.50	2.54	0.38	0.92	2.59	15.80	0.49	0.77	0.12	0.91	0.27	26.27	1.24	1.69	0.32	0.87	1.78
4B1	30.80	1.70	2.49	0.44	0.89	3.34	12.53	0.98	1.37	0.25	0.88	1.10	24.13	1.77	1.77	0.45	0.79	3.60
4B2	28.40	1.95	3.03	0.50	0.90	4.37	11.67	1.36	1.86	0.35	0.88	2.12	24.33	1.59	2.43	0.41	0.90	2.90
4B3	21.67	2.30	3.14	0.59	0.88	6.12	13.33	1.42	1.00	0.37	0.65	2.33	19.40	1.95	3.17	0.50	0.91	4.37
4B4	33.33	3.62	1.86	0.93	0.50	15.12	13.27	1.22	0.97	0.31	0.71	1.70	18.20	2.42	3.37	0.62	0.88	6.77
4B5	16.33	1.72	4.57	0.44	0.96	3.40	12.67	0.64	1.29	0.16	0.94	0.48	20.27	0.78	2.97	0.20	0.98	0.70
4B6	30.53	1.90	2.09	0.49	0.82	4.18	11.40	0.83	1.60	0.21	0.93	0.80	22.93	1.11	2.26	0.28	0.94	1.42
4B7	22.73	0.49	1.31	0.13	0.96	0.28	13.20	0.65	0.66	0.17	0.80	0.49	24.93	1.51	0.40	0.39	0.21	2.63
4C1	28.27	1.53	2.97	0.39	0.93	2.70	10.07	0.89	1.74	0.23	0.94	0.92	21.73	0.49	2.89	0.13	0.99	0.28
4C2	30.40	2.91	1.60	0.75	0.53	9.80	11.13	0.98	1.63	0.25	0.91	1.10	23.00	1.51	2.29	0.39	0.90	2.64
4C3	14.80	3.19	4.63	0.82	0.89	11.77	9.53	1.78	2.09	0.46	0.84	3.68	18.93	3.28	2.54	0.84	0.69	12.42
4C4	30.33	2.08	1.29	0.53	0.59	4.98	7.80	1.02	2.20	0.26	0.95	1.20	17.87	2.19	2.80	0.56	0.86	5.53
4C5	25.53	3.10	2.37	0.80	0.69	11.10	10.33	0.64	1.71	0.16	0.96	0.48	21.87	0.77	2.51	0.20	0.98	0.68
4C6	14.80	2.94	5.34	0.76	0.93	9.99	6.40	1.30	2.31	0.33	0.92	1.94	16.20	2.87	3.94	0.74	0.88	9.49
4C7	27.13	1.52	2.49	0.39	0.91	2.68	11.07	1.19	1.60	0.31	0.87	1.63	22.27	2.82	1.97	0.73	0.65	9.20
4C8	26.80	2.77	1.91	0.71	0.64	8.84	15.93	0.74	0.40	0.19	0.53	0.63	27.40	0.90	0.89	0.23	0.78	0.94
4C9	28.33	2.57	2.14	0.66	0.73	7.62	13.53	0.30	1.37	0.08	0.99	0.10	23.33	0.98	2.86	0.25	0.97	1.12
4D1	21.40	3.72	3.89	0.95	0.81	15.94	15.33	0.64	0.71	0.16	0.82	0.48	23.80	1.67	2.20	0.43	0.87	3.20
4D2	27.47	4.85	2.77	1.24	0.55	27.10	11.13	0.84	1.34	0.22	0.91	0.82	21.47	1.42	2.34	0.36	0.91	2.32
4D3	30.60	2.27	2.11	0.58	0.77	5.94	8.33	1.18	2.14	0.30	0.93	1.62	21.47	2.84	2.34	0.73	0.72	9.32

Table 29
Intervention results from exploratory OLS regression models for the PBS (P) subscales.

	Social Competence						Autonomy						Compliance					
	Initial Status		Rate of Change				Initial Status		Rate of Change				Initial Status		Rate of Change			
ID	Estimate	Error	Estimate	Error	R^2	Residual Variance	Estimate	Error	Estimate	Error	R^2	Residual Variance	Estimate	Error	Estimate	Error	R^2	Residual Variance
3B1	32.33	2.40	2.86	0.62	0.84	6.62	14.53	1.15	1.80	0.30	0.90	1.53	23.73	2.54	3.46	0.65	0.88	7.42
3B2	30.47	2.41	2.91	0.62	0.85	6.68	11.53	2.31	2.09	0.59	0.75	6.18	21.80	2.63	3.34	0.68	0.86	7.99
3B3	29.67	1.77	2.14	0.45	0.85	3.62	15.33	1.59	0.57	0.41	0.33	2.90	17.00	4.24	3.86	1.09	0.76	20.79
3C1	36.53	1.56	1.66	0.40	0.81	2.82	16.80	0.55	0.91	0.14	0.91	0.34	30.33	0.59	1.43	0.15	0.96	0.40
3C10	38.60	1.64	1.54	0.42	0.77	3.09	18.27	1.11	1.26	0.28	0.83	1.42	27.60	0.90	2.69	0.23	0.97	0.94
3C11	36.73	1.02	2.03	0.26	0.94	1.20	10.47	0.84	2.34	0.22	0.97	0.82	23.87	2.74	2.51	0.70	0.76	8.68
3C12	33.60	1.83	1.97	0.47	0.81	3.87	12.60	1.09	1.83	0.28	0.91	1.37	25.93	2.45	2.26	0.63	0.76	6.92
3C13	33.13	1.64	1.63	0.42	0.79	3.10	12.47	2.10	1.77	0.54	0.73	5.10	23.87	4.17	2.80	1.07	0.63	20.03
3C14	31.80	4.55	1.91	1.17	0.40	23.84	11.47	1.50	1.77	0.39	0.84	2.60	24.73	3.08	2.46	0.79	0.71	10.92
3C2	27.47	1.98	3.20	0.51	0.91	4.53	14.60	2.48	1.26	0.64	0.49	7.09	21.87	3.63	3.09	0.93	0.73	15.18
3C3	29.53	2.52	2.66	0.65	0.81	7.32	15.27	2.14	1.11	0.55	0.51	5.28	24.13	1.77	1.63	0.45	0.76	3.60
3C4	24.67	1.28	3.57	0.33	0.97	1.90	10.73	1.53	2.03	0.39	0.87	2.70	23.07	2.11	2.60	0.54	0.85	5.13
3C5	28.13	1.33	3.20	0.34	0.96	2.03	12.80	1.24	1.63	0.32	0.87	1.77	22.60	0.87	2.97	0.22	0.98	0.87
3C6	28.67	1.36	2.14	0.35	0.90	2.12	11.40	0.57	2.03	0.15	0.98	0.37	23.80	1.02	2.20	0.26	0.95	1.20
3C7	43.00	1.99	1.57	0.51	0.70	4.57	14.20	1.02	1.80	0.26	0.92	1.20	28.73	1.51	2.60	0.39	0.92	2.63
3C8	31.80	1.47	2.34	0.38	0.91	2.49	13.20	0.82	1.23	0.21	0.90	0.77	24.60	0.87	1.97	0.22	0.95	0.87
3C9	28.27	1.22	2.83	0.31	0.95	1.70	15.87	0.68	0.80	0.17	0.84	0.53	25.60	0.57	1.97	0.15	0.98	0.37
4B1	29.93	2.62	2.54	0.67	0.78	7.92	13.73	1.69	1.31	0.43	0.70	3.28	26.60	1.88	1.26	0.48	0.63	4.09
4B2	25.07	1.59	3.74	0.41	0.95	2.92	12.27	1.22	1.83	0.31	0.90	1.70	22.33	1.51	3.14	0.39	0.94	2.62
4B3	23.93	2.84	3.11	0.73	0.82	9.28	11.67	2.26	1.43	0.58	0.60	5.90	20.60	1.73	2.69	0.44	0.90	3.44
4B4	24.93	2.67	2.83	0.68	0.81	8.20	13.93	1.89	1.40	0.49	0.67	4.13	15.73	2.75	4.03	0.71	0.89	8.70
4B5	18.33	3.71	4.57	0.95	0.85	15.90	10.13	1.52	1.91	0.39	0.86	2.68	21.60	2.35	2.83	0.60	0.85	6.37
4B6	29.73	3.18	3.17	0.82	0.79	11.70	12.40	1.64	1.74	0.42	0.81	3.09	21.93	1.55	3.69	0.40	0.96	2.78
4B7	23.20	2.08	0.94	0.53	0.44	4.99	13.40	0.97	0.46	0.25	0.46	1.09	24.20	1.57	1.09	0.40	0.64	2.84
4C1	36.07	6.31	1.46	1.62	0.17	45.92	9.80	1.31	2.06	0.34	0.90	1.99	23.33	4.12	2.14	1.06	0.51	19.62
4C2	30.53	1.90	1.51	0.49	0.71	4.18	12.40	1.56	1.60	0.40	0.80	2.80	23.53	2.97	2.51	0.76	0.73	10.18
4C3	15.13	3.18	4.91	0.82	0.90	11.68	10.67	1.74	1.71	0.45	0.79	3.48	19.73	4.63	2.17	1.19	0.46	24.70
4C4	26.13	2.30	2.63	0.59	0.83	6.10	8.80	0.82	1.77	0.21	0.95	0.77	22.47	1.01	1.91	0.26	0.93	1.18
4C5	24.93	2.75	3.83	0.71	0.88	8.70	9.33	1.13	2.29	0.29	0.94	1.48	31.40	3.43	0.74	0.88	0.15	13.59
4C6	18.73	3.56	4.60	0.91	0.86	14.63	7.40	1.30	2.31	0.33	0.92	1.94	20.27	2.74	3.40	0.70	0.85	8.63
4C7	25.80	2.90	3.20	0.74	0.82	9.70	10.93	1.02	1.83	0.26	0.92	1.20	21.53	1.56	1.94	0.40	0.85	2.82
4C8	24.60	1.95	1.97	0.50	0.80	4.37	13.60	0.57	0.97	0.15	0.92	0.37	29.80	1.08	0.49	0.28	0.43	1.34
4C9	25.80	3.40	3.91	0.87	0.83	13.34	14.33	0.59	1.57	0.15	0.96	0.40	27.20	3.89	2.66	1.00	0.64	17.49
4D1	26.00	2.88	3.43	0.74	0.84	9.57	17.40	0.97	0.74	0.25	0.69	1.09	25.47	2.15	2.34	0.55	0.82	5.32
4D2	35.00	7.29	2.14	1.87	0.25	61.29	11.67	0.89	1.57	0.23	0.92	0.90	25.40	1.34	1.74	0.35	0.86	2.09
4D3	29.20	2.25	2.51	0.58	0.83	5.84	8.00	1.65	2.29	0.42	0.88	3.14	17.73	3.38	3.17	0.87	0.77	13.20

Appendix L: Scalograms

ID	SMI-C9	SEQ-C	PBS	S-ES
5B1	1	1	1	0
5B3	1	1	0	0
5C1	1	1	0	0
5D7	1	1	0	0
5D9	1	1	0	0
5C2	1	1	0	0
5C6	1	0	0	0
5C8	1	0	0	0
5B2	1	0	1	0
5D5	1	0	1	0
5B6	1	0	1	0
5B7	1	0	1	0
5C9	1	1	0	1
5C9	1	1	0	1
5B9	0	0	1	0
5D1	0	1	0	0
5D6	0	1	0	0
5B5	0	1	1	0
5D4	0	1	0	1
5C3	1	0	1	0
5D8	1	0	0	1
5D2	0	1	1	0
5D3	0	1	0	0
6A4	0	0	1	0
6B3	0	0	1	0
6B7	0	0	0	1
5B4	0	0	1	0
5C4	0	0	1	0
5C5	0	0	0	0
5C7	0	0	0	0
6A1	0	0	0	0
6A2	0	0	0	0
6A3	0	0	0	0
6A5	0	0	0	0
6A6	0	0	0	0
6A7	0	0	0	0
6A8	0	0	0	0
6A9	0	0	0	0
6B1	0	0	0	0
6B2	0	0	0	0
6B4	0	0	0	0
6B5	0	0	0	0
6B6	0	0	0	0
6B8	0	0	0	0
6B9	0	0	0	0
6C1	0	0	0	0
6C2	0	0	0	0
6C3	0	0	0	0
6C4	0	0	0	0

Coefficient of reproducibility 0.89

ID	SMI-C9	SEQ-C	S-ES	PBS
5B1	1	1	1	0
5B6	1	1	1	0
5C6	1	1	1	0
5D3	1	1	1	0
6A3	1	1	1	0
5B3	1	1	0	0
5B4	1	1	0	0
5B5	1	1	0	0
5B7	1	1	0	0
5B9	1	1	0	0
5C1	1	1	0	0
5C7	1	1	0	0
5D1	1	1	0	0
5D2	1	1	0	0
5D4	1	1	0	0
5D6	1	1	0	0
5D7	1	0	0	0
5D9	1	0	0	0
6C1	1	0	0	0
5B2	1	0	1	0
5B8	1	1	0	1
5C2	1	0	1	0
5C4	1	0	1	1
5C5	1	0	1	1
5C8	1	0	1	1
5C9	1	1	0	1
5D8	0	0	0	1
6A1	0	0	1	0
6A4	0	0	1	0
6A5	0	0	1	0
6B5	0	0	1	0
6B9	0	0	1	0
6C2	0	0	0	1
6C3	0	0	1	0
5C3	0	0	0	0
5D5	0	0	0	0
6A2	0	0	0	0
6A6	0	0	0	0
6A7	0	0	0	0
6A8	0	0	0	0
6A9	0	0	0	0
6B1	0	0	0	0
6B2	0	0	0	0
6B3	0	0	0	0
6B4	0	0	0	0
6B6	0	0	0	0
6B7	0	0	0	0
6B8	0	0	0	0
6C4	0	0	0	0

Coefficient of reproducibility 0.90

Scalogram Key

1 = On

0 = Off

/ = Approximated line of the triangulated pattern

Figure 41: Control scalograms: Child measures – Time 1 and Time 2.

ID	SMI-C9	SEQ-C	S-ES	PBS
5B1	1	1	1	0
5B4	1	1	1	0
5B6	1	1	1	0
5B9	1	1	1	0
5C4	1	1	1	0
5B5	1	1	0	0
5B7	1	1	0	0
5B8	1	1	0	0
5C1	1	1	0	0
5C9	1	1	0	0
5D6	1	1	0	0
5D7	1	1	0	0
5D8	1	1	0	0
6A6	1	1	0	0
5C7	1	1	0	0
6B8	1	0	0	0
5D5	1	0	0	0
5B3	1	0	0	0
5C8	1	0	0	0
5D2	1	0	0	0
5D1	1	1	0	1
5C2	1	0	1	0
5D9	0	1	0	0
5B2	1	0	1	1
6B1	1	0	1	0
6B4	1	1	0	1
5C3	1	1	0	1
5C6	0	1	0	0
5D4	0	0	1	0
6A3	0	1	1	0
6B3	0	1	0	1
5D3	0	1	0	0
6A1	0	0	1	0
6A8	0	0	1	0
6B5	0	0	1	0
6C3	0	0	1	0
6C4	0	0	1	0
5C5	0	0	0	0
6A2	0	0	0	0
6A4	0	0	0	0
6A5	0	0	0	0
6A7	0	0	0	0
6A9	0	0	0	0
6B2	0	0	0	0
6B6	0	0	0	0
6B7	0	0	0	0
6B9	0	0	0	0
6C1	0	0	0	0
6C2	0	0	0	0

Coefficient of reproducibility 0.88

ID	SMI-C9	SEQ-C	S-ES	PBS
5B2	1	1	1	0
5B1	1	1	1	0
5B9	1	1	1	0
5C1	1	1	1	0
5C2	1	1	1	0
5D1	1	1	1	0
5D2	1	1	1	0
5D6	1	1	1	0
6B8	1	1	1	0
5B4	1	1	0	0
5B5	1	1	0	0
5C7	1	1	0	0
5D7	1	1	0	0
6A3	1	1	0	0
6A6	1	1	0	0
6B1	1	1	0	0
6C2	1	1	0	0
6C3	1	1	0	0
5C9	1	1	0	0
5D4	1	0	0	0
5B3	1	1	0	1
5B6	1	1	0	1
5B7	1	0	1	0
5B8	0	1	0	0
5C3	1	0	1	0
5C4	1	1	0	1
5C6	0	1	1	0
5C8	1	0	1	1
5D5	1	0	1	0
5D8	1	0	1	0
5D9	0	1	0	0
6A2	0	1	1	1
6A4	1	1	0	1
6B3	1	0	1	1
6B4	1	1	0	1
6B7	0	1	0	1
6C1	1	0	1	0
5C5	0	0	0	0
5D3	0	0	0	0
6A1	0	0	0	0
6A5	0	0	0	0
6A7	0	0	0	0
6A8	0	0	0	0
6A9	0	0	0	0
6B2	0	0	0	0
6B5	0	0	0	0
6B6	0	0	0	0
6B9	0	0	0	0
6C4	0	0	0	0

Coefficient of reproducibility 0.87

Figure 42: Control scalograms: Child measures – Time 3 and Time 4.

ID	SMI-C9	SEQ-C	S-ES	PBS
5C9	1	1	1	1
5D4	1	1	1	0
5B1	1	1	1	0
5B2	1	1	1	0
5B6	1	1	1	0
5D2	1	1	1	0
5D6	1	1	1	0
5B3	1	1	0	0
5B7	1	1	0	0
5C4	1	1	0	0
5D1	1	1	0	0
5D3	1	1	0	0
6A6	1	1	0	0
6C1	1	0	0	0
5B8	1	0	0	0
5D8	1	0	1	0
5B5	1	1	0	1
5C2	1	0	1	0
5C3	1	0	1	0
5D5	1	0	1	0
5D7	1	0	1	0
5D9	1	0	1	0
6A3	0	1	0	0
6A4	1	0	1	0
6A9	0	1	0	0
6B1	1	0	1	0
6B3	1	0	0	1
6B4	0	1	1	0
6B7	0	1	1	0
6B8	0	1	0	0
6C2	0	1	0	1
5B4	0	0	0	0
5B9	0	0	0	0
5C1	0	0	0	0
5C5	0	0	0	0
5C6	0	0	0	0
5C7	0	0	0	0
5C8	0	0	0	0
6A1	0	0	0	0
6A2	0	0	0	0
6A5	0	0	0	0
6A7	0	0	0	0
6A8	0	0	0	0
6B2	0	0	0	0
6B5	0	0	0	0
6B6	0	0	0	0
6B9	0	0	0	0
6C3	0	0	0	0
6C4	0	0	0	0

Coefficient of reproducibility 0.89

ID	SMI-C9	SEQ-C	S-ES	PBS
5B2	1	1	1	1
5B6	1	1	1	0
5D2	1	1	1	0
6A9	1	1	1	0
6B7	1	1	1	0
5B4	1	1	0	0
5B5	1	1	0	0
5B8	1	1	0	0
5C8	1	1	0	0
5C9	1	1	0	0
5D1	1	1	0	0
5D3	1	1	0	0
5D5	1	1	0	0
5D6	1	1	0	0
5D8	1	1	0	0
6A3	1	1	0	0
5D9	1	1	0	0
5C7	1	0	0	0
5B3	1	1	0	1
5B1	1	0	1	0
5B7	1	0	1	0
5B9	0	1	0	0
5C4	0	1	0	0
6A2	0	1	1	0
6A4	1	0	1	0
6A1	0	0	1	0
6A7	0	1	0	1
6B1	1	0	1	0
6C2	1	0	1	0
6C3	1	0	1	0
6B4	0	1	0	0
5C2	0	0	1	0
5C1	0	0	0	0
5C3	0	0	0	0
5C5	0	0	0	0
5C6	0	0	0	0
5D4	0	0	0	0
5D7	0	0	0	0
6A5	0	0	0	0
6A6	0	0	0	0
6A8	0	0	0	0
6B2	0	0	0	0
6B3	0	0	0	0
6B5	0	0	0	0
6B6	0	0	0	0
6B8	0	0	0	0
6B9	0	0	0	0
6C1	0	0	0	0
6C4	0	0	0	0

Coefficient of reproducibility 0.90

Figure 43: Control scalograms: Child measures – Time 5 and Time 6.

ID	SMI-C9	SEQ-C	S-ES	PBS
3C2	1	1	0	0
4C1	1	1	0	0
4C2	1	1	0	0
4C3	1	1	0	0
3C9	1	0	0	0
4B1	1	0	0	0
3B1	0	1	0	0
3C10	1	0	1	0
3C11	0	0	1	0
3C13	0	0	1	0
3C3	0	1	0	0
3C4	0	1	0	0
3C5	0	0	0	1
4B3	0	0	1	0
4B6	0	0	0	1
4B7	1	0	0	1
4C4	1	0	1	0
4C6	1	1	0	1
4D2	1	0	1	0
4D3	0	0	1	0
3B2	0	0	0	0
3B3	0	0	0	0
3C1	0	0	0	0
3C12	0	0	0	0
3C14	0	0	0	0
3C6	0	0	0	0
3C7	0	0	0	0
3C8	0	0	0	0
4B2	0	0	0	0
4B4	0	0	0	0
4B5	0	0	0	0
4C5	0	0	0	0
4C7	0	0	0	0
4C8	0	0	0	0
4C9	0	0	0	0
4D1	0	0	0	0

Coefficient of reproducibility 0.90

ID	SMI-C9	SEQ-C	S-ES	PBS
3C1	1	1	1	1
4C2	1	1	1	1
4D2	1	1	1	0
3B3	1	1	0	0
3C1	1	1	0	0
3C2	1	1	0	0
3C4	1	1	0	0
3C6	1	1	0	0
4B1	1	1	0	0
4B3	1	1	0	0
4C1	1	1	0	0
4C3	1	1	0	0
4C4	1	1	0	0
4C8	1	0	0	0
4C9	1	0	0	0
3B2	0	1	1	0
3C1	1	0	1	0
3C1	1	0	1	0
3C3	0	1	0	0
3C5	1	1	0	1
3C7	1	0	1	0
3C8	0	0	1	0
3C9	1	0	1	0
4B2	1	0	1	0
4B5	0	1	0	0
4B6	0	0	1	0
4B7	1	1	0	1
4C6	1	0	1	1
4C7	0	1	0	0
4D1	0	1	0	0
4D3	1	0	1	0
3B1	0	0	0	0
3C1	0	0	0	0
3C1	0	0	0	0
4B4	0	0	0	0
4C5	0	0	0	0

Coefficient of reproducibility 0.89

Figure 44: Intervention scalograms: Child measures – Time 1 and Time 2.

ID	SMI-C9	SEQ-C	S-ES	PBS
3C7	1	1	1	1
4C5	1	1	1	1
3B2	1	1	1	0
3C12	1	1	1	0
3C3	1	1	1	0
3C4	1	1	1	0
3C6	1	1	1	0
3C9	1	1	1	0
4B1	1	1	1	0
4B2	1	1	1	0
4B7	1	1	1	0
4C2	1	1	1	0
4C4	1	1	1	0
4C8	1	1	1	0
4D2	1	1	1	0
4D3	1	1	1	0
3C1	1	1	0	0
3C14	1	1	0	0
4B3	1	1	0	0
4B5	1	1	0	0
4C1	1	1	0	0
4C3	1	1	0	0
4C9	1	0	0	0
3B1	0	1	0	0
3B3	0	1	0	0
3C10	0	1	1	0
3C11	1	0	1	0
3C13	0	0	1	1
3C2	1	1	0	1
3C5	0	1	1	1
3C8	1	0	1	1
4B4	1	0	1	0
4B6	1	0	1	1
4C6	1	0	1	1
4C7	0	1	0	0
4D1	0	0	1	0

Coefficient of reproducibility 0.91

ID	SMI-C9	SEQ-C	S-ES	PBS
3C14	1	1	1	1
3C4	1	1	1	1
3C5	1	1	1	1
3C8	1	1	1	1
4B2	1	1	1	1
4C5	1	1	1	1
3B2	1	1	1	0
3B3	1	1	1	0
3C1	1	1	1	0
3C10	1	1	1	0
3C11	1	1	1	0
3C12	1	1	1	0
3C2	1	1	1	0
3C3	1	1	1	0
3C6	1	1	1	0
3C7	1	1	1	0
3C9	1	1	1	0
4B1	1	1	1	0
4C2	1	1	1	0
4C4	1	1	1	0
4C8	1	1	1	0
4D2	1	1	1	0
4B3	1	1	0	0
4B5	1	1	0	0
4C3	1	1	0	0
4C9	1	1	0	0
3B1	0	1	1	0
3C13	1	0	1	1
4B4	0	0	1	0
4B6	1	0	1	1
4B7	1	0	1	0
4C1	1	1	0	1
4C6	1	1	0	1
4C7	0	1	0	0
4D1	1	0	1	0
4D3	1	1	0	1

Coefficient of reproducibility 0.93

Figure 45: Intervention scalograms: Child measures – Time 3 and Time 4.

ID	SMI-C9	SEQ-C	S-ES	PBS
3B2	1	1	1	1
3B3	1	1	1	1
3C1	1	1	1	1
3C1	1	1	1	1
3C1	1	1	1	1
3C5	1	1	1	1
3C7	1	1	1	1
3C8	1	1	1	1
4B2	1	1	1	1
4B6	1	1	1	1
4C1	1	1	1	1
4C2	1	1	1	1
4D3	1	1	1	1
3C1	1	1	1	0
3C1	1	1	1	0
3C2	1	1	1	0
3C3	1	1	1	0
3C6	1	1	1	0
3C9	1	1	1	0
4B1	1	1	1	0
4B4	1	1	1	0
4B5	1	1	1	0
4C3	1	1	1	0
4C4	1	1	1	0
4D1	1	1	1	0
4D2	1	1	1	0
3C1	1	1	0	0
4C7	1	1	0	0
4C9	1	1	0	0
3B1	1	1	0	1
3C4	0	0	1	0
4B3	1	1	0	1
4B7	0	0	1	0
4C5	1	1	0	1
4C6	1	0	1	1
4C8	0	0	1	0

Coefficient of reproducibility 0.95

ID	SMI-C9	SEQ-C	S-ES	PBS
3B2	1	1	1	1
3B3	1	1	1	1
3C1	1	1	1	1
3C1	1	1	1	1
3C1	1	1	1	1
3C1	1	1	1	1
3C1	1	1	1	1
3C2	1	1	1	1
3C4	1	1	1	1
3C5	1	1	1	1
3C6	1	1	1	1
3C7	1	1	1	1
3C8	1	1	1	1
3C9	1	1	1	1
4B2	1	1	1	1
4B3	1	1	1	1
4B4	1	1	1	1
4B6	1	1	1	1
4C1	1	1	1	1
4C2	1	1	1	1
4C3	1	1	1	1
4C6	1	1	1	1
4D2	1	1	1	1
4D3	1	1	1	1
3C1	1	1	1	0
3C3	1	1	1	0
4B1	1	1	1	0
4B5	1	1	1	0
4C4	1	1	1	0
4C5	1	1	1	0
4D1	1	1	1	0
4C7	1	1	1	0
4C9	1	1	0	0
3B1	1	1	0	1
4B7	1	0	1	0
4C8	0	0	1	0

Coefficient of reproducibility 0.98

Figure 46: Intervention scalograms: Child measures – Time 5 and Time 6.

ID	Parent	Teacher
5B8	1	1
5D2	1	1
6B9	1	1
5B6	1	0
5B5	0	1
5B1	0	0
5B2	0	0
5B3	0	0
5B4	0	0
5B7	0	0
5B9	0	0
5C1	0	0
5C2	0	0
5C3	0	0
5C4	0	0
5C5	0	0
5C6	0	0
5C7	0	0
5C8	0	0
5C9	0	0
5D1	0	0
5D3	0	0
5D4	0	0
5D5	0	0
5D6	0	0
5D7	0	0
5D8	0	0
5D9	0	0
6A1	0	0
6A2	0	0
6A3	0	0
6A4	0	0
6A5	0	0
6A6	0	0
6A7	0	0
6A8	0	0
6A9	0	0
6B1	0	0
6B2	0	0
6B3	0	0
6B4	0	0
6B5	0	0
6B6	0	0
6B7	0	0
6B8	0	0
6C1	0	0
6C2	0	0
6C3	0	0
6C4	0	0

Coefficient of reproducibility 0.99

ID	Parent	Teacher
5D4	1	1
5D8	1	1
5C9	1	0
5D2	1	0
5D7	1	0
5D9	1	0
5D6	0	1
6B7	0	1
6B8	0	1
6C1	0	1
5B1	0	0
5B2	0	0
5B3	0	0
5B4	0	0
5B5	0	0
5B6	0	0
5B7	0	0
5B8	0	0
5B9	0	0
5C1	0	0
5C2	0	0
5C3	0	0
5C4	0	0
5C5	0	0
5C6	0	0
5C7	0	0
5C8	0	0
5D1	0	0
5D3	0	0
5D5	0	0
6A1	0	0
6A2	0	0
6A3	0	0
6A4	0	0
6A5	0	0
6A6	0	0
6A7	0	0
6A8	0	0
6A9	0	0
6B1	0	0
6B2	0	0
6B3	0	0
6B4	0	0
6B5	0	0
6B6	0	0
6B9	0	0
6C2	0	0
6C3	0	0
6C4	0	0

Coefficient of reproducibility 0.96

Figure 47: Control parent / teacher scalograms - Time 1 and Time 2.

ID	Parent	Teacher
5D2	1	1
5D7	1	1
5B7	1	0
5C1	1	0
5C3	1	0
5C9	1	0
5D4	1	0
5D9	1	0
6B8	1	0
6C3	1	0
5C2	0	1
5D1	0	1
5D3	0	1
5D8	0	1
6A9	0	1
6B3	0	1
6B7	0	1
6C1	0	1
5B1	0	0
5B2	0	0
5B3	0	0
5B4	0	0
5B5	0	0
5B6	0	0
5B8	0	0
5B9	0	0
5C4	0	0
5C5	0	0
5C7	0	0
5C6	0	0
5C8	0	0
5D5	0	0
5D6	0	0
6A1	0	0
6A2	0	0
6A3	0	0
6A4	0	0
6A5	0	0
6A6	0	0
6A7	0	0
6A8	0	0
6B1	0	0
6B2	0	0
6B4	0	0
6B5	0	0
6B6	0	0
6B9	0	0
6C2	0	0
6C4	0	0

Coefficient of reproducibility 0.92

ID	Parent	Teacher
5D2	1	1
5D3	1	1
6B8	1	1
5B7	1	0
5B8	1	0
5C1	1	0
5C3	1	0
5C4	1	0
5C9	1	0
5D1	1	0
5D6	1	0
5D8	1	0
5D9	1	0
5C2	0	1
5C6	0	1
6A3	0	1
6A4	0	1
6A9	0	1
6B3	0	1
6B7	0	1
6C1	0	1
5B1	0	0
5B2	0	0
5B3	0	0
5B4	0	0
5B5	0	0
5B6	0	0
5B9	0	0
5C5	0	0
5C7	0	0
5C8	0	0
5D4	0	0
5D5	0	0
5D7	0	0
6A1	0	0
6A2	0	0
6A5	0	0
6A6	0	0
6A7	0	0
6A8	0	0
6B1	0	0
6B2	0	0
6B4	0	0
6B5	0	0
6B6	0	0
6B9	0	0
6C2	0	0
6C3	0	0
6C4	0	0

Coefficient of reproducibility 0.92

Figure 48: Control parent / teacher scalograms - Time 3 and Time 4.

ID	Parent	Teacher
5B7	1	1
5D2	1	1
5D3	1	1
5D6	1	1
6B3	1	1
6B8	1	1
5B4	1	0
5B6	1	0
5C1	1	0
5C3	1	0
5C4	1	0
6A9	1	0
6B6	1	0
5D7	0	1
5D8	0	1
5D9	0	1
6A3	0	1
6A4	0	1
6B5	0	1
6B7	0	1
5B1	0	0
5B2	0	0
5B3	0	0
5B5	0	0
5B8	0	0
5B9	0	0
5C2	0	0
5C5	0	0
5C6	0	0
5C7	0	0
5C8	0	0
5C9	0	0
5D1	0	0
5D4	0	0
5D5	0	0
6A1	0	0
6A2	0	0
6A5	0	0
6A6	0	0
6A7	0	0
6A8	0	0
6B1	0	0
6B2	0	0
6B4	0	0
6B9	0	0
6C1	0	0
6C2	0	0
6C3	0	0
6C4	0	0

Coefficient of reproducibility 0.93

ID	Parent	Teacher
5C4	1	1
5D2	1	1
5D3	1	1
5D7	1	1
5D8	1	1
6B3	1	1
5C2	1	0
5C9	1	0
5D1	1	0
5D6	1	0
6A3	1	0
6A9	1	0
6B6	1	0
6B7	1	0
5B7	0	1
5C1	0	1
5C8	0	1
5D9	0	1
6A2	0	1
6A4	0	1
6A7	0	1
6B8	0	1
5B1	0	0
5B2	0	0
5B3	0	0
5B4	0	0
5B5	0	0
5B6	0	0
5B8	0	0
5B9	0	0
5C3	0	0
5C5	0	0
5C6	0	0
5C7	0	0
5D4	0	0
5D5	0	0
6A1	0	0
6A5	0	0
6A6	0	0
6A8	0	0
6B1	0	0
6B2	0	0
6B4	0	0
6B5	0	0
6B9	0	0
6C1	0	0
6C2	0	0
6C3	0	0
6C4	0	0

Coefficient of reproducibility 0.92

Figure 49: Control parent / teacher scalograms - Time 5 and Time 6.

ID	Parent	Teacher	ID	Parent	Teacher
3C10	1	1	3C1	1	1
3C7	1	0	3C10	1	1
3C1	0	1	3C7	1	0
3B1	0	0	4D2	1	0
3B2	0	0	3C12	0	1
3B3	0	0	3B1	0	1
3C11	0	0	3B2	0	0
3C12	0	0	3B3	0	0
3C13	0	0	3C11	0	0
3C14	0	0	3C13	0	0
3C2	0	0	3C14	0	0
3C3	0	0	3C2	0	0
3C4	0	0	3C3	0	0
3C5	0	0	3C4	0	0
3C6	0	0	3C5	0	0
3C8	0	0	3C6	0	0
3C9	0	0	3C8	0	0
4B1	0	0	3C9	0	0
4B2	0	0	4B1	0	0
4B3	0	0	4B2	0	0
4B4	0	0	4B3	0	0
4B5	0	0	4B4	0	0
4B6	0	0	4B5	0	0
4B7	0	0	4B6	0	0
4C1	0	0	4B7	0	0
4C2	0	0	4C1	0	0
4C3	0	0	4C2	0	0
4C4	0	0	4C3	0	0
4C5	0	0	4C4	0	0
4C6	0	0	4C5	0	0
4C7	0	0	4C6	0	0
4C8	0	0	4C7	0	0
4C9	0	0	4C8	0	0
4D1	0	0	4C9	0	0
4D2	0	0	4D1	0	0
4D3	0	0	4D3	0	0
	Coefficient of reproducibility 0.99			Coefficient of reproducibility 0.98	

Figure 50: Intervention parent / teacher scalograms - Time 1 and Time 2.

ID	Parent	Teacher	ID	Parent	Teacher
3C1	1	1	3C1	1	1
3C10	1	1	3C10	1	1
4D2	1	1	3C11	1	1
3C11	1	0	3C12	1	1
3C7	1	0	3C13	1	1
4C1	1	0	3C5	1	1
3C12	0	1	3C7	1	1
3C2	0	1	3C9	1	1
3B1	0	1	4B2	1	1
3B2	0	0	4B4	1	1
3B3	0	0	4D2	1	1
3C13	0	0	3B2	1	0
3C14	0	0	3C6	1	0
3C3	0	0	3C8	1	0
3C4	0	0	4B6	1	0
3C5	0	0	4C9	1	0
3C6	0	0	4D1	1	0
3C8	0	0	3B1	0	1
3C9	0	0	3C2	0	1
4B1	0	0	3C3	0	1
4B2	0	0	4C1	0	1
4B3	0	0	3B3	0	0
4B4	0	0	3C14	0	0
4B5	0	0	3C4	0	0
4B6	0	0	4B1	0	0
4B7	0	0	4B3	0	0
4C2	0	0	4B5	0	0
4C3	0	0	4B7	0	0
4C4	0	0	4C2	0	0
4C5	0	0	4C3	0	0
4C6	0	0	4C4	0	0
4C7	0	0	4C5	0	0
4C8	0	0	4C6	0	0
4C9	0	0	4C7	0	0
4D1	0	0	4C8	0	0
4D3	0	0	4D3	0	0
	Coefficient of reproducibility 0.97			**Coefficient of reproducibility 0.96**	

Figure 51: Intervention parent / teacher scalograms - Time 3 and Time 4.

ID	Parent	Teacher	ID	Parent	Teacher
3B1	1	1	3B1	1	1
3B2	1	1	3B2	1	1
3C1	1	1	3B3	1	1
3C10	1	1	3C1	1	1
3C11	1	1	3C10	1	1
3C12	1	1	3C11	1	1
3C13	1	1	3C12	1	1
3C2	1	1	3C13	1	1
3C3	1	1	3C14	1	1
3C4	1	1	3C2	1	1
3C5	1	1	3C3	1	1
3C7	1	1	3C4	1	1
3C8	1	1	3C5	1	1
3C9	1	1	3C6	1	1
4B2	1	1	3C7	1	1
4B3	1	1	3C8	1	1
4B4	1	1	3C9	1	1
4B5	1	1	4B1	1	1
4B6	1	1	4B2	1	1
4C2	1	1	4B3	1	1
4C6	1	1	4B4	1	1
4C7	1	1	4B5	1	1
4C9	1	1	4B6	1	1
3C6	1	0	4C1	1	1
4D1	1	0	4C2	1	1
4C4	1	0	4C3	1	1
4D2	1	0	4C4	1	1
4C1	0	1	4C5	1	1
4C3	0	1	4C6	1	1
4C5	0	1	4C7	1	1
4D3	0	1	4C9	1	1
3B3	0	0	4D1	1	1
3C14	0	0	4D2	1	1
4B1	0	0	4D3	1	1
4B7	0	0	4B7	0	0
4C8	0	0	4C8	0	1
	Coefficient of reproducibility 0.96			Coefficient of reproducibility 0.99	

Figure 52: Intervention parent / teacher scalograms - Time 5 and Time 6.