RESEARCH

Weiping Liu

How Are Chinese Only Children Growing

A Bioecological Systems Perspective

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Xi'an, P.R. China

The whole research project is supported by Scientific Research Foundation for the Returned Overseas Chinese Scholars, State Education Ministry (SRF for ROCS, SEM), by the National Natural Science Foundation of China (Grant No. 11372167), the 111 Project (Grant No. B16031), by Shaanxi Normal University Teacher Education Research Project (JSJY2015J011), and by the Fundamental Research Funds for the Central Universities of China (Grant No. GK201402058), and by Interdisciplinary Incubation Project of Learning Science of Shaanxi Normal University.

ISBN 978-3-658-02225-9 ISBN 978-3-658-02226-6 (eBook)
DOI 10.1007/978-3-658-02226-6

Library of Congress Control Number: 2016963338

Springer VS

Printed on acid-free paper

This Springer VS imprint is published by Springer Nature
The registered company is Springer Fachmedien Wiesbaden GmbH
The registered company address is: Abraham-Lincoln-Str. 46, 65189 Wiesbaden, Germany

Preface

In writing this book, I would like to share the story of how the work comes into being.

First of all, my 10-year experience of studying abroad gave me a chance to have an idea of the curiosities people outside of China have regarding China. For example, they are wondering how China's One-Child Policy is running. Is it good or bad for a person's growth? What are the impacts of this policy on the only children in China? In a word, how are Chinese only children growing?

Secondly, so frequently in China, I have been hearing that the generation who were born in the 1970s said, "I don't like the selfish 1980s generation—the first generation of China's only children!" Later on, as the 1980s generation of only children grows up, similar remarks were heard: "I don't like the 1990s generation of only children—the generation of the self-centred!" Till now, you might already get an idea where I am heading. I would like to find whether there is really anything wrong with Chinese only children by studying relations between their personal characteristics, learning environments and some of their important growing outcomes and how these personal characteristics and learning environments interact with each other to influence these only children in terms of their growing outcomes.

Thirdly, since I am a person who has special interests in ecological psychology following the ideas of Kurt Lewin and Urie Bronfenbrenner and who greatly agrees with the views of Wasserman and Faust's Social Network Analysis, meanwhile I would like to launch a theoretically driven research for proof of a theoretical model. The proposed theoretical model contends that the impacts of learning environments on students must be studied from a bio-ecological perspective and a social networks perspective by considering the direct and joint effects of the learning environments and student personality within the macro-environments of culture, public policy etc. Therefore, my second purpose is to see how the significant persons, such as peers, especially best friends, teachers, parents can help to create and promote students' specific good learning conditions under the condition that they have knowledge about the students' personality. In order to reach this goal, the first step is to examine the relations between Chinese only children's learning environments and their growing outcomes such as academic achievement goal orientations, self-esteem, social anxious solitary

behaviour, prosocial behaviour and career orientation from a bio-ecological systems perspective and a social networks perspective. The learning environments that I am concentrating on include chronic self-concept levels, peer relations, teacher-student relations, and family environment within the atmosphere of Chinese culture and China's One Child Policy.

However, due to the national level of the implementation of China's One Child Policy, it seems to me impossible to find an adequate non-only children group to make a comparison with the Chinese only children as a control group, for example, either historically with Chinese children prior to the establishment of the One Child Policy, given the many other historical changes that might account for any differences from earlier norms. Additionally, comparison of my sample of Chinese only children with samples of only children in other cultural contexts is problematic as well. Indeed, there are sibling children in China as well, but they are not appropriate to act as a comparing group with China's only children because, in China, during the time when the One Child Policy takes effect, families in China have to provide very special reasons for getting permission to have a second child, for example, either for at least one parent, either the mother or the father, being from the national minority group, or for the first child of the family being handicapped, or for one parent in the family being an only child after the Chinese government relaxed its One-Child Policy in the year of 2013. Consequently, I decided to investigate the 1980s and 1990s generations of the Chinese only children respectively with similar research methodologies and with the same research purpose to study the relations between their learning environments and some of their important growing outcomes and how these learning environments interact with each other to influence these only children's growing outcomes. In the first study of researching the 1980s generation of Chinese only children, I chose a sample of Chinese only children (N=405) from senior high schools and colleges from mid-China. Finding the necessities of improvement on bases of the limited sample choice, the research results and conclusions in the first study, I enlarged my new sample (N=2105) by including three education level groups, i.e., junior high group, senior high group and college group from the east, middle and west of China, in order to study of the 1990s generation of Chinese only children and to investigate whether these groups of Chinese only children grow differently from the 1980s generation groups. Meanwhile, both studies are designed to prove the proposed theoretical model as well.

As mentioned above, it was proved that the research design and purpose of Study 1 were meaningful, which, meanwhile, signalized a great limitation of this study as well. With data analyses such as exploratory factor analysis, hierarchical multiple regression analysis, MANOVA and ANOVA, hypotheses formulated on

these research purposes were tested to be true and the proved theoretical model coincided with part of the prediction of Bronfenbrenner's Bioecological Systems Theory. But since the sample concentrated on senior high students and college students, i.e., the older adolescents and young adults, the validity and reliability of the research results need further study to get it further underpinned. Therefore, the second study was planned thereafter by choosing 3 groups: younger adolescents, i.e., the junior high student group, senior high student group and college student group chosen from the east, middle and west of China. Although some new different research results were found for the 1990s generation of Chinese only children in the second study, basically in nature, the research model proposed in the first study was further supported.

From the bottom of my heart, I would like to express my appreciation and thanks to many of my special people.....

To my supervisor and mentor, Professor Dr. Thomas Eckert at the Chair for General Education/Developmental and Socialization Research, Faculty of Psychology and Education, University of Munich, for his great support, guidance and expertise. I greatly appreciate his humour, tolerance, wisdom, flexibility, and encouragement during the process of supervising. I'm very grateful to him for his step-by-step supervision and guidance from research proposal, questionnaire design, data-analysis till his criticism and suggestions for some important change in the manuscript. His timely recommending me to read some important books is like opening the windows of a dark room, in which I am!

To my husband, Hui whose love and great support by sharing more child care work and doing more housework encouraged me along over the whole process. To my son, Yiyang (4 years old) who was so great in agreeing to be taken care of by papa during this time and whose love and hug made me forget tiredness and regain strength and energy every time when I came back home from working on this manuscript.

To my late grandmother, and to my parents and my brothers for your encouragement and unintentionally urging me to finish this research project by always remembering asking me when I could finish the manuscript at the time when I made a phone call to you! Now you get the answer!

To my friends Jie Zhang, Renxiu Liu, Ling Wang and my brother, Weijian who helped me in getting more contacts for distributing and collecting questionnaires. To all the students who participated in my research project, for their willingness to sacrifice almost one hour time to share your information with me by filling out the questionnaires. Without your support and help, it is not possible for me to finish doing this research project.

And last, but not least, to both Professor Dr. Rudolf Tippelt and Professor Dr. Sabine Walper at the Chair for General Education and Educational Research, Faculty of Psychology and Education, University of Munich, for their criticisms and suggestions to the revision of the manuscript.

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Abstract

Background. There has been continuous discussion of the pros and cons of China's One-Child Policy. Different from other cultures, so many only children live in intact families due to this policy, who deserve an integrated investigation of how they are growing by considering how their learning environments and learning outcomes are related with each other. Theoretically, new directions should be found for real practices for supporting the growth of these only children because of lack of siblings in their families.

Theoretical frameworks. Lewin's (1951) Field Theory, Bronfenbrenner's (1979) Bioecological Systems Theory and Wasserman and Faust's (1994) Social Network Analysis together were the theoretical frameworks of the present research project. Specifically, first of all, according to Lewin's (1951) field theory, to understand or to predict behaviour or development, the person and his or her environment have to be considered as one constellation of interdependent factors. Furthermore, in Lewin's field theory, through the proposal of psychological ecology, some physical and social environments, which must be perceived or known in the psychological field, are considered as components of psychological investigation. Secondly, Bronfenbrenner's (1979) Bioecological Systems Theory looks at human development within the context of the system of relationships that form his or her environment, and it defines several complex layers of environment as different systems, each having an effect on a person's development and behaviour. Thirdly, according to the predictions of Social Network Analysis (Wasserman & Faust, 1994), multiple aspects of learning outcomes depend on not only different aspects and quality of the social relations with others, but also the way how they define themselves: in terms of interpersonal comparisons with other individuals, in terms of dyadic connections and role relationships with others, intergroup comparisons and/or interactions between social relations. On base of these theories, therefore, present research contended that the psychological development and behaviours of a person might be best informed by an integration of the somewhat independent research traditions in each separate learning environment.

Aims. Present research was designed, firstly, to see what Chinese only children's learning environments were like and how these learning environments influenced the behaviour and development outcomes of these only children, and whether there were group differences and uniqueness in these learning environments and chronic self-concepts between these two generations Chinese only children. Secondly, this research was a theoretically driven research for proof of a theoretical model. The proposed theoretical model contended that the impacts of learning environments on students must be studied from bioecological systems and social networks perspectives by considering the direct and joint effects of learning environments and student personality within the macro-environments of culture, public policy etc.

Samples. Samples were chosen randomly from 1980s Chinese only children (N=405) and from 1990s Chinese only children (N=2105) ranging from junior high, senior high and college students in east, middle and west China.

Method. The author collected data from these Chinese only children regarding their three social interrelation learning environments, chronic self-concept levels and learning outcomes such as career orientation, academic achievement orientation, social competence and self-esteem through self-report of questionnaires. With data analyses such as exploratory factor analysis, hierarchical multiple regression analysis, MANOVA and ANOVA, hypotheses formulated on these research purposes were tested.

Results and Conclusions.
(1) Some instruments developed in the West meant something different to Chinese only children. For example, for the Questionnaire on Teacher Interpersonal Behaviour, only the dimension of proximity was strongly felt, but the dimension of control, only in favourite teacher interpersonal behaviour: strict behaviour has a weak trait of being distinct. Parenting Authority Questionnaire held different meanings as well for these only children: only two parenting styles, a mixture of permissive and authoritative parenting style and authoritarian parenting style were perceived.
(2) Gender differences were found in chronic self-concept levels, prosocial behaviour and career orientations of both Generations and female only children were more socially oriented.
(3) As it was found in previous research, family environment had impacts on career orientations. It was newly found in present research that Chronic Self-Concept Level had impact on career orientation as well.

(4) The factor analyses of chronic self-concept levels revealed that the chronic self-concept levels of these Chinese only-children still bear a deep print of Chinese cultural impact.
(5) Results indicated that, not only peer relations influenced prosocial behaviour, but also education level group had impact on only children's prosocial behaviour as well. It was found that senior high group were more prosocial than college group and junior high group, and college group were more prosocial than junior high group. Moreover, in terms of interaction effects between peer relations and education level, best friendship quality interacted greater than peer group acceptance with college group and senior group than junior high group.
(6) For the 1980s Chinese only children, different from previous literature, cross-sex parenting effect existed not on positive self-esteem, but only on prosocial behavior. However, for the sample of 1990s Chinese only children, same as previous literature, cross-sex parenting effect existed both on prosocial behaviour and positive self-esteem.
(7) The analysis of father and mother parenting style match indicated that if the best children outcomes were expected, both father and mother in a family should hold the right parenting styles. For instance, in study of the 1980s Chinese only children, when both father and mother in a family held permissive-authoritative parenting style to their child, best outcomes were produced; when both parents presented authoritarian parenting style, worst outcomes were resulted in; when one parent figure held authoritarian, the other held permissive-authoritative to their child, child outcomes produced were mediocre. However, in study of the 1990s Chinese only children, similar conclusions existed only on performance goal and avoidance goal, but best outcome on other learning outcomes, such as prosocial behaviour, positive self-esteem, social anxious solitary behaviour and negative self-esteem, corresponded with a match of father authoritarian and mother permissive-authoritative parenting style; best outcomes on other learning outcomes, such as prosocial behaviour, positive self-esteem, social anxious solitary behaviour and negative self-esteem, corresponded with a match of father authoritarian and mother permissive-authoritative parenting style; worst outcomes on these variables corresponded with a match of mother authoritarian and father permissive-authoritative parenting style; mediocre outcomes corresponded with a match of both parents authoritarian or permissive-authoritative parenting styles.
(8) Hypotheses formulated on the research purposes were tested to be true and the proved theoretical model coincided with part of the predictions of Lewin's Field Theory, Bronfenbrenner's Bioecological Systems Theory and Wasserman and Faust's Social Network Analysis. That is, it was not the person himself or one separate learning environment that were able to determine the learning outcomes, but in consideration of the specific learning outcomes and the personal

characteristics of the person, all the parties involved had to make the right efforts individually and cooperatively. Present study indicated that future learning environment theoretical models should integrate factors regarding the person and other learning environments because, although more variances were explained in present study, there is still much in the rest of the variances in learning outcomes waiting for being explained. Finally, based on the conclusion of the present study, theoretical and practical implications were discussed.

1 Introduction

Although researchers in education have taken great efforts to assess academic achievement and other valued learning outcomes, these measures cannot give a complete picture of the educational process. Because students spend much of their time at school and home by the time they finish senior high school, what happens to them at school and home and their reactions to and perceptions of these learning environments are significant to their growing or learning outcomes and process.

Over the years, remarkable progress has been made in conceptualising, assessing and investigating the determinants and effects of social and psychological aspects of the learning environments of families, classrooms and schools. And today, the study of learning environments has a valuable role to play in pre-service teacher training, professional development, the evaluation of new curricula or innovation and generally, as an important field of inquiry in its own right – description of a valuable psychological and social component of students' educational experience and prediction of student learning (see Zandvliet, Ashby & Ormond, TEAM6).

In this chapter, some general background information for the investigation of the learning environments of Chinese only-children is to be provided, including the history of learning environments, China's One-Child Policy and its predicted impacts on family and society, and learning environment research gaps.

1.1 History of Learning Environment Research

1.1.1 Background

The development of a learning environment theory should be traced back as early as the 1930s to research conducted by Kurt Lewin (1936). Further contributors to this inquiry included Henry Murray, Herbert Walberg, and Rudolf Moos as reported by Fraser (1998). Lewin's (1936, 1951) field theory stipulated that human behaviour has two potent determinants: the environment and its interaction with an individual's personal characteristics. This idea was not consistent with the popular theories at that time, because most theorists at that time believed a person's previous experience was what informed their future behaviour. But

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DOI 10.1007/978-3-658-02226-6_1

Lewin (1936) asserted that a person's environment also influenced a person's behaviour. He illustrated this relationship through the formula B= f (P, E) which demonstrated that behaviour was a function of the person and the environment. Murray (1938) was the first to follow Lewin's approach by proposing a needs-press model which allowed the analogous representation of person and environment in common terms. According to this model, personal needs refer to motivational personality characteristics representing tendencies to move in the direction of certain goals, while environmental press provides an external situational counterpart which supports or frustrates the expression of internalized personality needs. And the needs-press theory was popularised and elucidated later by Pace and Stern (Stern 1970).

Decades later and conceptually based on the theories of Lewin and Murray, Herbert Walberg and Rudolf Moos initiated research programs that study the psychosocial environment. Therefore, commentators often attributed the beginnings of the field of learning environment research to the pioneering independent contributions of these two American researchers, Herbert Walberg and Rudolf Moos. Hence the research of learning environments has an age of more than 40 years.

Walberg developed the Learning Environment Inventory to assess students' perceptions as part of the research and evaluation activities of Harvard Project Physics (Walberg & Anderson, 1968). Walberg's work gave rise to an exploration of students' perceptions and how these are influenced by the context in which learning occurs. Moos (1974, 1979) continued this line of inquiry and began its application to the academic environment by developing surveys and assessments that address students' behaviour. Moos' (1974) questionnaires are to assess nine separate human environments (including hospital wards, families and work settings), one of which was the Classroom Environment Scale (Moos & Trickett, 1974). One of Moos' (1974) contributions was to show that the same three basic types of dimensions characterized diverse human environments: the Relationship dimension involves the strength and type of personal relationships within an environment and the extent to which people are involved in the environment and help and support each other; the Personal Development dimension assesses basic directions along which personal growth and self-enhancement tend to occur; and the System Maintenance and Change dimension involves the extent to which the environment is structured and orderly, provides clear expectations, maintains control, and is responsive to change.

The work of both Walberg and Moos launched the field of learning environment research and provided a conceptual foundation for what is being researched today (Fraser, 1998, 2007). All learning environment studies seek to describe and/or identify the educational contexts and the empirical relationships

among learning outcomes, subject matter, teaching practices, and environmental variables (Fraser, 1998; Jamieson, 2003; Oblinger, 2006).

1.1.2. Approaches to Learning Environments Studies

Over the last four decades learning environment research has grown considerably, including a variety of approaches that have been developed, tested, and validated in diverse educational contexts and in different countries (Fraser, 1998). Disciplines exploring the relationship between the environment and learning include science education, environmental psychology, campus ecology, architecture, and now, inter- or multi-disciplinary fields of study such as environmental or place-based forms of education (Kenney et al., 2005).

For different purposes, different approaches were applied in learning environment research. Murray (1938) introduced the term alpha press to describe the environment as assessed by a detached observer and the term beta press to describe the environment as perceived by milieu inhabitants. In order to evaluate the influences of learning environments on student, traditionally, teacher and student perceptions are used because they are easy to administer and can focus on a larger sample of participants. Fraser (1998) believed that defining the classroom or school environment in terms of the shared perceptions of the students and teachers had the dual advantage of characterising the setting through the eyes of the participants themselves and capturing data which the observer could miss or consider unimportant, and that students were at a good vantage point to make judgements about classrooms because they have encountered many different learning environments and have enough time in a class to form accurate impressions. Reasonably enough, the external observer's direct observation and systematic coding of classroom communication and events can be used as well (Brophy & Good 1986).

Another approach to studying educational environments involves application of qualitative research methods, such as the techniques of naturalistic inquiry, ethnography, case study or interpretive research (Erickson, 1998). Meanwhile, qualitative methodologies, such as interviews and focus groups, also tend to provide more specific and yield richer more detailed information regarding how the environment impacts the perception and behaviour of students (Mayan, 2001; Neuman, 1997; Tinto, 2000). Finally, combining qualitative and quantitative approaches to assessing learning environments are recommended as well because it allows not only the purpose of evaluating the impacts of learning environments on student and teacher perception and behaviour, but also the purpose of measuring student involvement and engagement, learning outcomes, utilization of

space, and individual environment influences (Fraser, 1998; Fraser & Tobin 1991; Hurley & Schaller, 2006).

1.1.3. Research Focuses of Learning Environments

Past research focused on associations between student outcomes and environment, evaluating educational innovations, differences between student and teacher perceptions, whether students achieve better in their preferred environment, teachers' use of learning environment perceptions in guiding improvements in classrooms, links between different educational environments, cross-national studies, the transition from primary to high school, and incorporating educational environment ideas into school psychology, teacher education and teacher assessment (Fraser, 1998). Another relatively new focus should be mentioned is the space-based learning environment research in comparison with the place-based learning environment research (Zandvliet, 2014).

1.1.4. Learning Environment Research Instruments and Achievements

Following the pioneering work of Herbert Walberg and Rudolf Moos, learning environment researchers invested much efforts in the development, validation and use of various learning environment instruments, mainly, questionnaires. For example, to assess students' perceptions of psychosocial aspects of classroom learning environments, specific questionnaires focused on individualized, computer-assisted, constructivist, multimedia, distance education and internet learning environments. As reviewed by Fraser (1998), these instruments include: Learning Environment Inventory (LEI), Classroom Environment Scale (CES), Individualised Classroom Environment Questionnaire (ICEQ), My Class Inventory (MCI), College and University Classroom Environment Inventory (CUCEI), Questionnaire on Teacher Interaction (QTI), Science Laboratory Environment Inventory (SLEI), Constructivist Learning Environment Survey (CLES), What Is Happening in This Class (WIHIC) questionnaire etc.

The way in which the important pioneering work of Walberg and Moos on perceptions of classroom environment developed into major research programs and influenced many other researchers, which were expressed in numerous journal and conference research papers, in books (Beaty, 2013; Fraser 1986 and 2012; Fraser & Walberg 1991; Hamilton, 2013; Moos, 1979; Seymour, 2015; Walberg, 1979), literature reviews (Davies, et al., 2013; Fraser, 1994; MacAuley, 1990; von Saldern, 1992) and monographs sponsored by the American Educational Research

Association's Special Interest Group (SIG) on the Study of Learning Environments (e.g., Fraser & Fisher, 1994). Learning environment studies typically acknowledge and account for factors in the physical and social realm and describe how these conditions influence the process and experience of learning. The line research continues to further knowledge on student perceptions of their learning environment. It could be generalized that research on learning environments has "provided convincing evidence that the quality of the classroom environment in schools is a significant determinant of student learning" (Dorman, Fisher, &Waldrip, 2006, p. 2). For example, as it was reviewed (Davies, et al., 2013), that there was a reasonable weight of research evidence to support the importance of the following factors in supporting creative skills development in children and young people: flexible use of space and time; availability of appropriate materials; working outside the classroom/school; 'playful' or 'games-bases' approaches with a degree of learner autonomy; respectful relationships between teachers and learners; opportunities for peer collaboration; partnerships with outside agencies; awareness of learners' needs; and non-prescriptive planning. Moreover, this review also found evidence for impact of creative environments on pupil attainment and the development of teacher professionalism. However, it is warned (Kreijns, Kirschner, & Jochems, 2003) that, although computer-mediated world-wide networks have enabled a shift from contiguous learning groups to asynchronous distributed learning groups utilizing computer-supported collaborative learning environments and these environments can support communication and collaboration, both research and field observations are not always positive about their working because of some pitfalls that appear to impede achieving the desired learning environment results, for example, taking for granted that participants will socially interact simply because the environment makes it possible and neglecting the social (psychological) dimension of the desired social interaction.

1.2 China's One-Child Policy and Its Impact on Family and Society

The One Child Policy is a family planning policy, which is a population control policy of the People's Republic of China. Chinese government introduced this policy in 1978 and enacted on September 18th, 1980, in order to alleviate social, economic, and environmental problems in China due to a large population and an increasing birth rate. It officially restricts the number of children married urban couples can have to one. Yet the history of Chinese family planning regulations has long been characterized by exceptions to the one-child restrictions for certain couples and minority groups. For example, the policy allows ethnic minorities

exempt. That is, a married couple, both of whom or either of whom belonging to ethnic minorities, are allowed to have more than one child. In addition, there are some other exemptions. For instance, in rural areas, a married couple is allowed to have a second child if the first is a girl. Additionally, in mainland China, if their first child is handicapped according to the governmental standards, a married couple is allowed to have a second child as well. The policy is enforced at the provincial level through fines that are imposed generally based on the family income. "Population and Family Planning Commissions" were established at every level of government to sharpen public awareness and carry out registration and inspection work. A comprehensive history of Chinese family planning policies from the 1970s to the early 2000s can be found in earlier literature (Attané, 2002; Greenhalgh, 2003; Scharping, 2003; Greenhalgh & Winckler 2005).

In November 2013, China announced reforms to the family planning policies, whereby couples would be allowed to have a second child if either parent is an only child. Since the One Child Policy has been one of China's basic policies, the reform took a relative hard process as noted by Basten and Jiang (2014): in 2012, the China Development Research Foundation suggested the immediate implementation of a two-child policy in some provinces, followed by a national two-child policy by 2015 and the removal of all birth limits by 2020, stating that "China has paid a huge political and social cost for the policy, as it has resulted in social conflict and high administrative costs, and led indirectly to a long-term gender imbalance at birth". Meanwhile, a two-child policy has been advocated by numerous organizations and scholars. The merging in early 2013 of China's Population and Family Planning Commission with the new National Health and Family Planning Commission (NHFPC) led to further debate about China's fertility policy and was regarded as a sign of possible reform of the strict birth-control policy (Jiang, Li, & Feldman 2013). From 9–12 November 2013, the Third Plenary Session of the 18th CCCPC was held in Beijing. At the meeting, Party General Secretary Xi Jinping delivered a report entitled "Decisions on Major Issues Concerning Comprehensively Deepening Reforms" whereby couples would be allowed to have a second child if either parent is an only child (NHFPC, 2013). After this meeting, provinces implemented the new policy and began to modify their birth-planning regulations. As of August 2014, almost all municipalities have implemented this policy change, allowing such couples to apply for certification to have a second child.

The One Child Policy has been exciting the world and arousing academic and popular discussions between the pros and cons. In fact, this policy has some advantages on a family with only one child. For example, the family will have less financial pressure, more freedom, more possibility to devote time and energy to the only child, no sibling rivalry, and more possibility for the mother to realize her

career ambition etc. However, mmeanwhile, this policy also has been bringing immensely other social effects on society and families. To name but a few, for example, the first effect of the policy is on the size and structure of Chinese families, which have a long time of tradition of preferring larger size of families with more children and more grandchildren. The size of Chinese families tends to be minimized, and more and more nuclear families have been resulted in. While nuclear family has already been the most popular form of Chinese families, the traditional large families including 3 or 4 generations have been disappearing. A nuclear family probably makes more family cohesion, but at the same time, this leaves the family more vulnerable and unstable, and more isolated as well. The second effect is that many parents tend to take new parenting styles. Since they have only one child in the family and hence are capable to invest more resources and more attention and patience in their only child. Parenting styles may change from the traditional Chinese authoritarian style into a permissive or authoritative style. Thirdly, this policy has also a great impact on Chinese family kinship and on the ratio between the elderly people and young people in society. To illustrate the effects of China's One-Child Policy on Chinese family kinship, I use an extended family of a fourth generation only child based on Helle's (1988) parent family culture (see Figure 1). In this extended family, each member has been or is the only child of his or her parents in the former or present nuclear family. The present only child (in the fourth row from the top) in Figure 1 has 8 great grandparents (the first row from the top), 4 grandparents (the second row from the top) and 2 parents (the third row from the top). But if this conception of extended family is based on Father Family Culture (Helle, 1988), it would be like the illustration in Figure 2, but when a married couple have a female child, the family would come to the end for further development! Probably few people have seen such strange extended families because they are not developing, but generation after generation combining and decreasing till disappearing. The number of family members of the last generation divided by two would be the largest number of the immediate next generation. This is exactly the goal of the policy makers, that is, to reduce the birth rate at national level. But if we consider this situation from the long run, we could see that the rapid decrease in the birth rate, together with stable or improving proportion of elderly people.

Figure 1 The extended family of the fourth generation only child in a parent family
Note. "□" refers to a male, while "○" refers to a female. And "□—○" refers to a married couple.

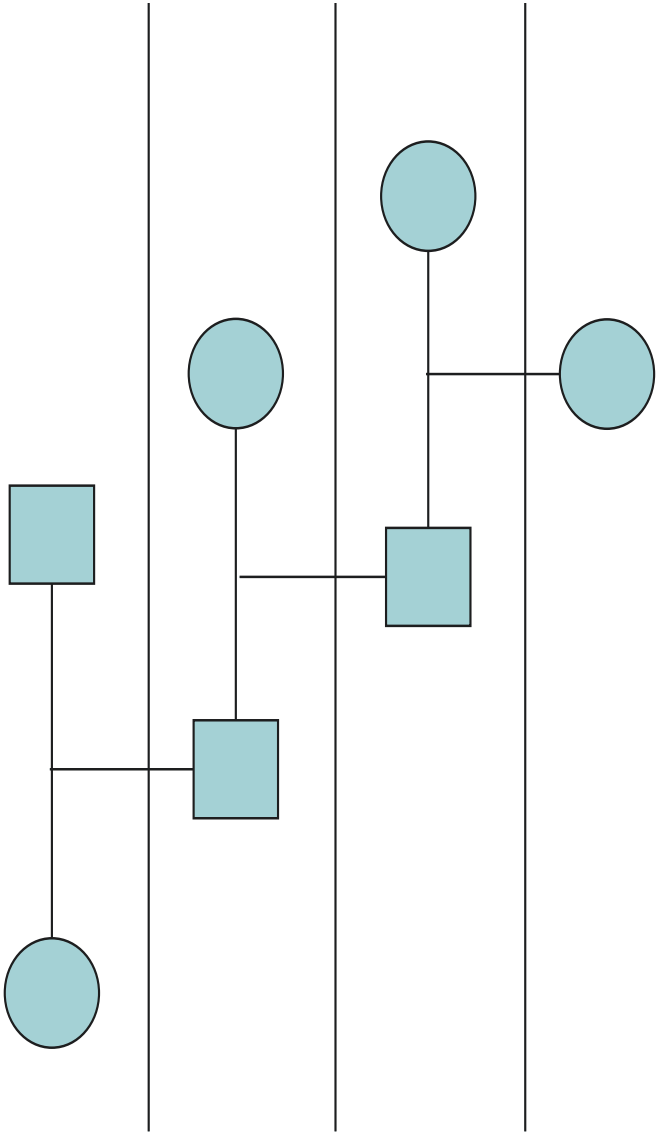

Figure 2 Family tree in a father family culture

Note. "□" refers to a female, while "○" refers to a male. And "□—○" refers to a married couple

In China, the percentage of the population over the age of 65 years old was 5% in 1982 and accounted for 7.5% in 2005, but is expected to rise to more than 15% till 2025 according to World Bank Health Nutrition and Population Division, Developmental data (2015). Therefore, the renowned "4:2:1" (or even "8:4:2:1") phenomenon appears. A lack of adequate pension coverage in China, the underdeveloped social welfare systems and social health insurance systems mean that financial dependence on offspring is still necessary for approximately 70% of the elderly people because they live in rural areas and have no pensions. In China, this problem has been named as the "4:2:1" phenomenon, meaning that increasing numbers of couples will be solely responsible for the care of one child and four parents. Chinese people have greatly emphasized children's roles and duties in the family as part of the larger Chinese value of filial piety, of which family obligation is one component. The obligation to the family that is emphasized in Chinese societies includes dimensions such as a belief in the need to repay parents for their efforts in raising children, a willingness to make sacrifices for the sake of the family, and a respect for the elderly of the family (Ho, 1996; Huang, 1989; Yang, 1989). Also according to the law in China, parents shall take the responsibility to bring up their children, and the children later shall take the obligation to support their parents when they are old or need help. Therefore, the "4:2:1" phenomenon would create a heavy social and financial burden for the young adults if the government does not make any improvement in the social health insurance system and other supporting systems. These heavy burdens might probably make the new generation of Chinese only children have quite different career orientations to run for practical means, such as money and power.

Finally, the lack of extension of family kinship and the prevailing way of living in a nuclear family, to some extent, lead to a loss of the basic functions of the family: initial socialization of children (Parsons, 1955). With this policy, there are to be less relatives and less closer family kinship relations for each member of the family because it is obvious that each member in the extended family has no uncles or aunts, no siblings, and no cousins as well. Probably these Chinese terms, such as uncle, aunt, brother, sister, and cousin, are to be explained by the later archaeologists and are going to seem new words from a foreign language to the later generations of only children in China. In a nuclear family, the only-child could not find the same age children to communicate with and thus may not learn how to get along well with his peers later in society. Therefore, when they consider themselves, they may limit to the individual level, instead of a relational and/or collective level, hence they may lack social competence, have a feeling of loneliness and helplessness, and present some anxious solitary behaviours.

1.3 Learning Environment Research Gaps

Since learning environments in schools were described as "a classroom or school climate, environment, atmosphere, tone, ethos, or ambience" (Fraser 1994), logically there should be learning environments in a family, society, culture, space and even time (Bronfenbrenner, 1979 and 2005). This would be the enlarged definition of learning environment in this book.

There are at least three learning environment research gaps. First, it is the gap between Western world and China in learning environment research. Learning environment research has a history of more than 45 years in the West and the researchers from Western world in this field have accomplished fruitful successes in terms of the variety and validity research instruments, research design, and research results both about normal population or only children. But among the international literature, not many research results are revealed about Chinese students or Chinese only children. Fortunately, within China, there have been many relevant literatures in the language of Chinese. However, this might not be beneficial for the communications in this field among the world academics. Therefore, it would be of great importance and of great interest to investigate the learning environments of Chinese only children in such a huge laboratory created by Chinese government, but based on a quite different culture — a collectivistic culture.

Secondly, personal characteristics were mostly ignored by learning environment researchers. According to Lewin's Field Theory (1951), behaviour depends on the interaction of the person and the environment within a psychological field, or life space. That is, when studying the effects of learning environments, the personal state of the learners should be considered as well because it is the learners who determine which aspects of the physical and social learning environments could enter into their psychological learning environment reality and what they react to the learning environments according to their needs, expectations, etc.

Thirdly, there is a research gap on Western research part as well. Since throughout the learning environment literature, almost all researchers concentrated themselves on one aspect of learning environments, such as family environment, classroom climate environment or teacher effectiveness (or teacher interpersonal relations). As learning environments, researchers should consider them systematically in order to study the effects of learning environments on students.

Early in his work on human environments, Rudolf Moos (1974, 1979) predicted that interest in the physical and social aspects of planning human environmental systems such as towns, workplaces or public institutions was steadily increasing in response to the technological advances that often instigate

the large-scale changes and adaptations that are required in our society. He suggested that these changes required a socio-environmental model to conceptualize, assess, and address our evolving perceptions of space (Moos, 1979). To follow this line of inquiry and on base of my proposed model, this project aimed to answer the question "How do Chinese only-children perceptions of aspects of their learning environments within the context of family and school exert impact on their learning outcomes?"

Furthermore, the range of learning outcomes should be enlarged. Since most academic institutions operate within a paradigm that emphasizes student academic achievements. Defining learning outcomes as something that are simply as equivalent to academic achievements is not adequate because it implies a lack of support to many other educators who plan and intend to explore other factors that might contribute to student learning and success. Additionally, focusing solely on student achievement as an evaluation of learning destroys "the human qualities that make education a worthwhile experience for students" (Fraser, 2001). Moreover, learning environment research offered substantial evidence that suggested that the classroom environment could have some impact or be predictive of other student learning outcomes such as attitudes, behaviours and learning (Fisher & Khine, 2006; Fraser, 2007; Reyes, et al., 2012; Wang, & Eccles, 2013).

1.4 Chapter Arrangements in this Book

The following chapters follow such an order from the chapter of the theoretical frameworks, past theories and research results regarding only children, research review about previous family environment related to the present research, related literature review about peer relations mainly including peer group acceptance and best friendship quality, some closely related literature review about teacher interpersonal behaviour, present research goals and hypotheses, the chapter of methodology, the chapter of analysis and results, and the chapter of conclusion and discussion.

2 Theoretical Frameworks

Early Lewin realized that: "Without theories it is impossible in psychology, as in any other science, to proceed beyond the mere collection and description of facts which have no predictive value. It is impossible to handle problems of conditions or effects without characterizing the dynamic properties behind the surface of the directly observable phonotypical properties." (Lewin, 1951, p. 241) Lewin's field theory (1936，1951), Bronfenbrenner's (1979) Ecological Systems Theory and Social Network Analysis (Wasserman & Faust, 1994) are applied as the theoretical framework of the present study.

2.1 Kurt Lewin's Field Theory and his Psychological Ecology

2.1.1 Field Theory and Psychological Field

Field theory, defined by Lewin (1951, p. 45) primarily as "a method of analyzing causal relations and of building scientific constructs". According to Lewin's (1951) field theory, "behaviour and development depend upon the state of the person and his environment, B = F (P, E). In this equation the person (P) and his environment (E) have to be viewed as variables which are mutually dependent upon each other. In other words, to understand or to predict behaviour, the person and his environment have to be considered as one constellation of interdependent factors. We call the totality of these interdependent factors the life space (LSp) of that individual, and write B = F (P, E) = F (LSp). The task of explaining behaviour then becomes identical with (1) finding a scientific representation of the life space (LSp) and (2) determining the function (F) is what one usually calls a law" (p.239-240). Furthermore, there are six essential features of the field-theoretical approach which distinguish it most clearly from other theoretical orientations (Lewin, 1951, p. 60): (1) the use of a constructive rather than classificatory method; (2) dynamic approach: an interest in the dynamic aspects of events; (3) a psychological rather than physical approach; (4) an analysis which starts with the situation as a whole; (5) a distinction between systematic and historical problems; (6) a mathematical representation of the field.

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What is the "field" then? "A totality of coexisting facts which are conceived of as mutually interdependent is called a field. Psychology has to view the life space, including the person and his environment, as one field." (p.240) specifically, "What means are most appropriate for analyzing and representing scientifically a psychological field have to be judged on the basis of their fruitfulness for explaining behaviour." (p. 240)

Therefore, for Lewin, both the person and the environment are important in studying behaviour and development. Moreover, both aspects of the field should be studied as interdependent factors when considering their impacts on behaviour or development.

2.1.2 Psychological Ecology

With the intention of clarifying what the "psychological field" is, Lewin (1951, p. 57) noticed that within the realm of facts existing at a given time one can distinguish three areas in which changes are or might be of interest to psychology:

(1) The "life space", i.e., the person and the psychological environment as it exists for him. We usually have this field in mind if we refer to needs, motivation, mood, goals, anxiety, and ideals.
(2) A multitude of processes in the physical or social world, which do not affect the life space of the individual at that time.
(3) A "boundary zone" of the life space: certain parts of the physical or social world do affect the state of the life space at that time.

Lewin (1951, p. 57) continued to emphasize that "the process of perception, for instance, is intimately linked with this boundary zone because what is perceived is partly determined by the physical 'stimuli'; i.e., that part of the physical world which affects the sensory organs at that time. Another process located in the boundary zone is the 'execution' of an action." Then he (Lewin, 1951, p. 59) went further to define "psychological ecology":

> Theoretically, we can characterize this task as discovering what part of the physical or social world will determine during a given period the "boundary zone" of the life space. This task is worth the interest of the psychologists. I would suggest calling it "psychological ecology."

Thus, in Lewin's field theory, through the proposal of psychological ecology, some physical and social environments are as components of psychological investigation. But, in essence, he meant that all these physical and social environments must appear in the psychological investigation as psychological, not purely physically objective data, that is, they must be present as they are perceived

or known in the psychological field considered. The most important is that through his proposal of psychological ecology, Lewin essentially suggests a form a psychological research able to use and to integrate information of a non-psychological nature for the understanding of psychological phenomena.

2.2 Implications of Lewin's Field Theory for Present Study

2.2.1 Lewin's Definition of Learning

Learning is "a term with many meanings and a disturbing history" as Lewin (1951, p.65) noted. Under the broad sense of leaning as "doing something better than before", Lewin distinguished at least the following types of changes: (1) learning as a change in cognitive structure (knowledge), (2) learning as a change in motivation (learning to like or dislike), (3) learning as a change in group belongingness or ideology (this is an important aspect of growing into a culture), (4) learning in the meaning of voluntary control of the body musculature (this is one important aspect of acquiring skills, such as speech and self-control).

2.2.2 Defining Learning Environment

Thus, we could give a simple definition to learning environment: it is the environment where learning takes places. Thus the real problem lies in how the "environment" is defined. As Lewin (1951, p. 57) defined that the "field" is:

> the person in his life space, the study of learning environment become the study of the "field", which includes not only the life space, that is, the person and the psychological environment as it exists for him, but also those areas of the physical and social world which are part of the life space or which affect its boundary zone at present.

Lewin (1951, p. 72-74) further suggested that scientific predictions or advice for methods of change should be based on an analysis of the "field as a whole," including both its psychological and non-psychological aspects. That is, "One should view the present situation— the status quo — as being maintained by certain conditions or forces. ..... In other words, we have to deal, in group life as in individual life, with what is known in physics as 'quasi-stationary' processes." Moreover, "these processes have to be conceived of as a result of forces in the organism and its life space, in the group and its setting. The structure of the organism, of the group, of the setting, or whatever name the field might have in the given case, has to be represented and the forces in the various parts of the field

have to be analysed if the processes are to be understood scientifically." Because "the process is but the epiphenomenon," while "the real object of study is the constellation of forces."

Therefore, an inference about an investigation of learning environments becomes the study of the constellation of forces coming from the learners' life space (such as personality, family, school, community, etc.) and its boundary zone (such as parents work places, public policy, culture, etc.), which contribute to the learning processes or outcomes.

2.3 Bronfenbrenner's Ecological Systems Theory

2.3.1 Bioecological Systems Theory

As many other psychologists, Bronfenbrenner (1979) has been greatly influenced by Lewin's field theory and especially his proposal of psychological ecology. The proof we could find in his ecological approach to human development in his Ecological Systems Theory. His theoretical paradigm, the ecology of human development, has transformed the way many social and behavioural scientists approach, think about, and study human beings and their environments.

Bronfenbrenner's ecological model requires behaviour and development to be examined as a joint function of the characteristics of the person and of the environment. The former includes both biological and psychological attributes (e.g., an individual's genetic heritage and personality). The latter encompasses the physical, social, and cultural features of the immediate settings in which human beings live (e.g., the society and times into which an individual is born). Furthermore, this theoretical perspective emphasizes using rigorously designed naturalistic and planned experiments for studying development in the actual environments, both immediate and more remote, in which people live. The evolving reciprocal relation between person and environment through life is conceptualized and operationalized in systems terms. Specifically, this theory looks at human development within the context of the system of relationships that form his or her environment. It defines several complex layers of environment as different systems, each having an effect on a person's development and behaviour. This theory has recently been renamed "bioecological systems theory" (Bronfenbrenner, 2005) to emphasize that a person's own biology is a primarily important environment fueling his or her development, which is again a reflection of the influence from Lewin's field theory. The interaction between factors in the person's maturing biology, his immediate environment, such as family, classroom, school, community and the other social environments affect the development of

the person. Changes or conflict in any one layer will ripple throughout other layers. To study a person's development, we should look not only at the person and his or her immediate environments, but also at the interaction of the larger environments as well.

2.3.2 Bronfenbrenner's Structure of Environment

Within Bronfenbrenner's Bioecological Systems Theory, five environmental systems are identified (see Figure 3):

(1) Microsystem: This is the layer closest to the person and contains the settings in which the individual directly lives. Structures in the microsystem include family, school, neighborhood, or childcare environments etc. At this level, relationships have impact in two directions - both away from the person and toward the person. For example, a child's peers may have impact on his attitudes, beliefs and behaviour; meanwhile, the child also affects the attitudes, beliefs and behaviour of his peers as well. Bronfenbrenner calls these bi-directional influences. The interactions within and between systems and structures is a key to understanding this theory. It is in the microsystem that the most direct interactions with social agents take place; with parents, peers, and teachers, for example. Howevr, the individual is not a passive recipient of experiences in these settings, but someone who helps to construct the settings. In addition, the person's own biology may be considered part of the microsystem.

(2) Mesosystem: Mesosystem is defined as "a set of interrelations between two or more settings in which the developing person becomes an active participants" (Bronfenbrenner, p. 209). Regarding these interrelations or interconnections between the settings, Bronfenbrenner proposed four general types: Multisetting participation, indirect linkage, intersetting communication and intersetting knowledge (p. 209－211). That is, mesosystem refers to relations between microsystems or connections between contexts. Examples are the relation of family experiences to school experiences, school experiences to church experiences, and family experiences to peer experiences. For example, children whose parents have rejected them may have difficulty developing positive relations with peers.

(3) Exosystem: Exosystem involves links between a social setting in which the individual does not have an active role and the individual's immediate context in the microsystem. For example, that a mother has to work longer in her

workplace may influence length of time and quality of reaction between the mother and her child.

(4) Macrosystem: Macrosystem describes the culture in which individuals live. Cultural contexts include developing and industrialized countries, socioeconomic status, poverty, and ethnicity. Moreover, the public policy is also categorized into the macrosystem by Bronfenbrenner (1979).

(5) Chronosystem: Chronosystem encompasses the dimension of time as it relates to a child's environments. Elements within this system can be either external or internal, such as the patterning of environmental events, social-historical circumstances, and transitions over the life course, or different development phases due to age increase. For example, divorce is one transition. Researchers have found that the negative effects of divorce on children often peak in the first year after the divorce. By two years after the divorce, family interaction is less chaotic and more stable. Furthermore, as social-historical circumstances, we might consider decades or hundreds years ago, women had no right to enter into education world and to pursue their careers, but now they have the rights, which, in turn, affect the development of their children.

In sum, Bronfenbrenner proposed a theoretical framework on human development as regards methods and results and in particular their possibilities of providing indications for social changes in the area of social policy. Both Lewin's field theory and Bronfenbrenner's bioecological systems theory are to act as part of the theoretical frameworks in present study.

2.4 Social Network Analysis

Social Network Analysis could underpin the present investigation as well. According to the predictions of Social Network Analysis (Wasserman & Faust, 1994), multiple aspects of student outcomes depend on not only different aspects and quality of the social relations with others, but also the way how they define themselves: in terms of interpersonal comparisons with other individuals, in terms of dyadic connections and role relationships with others, intergroup comparisons and/or interactions between social relations. And the whole social structures and substructures may also be seen as displaying high levels or low levels of impacts

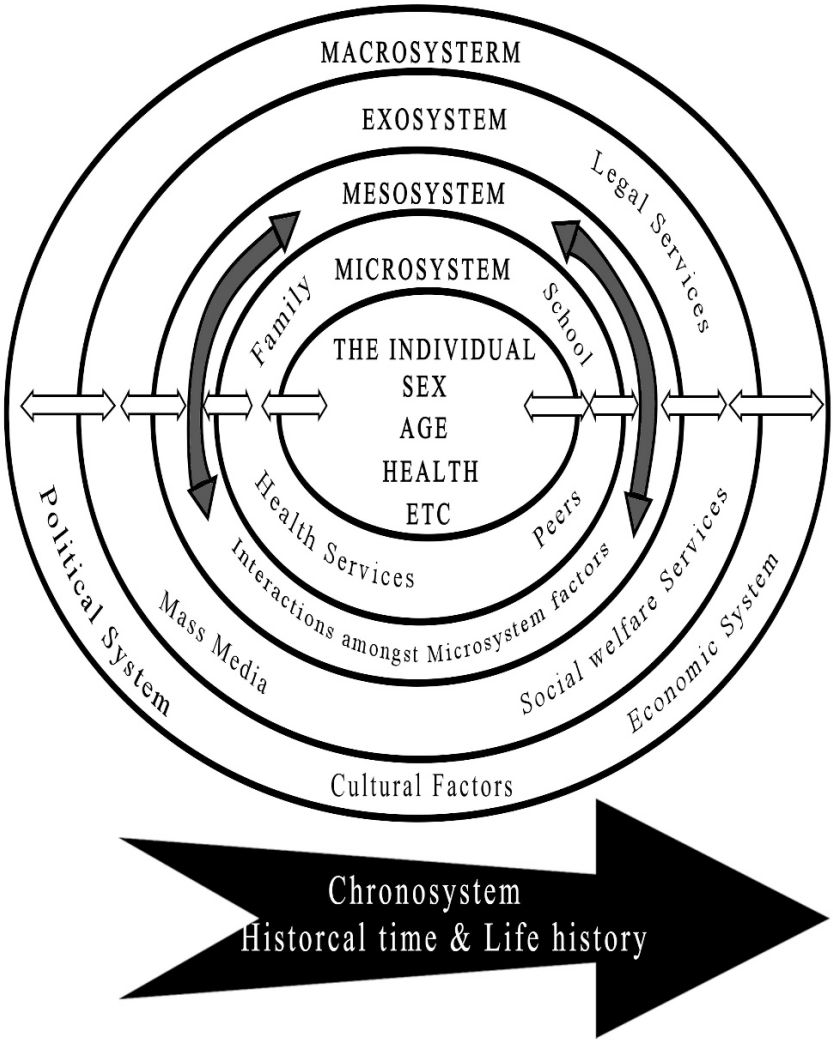

Figure 3 Bronfenbrenner's Ecological Systems Theory Model

as a result of variations in the patterns of ties (social relations) among actors, which could be very relevant to predicting the behaviour of the network as a whole. For example, Gifford-Smith and Brownell's (2003) review of peer relations found what happened in peer groups and friendship relations affected not only children's behaviour and development, but also the functioning in probably every other aspect of children's lives, including the family, the school, and the community. And the goings-on in these settings in turn affected children's functioning in their peer groups and their behaviour and development. Therefore, social network analysis of students in the classroom, family and community could reveal those with many in degree and out degree relations and hence it is argued by Gifford-Smith and Brownell (2003) that children's psychological development and their behaviours might be best informed by an integration of these somewhat independent research traditions.

In sum, on basis of the above-mentioned theoretical framework, it seems that it is meaningful to plan a research project to examine how Chinese only children are growing by investigating the interactions between person and his environments and interactions between these environments on behaviour and development. One thing needs to emphasize is that, although these environments seemingly are outside of the person, we have to make it sure that these environments are perceived by the person. Therefore, it is a good way to investigate these interaction effects through students' perception of these environments and themselves in terms of the person. Meanwhile, different aspects and quality of the social relations with others should be examined; there should be some consideration on the way how the person defines himself: in terms of interpersonal comparisons with other individuals, in terms of dyadic connections and role relationships with others, intergroup comparisons and/or interactions between social relations.

2.5 Why Self-Concept Levels Are To be Considered?

2.5.1. Definition and Importance of Self-Concept Levels

Brookover (1964) proposed that student's self-concept of ability functioned as a threshold variable setting limits of achievement for the individual and that significant numbers of students were being needlessly hindered not by lack of ability but by inadequate self-concepts. If Brookover's idea was accepted, then a logical conclusion would be that a right self-concept would subsequently make possible an increase in achievement. Socially, self-concept, as individuals' understanding of their roles and their personalities, evolved to be understood from a global perspective to a multidimensional perspective. For example, Lord, Brown

and Freiberg (1999) distinguished among three levels: individual, relational, and collective levels. The individual-level involves interpersonal comparisons where one's sense of uniqueness and self-worth are derived from perceived similarities with and differences from other individuals. At this level, behaviour is driven by self-interest (Brewer and Gardner, 1996; Lord et al., 1999 and Markus and Kitayama, 1991). The relational-level is based on the extent to which individuals define themselves in terms of dyadic connections and role relationships with others. At this level, individuals are motivated by the welfare of the specific other, and appropriate role behaviour regarding a specific person determines self-worth (Brewer and Gardner, 1996 and Markus and Kitayama, 1991). The collective-level involves self-definition based on one's social group memberships, where favorable intergroup comparisons give rise to self-worth. At this level, individuals are motivated by the welfare of the groups to which they belong (Brewer and Gardner, 1996).

2.5.2 Chronic and Working Self-Concepts

Lord and Brown (2004) argued that self-concept could be activated and self-concept activation has both trait- and state-like qualities. The chronic self-concept refers to the relatively time-invariant (i.e., trait-like) accessibility of the individual, relational, and collective levels for a particular person that occurs because different learning histories produce stable differences among people's self-schemas. The working self-concept refers to the situation-specific, moment-to-moment (i.e., state-like) activation of one's self-concept levels (Markus and Wurf, 1987) which is produced by priming factors that vary across situations. Consequently the self-concept level that is currently active will vary across people and over time, along with the goals, attitudes, and information processing styles associated with each level.

With respect to the chronic self-concept, the three levels exhibit different levels of accessibility across different people. For some individuals, one level may even be chronically accessible. This baseline activation associated with the chronic self-concept is the product of social and cognitive development, especially which is associated with prior social interactions and cultural influences (Oyserman, 2001). For example, the individual self-concept may be chronically salient for members of individualistic cultures. In work contexts, phenomena such as organizational culture and routines contribute to chronic self-concept activation. Moorman and Blakely (1995) found that individuals with collectivistic values and norms (indicating chronic collective self-concept activation) are more likely to perform citizenship behaviours.

However, with respect to the working self-concept, the momentary social context is able to prime different self-concept levels depending on the cues that are currently present (Gardner et al., 1999 and Markus and Kunda, 1986). For example, cues within organizations include aspects of one's current work tasks and the performance feedback that is received. Cues within a social communicational system, such as a family, a peer group or between students and teachers, may include interactionl relationships at the dyadic and group level. That is, there are a variety of ways that self-concept levels are activated by the momentary social contexts.

2.6 Why Learning Condition Variables Are Considered

As one of student outcomes, academic achievement was usually considered as an important one. However, learning condition variables should be considered as important student outcomes as well. Gagné thought that the cause of students' failure in learning was the gaps in their knowledge of the sub-components of the tasks, i.e. the prerequisite skills (Gredler， 1997). Thus, his principal assumption was that there were different kinds of learned outcomes, and that different internal and external conditions are necessary to promote each type (Gagné, 1985). Five major categories of learning: verbal information, intellectual skills, cognitive strategies, motor skills and attitudes are identified (Gagné, 1985). Thus, attitude learning, as human behaviour, along with other categories of learning is due to the influence of chronic self-concept levels and learning environments. Meanwhile, as internal learning condition, attitude learning influences individuals' choices of activities, engagement and persistence in the activities (Weiner, 1992). Student learning condition variables in current study include career orientation, academic achievement orientation, anxious solitary behaviour, general prosocial orientation and self-esteem.

For example, chronic self-concept and peer relations would not only exert direct, but also indirect impacts on how students see themselves, that is, their self-esteem, academic achievement orientation, anxious solitary behaviour, general prosocial orientation, and academic achievement. Academic achievement orientation includes mastery goal orientation and performance goal orientation. A mastery goal orientation refers to a desire to master knowledge in learning and learning, in this sense, is an end in itself. Performance goal orientation is further classified into two: performance-approach goal orientation and performance-avoidance goal orientation. Whereas learners of the performance-approach goal orientation like to demonstrate their good ability, look smart, or outperform others, those with performance-avoidance goal orientation like to focus on avoiding

negative judgments of their competence and trying to avoid looking dumb or be outwitted by others (Elliot & Church, 1997). Moreover, with increasing nuclear families and the implementation of the One-Child Policy in China, fewer peer contacts and less social resources for socialization might lead to children's feeling lonely and ego-centered; hence they might present anxious solitary behaviour. Finally, behaving prosocial or not, that is, General Prosocial Orientation might be affected by the interdependence of chronic self-concept and other learning environments as well. Moreover, in research field, direct and mediating effects of self-concept were found by some researchers on academic achievement (Guay, Marsh & Boivin, 2003; Song & Hattie, 1984) and on learning conditions (Eisenberg, Martin, & Fabes, 1996).

2.7 What to Be Studied?

Educators have long recognized that successful and unsuccessful students usually displayed marked differences not only in academic achievement and ability but also in certain affective dimensions. But what factors lead to the differences then? Based on the above-mentioned theoretical frameworks and the research gaps， present study was designed to test the direct and joint effects of learning environments and chronic self-concept on student outcomes such as learning conditions. And the proposed relations were illustrated in the following model. Namely, how good learning conditions were, was not an individual attribute, but might arise from the direct effects and joint effects of learning environments and how they defined themselves.

3 Past Theories and Research Results

3.1 Theories

A child's ordinal place in the family has long been thought to have enduring implications for personality development and psychological well-being. The concept of birth order as a mechanism to understand children's behaviour was formally developed by Alfred Adler (Adler, 1931), who thought that children's positions in the family greatly influence their overall development and attitude toward life. Furthermore, the pioneering psychologist G. Stanley Hall held that for a child to develop normally he or she should have siblings and on the basis of a study with an extremely small sample size of only children, concluded that, "being an only child is a disease in itself " (as cited in Fenton, 1928: p. 547). Although Hall's conclusion was questionable, his negative view of the only child launched new interests to study the impact of the birth order and/or the only children.

From a theoretical standpoint, only children do represent a useful and challenging concept because they do not grow up with siblings and they also provide a natural comparison group for those who seek to determine what impact siblings have on development. Only children are also important for both birth order and family size theorists (Polit & Falbo, 1985).

3.2 Research Results about Only Children outside of China

Negative stereotypes about only children still persist. It was commonly believed that only children were spoiled, selfish, lonely, and maladjusted (Roberts & Blanton, 2001). Blake's (1981) research also stated that such a negative perception of only children was common, citing that only children were depicted as self-centered, anxious, domineering, and quarrelsome. Falbo and Polit (1986) noted that only children were often characterized as lacking social competence because of the notion that they were deprived of the social experiences siblings can offer. However, although some previous researchers reached some mixed results about only children, advantaged or no difference results about the comparison between only children and other children was the mainstream. Research evidence was as follows.

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DOI 10.1007/978-3-658-02226-6_3

During the 1970s, Falbo's (1977) literature review analyses indicated that there existed an intellectual advantage for only children relative to those from most other family-size/birth-order statuses; that "onlies" achieved more than later-borns; that only children appeared to have lower needs for affiliation; and that the popular conception of only children as selfish, lonely, or maladjusted was not supported. However, findings regarding the self-esteem of only children were contradictory.

In the 1980s, Doby and others (1980) conducted an investigation by comparing the characteristics of only children with children raised in multiple-sibling families. Results indicated that being reared as only child actually provided a slightly developmental advantage over those raised with other siblings. But when information was gathered on background characteristics such as parents' education levels and prenatal and natal conditions, they reached similar or no difference outcomes. The analysis of over 40 years of nationwide American surveys indicated that only children were educationally and occupationally achieving (Blake, 1981). Another analysis of over 40 years of nationwide American surveys indicated that only children in the US were advantaged in terms of educational attainment, no different from others in personality characteristics, and no more lonely or maladjusted than other children, although they might be less sociable.(Falbo, 1982). Later on, Falbo and Polit continued to make efforts in providing a more accurate picture of only children in the US by conducting two quantitative literature reviews (Falbo, & Polit, 1986; Polit & Falbo, 1987). Firstly, developmental outcomes of only and non-only children, categorized by birth order and by family size, were investigated by conducting 6 meta-analyses of 115 studies on only children (Falbo, & Polit, 1986). Specifically, the 6 meta-analyses focused on achievement, adjustment, character, intelligence, parent–child relationships, and sociability respectively. The findings indicated that only children were found to surpass all others except firstborns and people from 2-child families on achievement and intelligence. They also surpassed all non-only children, especially people from families with 3 or more children, in character, and all non-OCs, especially those from large families, in the positivity of the parent–child relationship. Generally, Falbo, and Polit (1986), in this literature review, found that across all developmental outcomes, only children were indistinguishable from firstborns and people from small families. Therefore, theories relating to only children's deprivation and only children uniqueness were discredited by the results of these meta-analyses. However, one point of great importance is that, among these meta-analyses, support was found for parent–child relationships as an important factor in producing the developmental outcomes attained by OCs, firstborns, and people from 2-child families, which is one good reason for present research design to consider family environment as an important learning

environment. The second quantitative review (Falbo and Polit, 1987) of the literature on the personality characteristics of only children was conducted on 141 studies from 16 different personality domains and it was consistently found that only children scored significantly better than other groups in achievement motivation and mostly in personal adjustment. But it was also found that only children were not substantially different from other children who were raised with siblings with respect to personality characteristics.

However, consistent research conclusions regarding only children in academic abilities, orientations and academic achievement was reached, but, there were still some inconsistencies in personality characteristics and social behaviour. Fortunately, regarding these inconsistencies, some moderator effects were found. For example, in reviewing the research literature regarding only children from Adler's writings, the research conducted in the 20th century and in early 21st century, with a special focus on Chinese only children, Falbo (2012) found that, on average, only children tended to outscore their peers with siblings in terms of academic abilities and achievement, although this difference was small. Many inconsistent findings regarding personality characteristics and social behaviour were reported as well, and many of these inconsistencies were explained in terms of maturational effects and population selectivity. Furthermore, other researchers found similar or further results. For example, Rivera and Carrasquill's (1997) research indicated that in level of achievement and intelligence, only children appear to have an advantage over children with siblings and that their research on sociability and self-esteem also revealed positive aspects about only children. Kuersten (2000) found that only children did not fit the stereotype of lonely social misfits, and in fact they surpassed children with siblings both academically and socially. Overall, consistently across research, it was indicated that only children were advantaged in intelligence, academic achievement, and advantaged or comparable in most other aspects, such as self-esteem, personality characteristics and sociability in comparison with their non-only counterparts if some moderator effects were considered. However, as it was warned early by Falbo (1982), that the developmental outcomes of only children in the US were found to be greatly affected by 4 groups of factors: the strong cultural expectation that only children are selfish, lonely and maladjusted, the degree of voluntariness of having a single child, the number of adults in the family unit, and the age of the child studied. In comparison with Chinese only children in China after the implementation of China's One-Child Policy, there are fundamentally different background. That is, most of these Chinese only children live in intact nuclear families because their parents must obey the law to have only one child in the family. Therefore, there is a necessity to review literature on Chinese only children.

3.3 Research Results about Chinese Only-Children in China

Since the implementation of China's One-Child Policy, almost 100,000,000 only children were born. This has been extensively and deeply affecting the social life in China and has been creating persisting interests in research on Chinese only children in China. With the growth of the 1980s and 1990s only children, Chinese researchers and Western researchers were adapting themselves with different research focuses and different age-group research subjects. For example, in the 1980s, after the first generation Chinese only children was born and from the years of their going to the kindergarten or primary school, the personal characteristics of Chinese only children and finding answers to the question regarding the right education to them was the research focuses; in the 1990s, as the first generation only children entered into the stage of adolescence and went to high school, and at the same time, the second generation of Chinese only children were born, part of the research focuses keep retaining the 1980s focuses and part of then turned to socialization of only children; after the year of 2000, the first generation Chinese only children entered into their adulthood and the second generation entered into adolescence, researchers turned to focus on the marriages and families of Chinese only children and their social adaptation.

There are two different research perspectives: one is to treat Chinese only children as research objects and to explore what their personal characteristics, academic outcomes, socialization, social adaptation etc. are; the other is to treat Chinese only children as research variables to explore the impacts of the Chinese only children phenomenon on family and society. The research outcome variables investigated include many, such as cognitive ability, cognition about self, emotion, social adaptation, academic outcomes, personality characteristics and other personal characteristics, but mainly in this section of the literature review, only research that is relevant to the investigated outcome variables, is reviewed.

As a leading Chinese researcher of Chinese only children, Feng did extensive research on Chinese only children, reviewed literatures in this line and developed the theory of Chinese only children's growth. He contended that with age and social environments varying and being enlarged, there might be major differences between only children and non-onlies at first, but these major differences were to be minimized or disappear in the end (Feng, 2000 and 2002; Xiao & Feng, 2010). Meanwhile, he believed that, the lack of some objective environment conditions for social communications can make the only children at the stage of adolescence, encourage themselves to actively create more chance for social communications in other social environments and hence there might appear more advantages on only children in this aspect (Feng, 2000).

In reviewing previous research, the above-mentioned theories are supported to a large degree. That is, the differences between Chinese only children and non-onlies have such a tendency of development, from significant differences or no significant differences, to advantage on the part of only children in some growing outcomes.

Firstly, in terms of personal characteristics, such as personality, academic motivation and independence, it was found that there were differences between Chinese only-children and non-onlies at primary school level (Fan, et al., 1994); but no apparent differences between Chinese only children and non-onlies at senior high school level (Li, 2001); more advantages on the side of Chinese only children than non-onlies in some positive personal characteristics at college level (Kong & Zhang, 1998).

Secondly, in terms of socialization process and social competence, it was found that there were almost no differences between Chinese only children and non-onlies and they all reached a normal level, and if any differences, that might be due to some advantages on the only children, either from preschoolers to elementary schoolers (Bai, 1992), from elementary schoolers to junior highs in rural areas in China (Feng, 2000), or from adolescents in the cities in China (Xiao, 2008). Moreover, similar tendencies applied to young adults in employment as well. Feng (2005) found that, among 1786 working young adults from 12 cities in China, except that the single working young adults are less socially competent than non-onlies, there were no difference between Chinese only children and the non-onlies in socialization and social competence. Further tendencies applied also to university undergraduates and it indicated that, among 3218 undergraduates from 3 universities, the only children are clearly better than non-onlies in social adaptation, but it was reported that their origins, that is, either from the city or from rural areas, contributed partly to this difference as well (She & Song, 2011). In cooperative behaviour, among 510 college students, no difference was found between only children and non-onlies as well (Hu, 2014). In terms of social anxious solitary behaviour, apparent differences were found in only children in comparison with non-onlies among the 493 primary schoolers at their age between 7 and 13 years old (Zhang, 2014). However, further research results were not found for only children and non-onlies in their adolescence or adulthood.

Thirdly, in terms of academic achievement goals, mixed research results were reached in comparison of only children and non-onlies at college level. With 650 college students, one research (Wang, 2013) indicated that there were no difference between only children and non-onlies, while the other (Fan, 2013), with different measure instrument of academic achievement goals, found there were significant difference between the two parties, non-onlies scoring higher on each of the academic goals than only children.

Fourthly, in terms of self-esteem, with different measuring instrument, including Rosenberg's (1965) self-esteem scale and others, only one research indicated that, among 493 primary schoolers, there were no differences between only children and non-onlies (Zhang, 2014), while other studies of junior and senior high schoolers and college students indicated that only children have higher self-esteem than non-onlies (Chen, et al., 2008; Song, 2007; Zhang, 1997). It would be meaningful to design a study to measure different age groups of Chinese only children with the same measuring instrument, in order to see which age group has higher or lower self-esteem.

In terms of occupational variables, Feng and Wang (2003) found that there were no differences between only children and non-onlies among the working young adults in occupational adaptation.

Furthermore, after China's implementation of the One-Child Policy, concern for its impacts is raised among researchers outside of China as well. Generally, similar results, advantaged or no difference results were found in comparing only children in China and other children with siblings either in China or in the West as well (e.g., Falbo and Poston, 1993; Poston and Falbo, 1990; Tsui, 2005). Specifically, in academic achievement, academic abilities and achievement motivation, Chinese only children outscored children with siblings (Falbo and Poston, 1993; Poston and Falbo, 1990; Wan et al., 1994). Additionally, focusing especially on Chinese only children, Falbo (2012) did an updated review of the research literature by summarizing the research conducted in the 20th century, and providing examples of early 21st century research and found that, on average, Chinese only children tend to outscore their peers with many siblings in terms of academic abilities and achievement, although this difference is small, but significant. Meanwhile, in some research, moderators of only children effect were found. For example, research analyses of the combined sample of Beijing and Jilin schoolchildren indicated that the only-child advantages in achievement were found among children from urban families, not rural peasant families (Falbo, et al., 1989). However, no difference result in academic achievement was reached by some researchers when comparing primary school Chinese only children and sibling children (e.g., Chen et al., 1994). In terms of personality characteristics and social competence, some research indicated no difference between Chinese only children and sibling Children. For example, Chen and others (1994) examined differences in social and academic competence between Chinese 8- and 10-year olds with and without siblings and their results indicated no significant differences between the only-child subjects and those with siblings in social behaviour. Falbo and Poston (1993) and Poston and Falbo (1990) demonstrated in their studies that Chinese only children showed no differences from sibling children in personality

characteristics. In comparison of the sixth grade only children schoolers and sibling schoolers from urban and rural schools, Meredith, Abbott and Ming, (1992) found that there were no differences between them on self-concept. However, by summarizing the research conducted in the 20th century and that of early 21st century research on Chinese only children, Falbo (2012) updated the research conclusion about Chinese only children indicating many inconsistent findings, many of which were explained in terms of maturational effects and population selectivity. In terms of fear, anxiety, and depression, Unexpectedly, only children reported significantly lower levels of fear, anxiety, and depression than children with siblings, regardless of when they were born: before, during or after the implementation of the One-Child Policy (Yang, et al., 1995). Finally, motivated by concern for mental health among Chinese only children, in their newest literature review, Falbo and Hooper (2015) found small, but significant advantages for only children compared to their peers with siblings, regardless of subscale in anxiety and depression. However, moderators of this only-child effect were also found. Specifically, only children as college students reported significantly fewer symptoms, regardless of subscale, while only children as military recruits reported more symptoms, although the findings about military recruits received less support from the analyses. Furthermore, the size of the only-child advantage was found to be greater for only children born after the policy.

3.4 Summary

Generally, research on Chinese only children and their counterparts outside of China seemingly reached similar results. In academic outcomes, only children tended to outscore their peers with many siblings although this advantage was small, but significant. In personality characteristics and social competence, some researcher reached no difference results while others reached other inconsistent results. In mental health, such as fear, anxiety and depression, unexpectedly, small, but significant advantages were found for only children. The inconsistency of research results may be caused by a variety of factors. For example, some selected samples contain groups of only children who are advantaged (e.g., living in a financially and affectionately happy family), while other selected samples contain groups of only children who are disadvantaged (e.g., living in a divorced family or in a single parent family). Besides siblings and birth order, more other factors should be considered as well. However, despite the mixture of research results concerning only children, most of research results indicate that the negative stereotypes of only children are not true in reality, that there are few differences between only children and their peers with siblings, and that to some degree, only

children even have more strengths than sibling children. Therefore, it is of great importance to know deeper about only children from a same or very similar baseline. In other part of the world, only children may have some characteristics of being special in comparison with their peers, but in China, being an only child is no special because his or her peers mostly are also only children. Hence in China, a similar baseline is being provided.

4 Family Environment

Generally, family environment is the first learning environment of a child after his birth. There are two main research focuses on family environment: one is on the general family environment closely connected with parents' indirect behaviours in the family (e.g., Woos et al, 1981); the other is the specific family environment, such as parenting style or its relevant components closely connected with parents' direct behaviours in the family.

4.1 Parenting Style

4.1.1 Diana Baumrind's Concept of Parenting Style

More than 40 years ago, Baumrind (1967, 1971) noted that preschool children reared by parents with differing parenting attitudes, or styles, differed in their degrees of social competence. According to Baumrind, the construct of parenting style is used to capture normal variations in parents' attempts to control and socialize their children (Baumrind, 1991). Parenting style has two dimensions: parental responsiveness and parental demandingness. Parental responsiveness (or parental warmth or supportiveness) refers to "the extent to which parents intentionally foster individuality, self-regulation, and self-assertion by being attuned, supportive, and acquiescent to children's special needs and demands" (Baumrind, 1991, p.62). Parental demandingness (or behavioural control) refers to "the claims parents make on children to become integrated into the family whole, by their maturity demands, supervision, disciplinary efforts and willingness to confront the child who disobeys" (Baumrind, 1991, p. 61-62). According to whether parents are high or low on parental demandingness and responsiveness, a typology of four parenting styles is created: permissive, authoritarian, authoritative, and uninvolved parenting styles. Permissive parents are more responsive than they are demanding. They are non-traditional and lenient, do not require mature behaviour, allow considerable self-regulation, and avoid confrontation (Baumrind, 1991, p. 62). Authoritarian parents are highly demanding and directive, but not responsive. They are obedience- and status-oriented, and expect their orders to be obeyed without explanation (Baumrind,

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DOI 10.1007/978-3-658-02226-6_4

1991, p. 62). These parents provide well-ordered and structured environments with clearly stated rules. Authoritative parents are both demanding and responsive. They monitor and impact clear standards for their children's conduct. They are assertive, but not intrusive and restrictive. Their disciplinary methods are supportive, rather than punitive. They want their children to be assertive as well as socially responsible, and self-regulated as well as cooperative (Baumrind, 1991, p. 62). Uninvolved parents are low in both responsiveness and demandingness. In extreme cases, this parenting style might encompass both rejecting-neglecting and neglectful parents, although most parents of this type fall within the normal range. It is further warned that, because parenting style is a typology, rather than a linear combination of responsiveness and demandingness, each parenting style is more than and different from the sum of its parts (Baumrind, 1991).

And later, Baumrind's theory met challenges in other ethnic groups, for example, in Chinese group, regarding the positive association of authoritative parenting style with children's positive outcomes, such as academic performance. And even she was asked to express her attitude to the punitive disciplinary parental practices at several conferences because such parental practices have been found to be effectual. She (Baumrind, 1996) clearly expressed that the prudent use of punishment within the context of a responsive, supportive parent-child relationship is a necessary tool in the disciplinary encounter with young children. The short- and long-term effects on child outcomes of any disciplinary practice within the normative range are moderated by cultural and childrearing contexts. Therefore, developmental and cultural factors must be taken into account for rational debate to occur concerning desirable child outcomes and consequent childrearing objectives. And the general conclusion is reached that it is not the specific disciplinary practice but how it is administered and in what cultural context that determine its efficacy and long-term effects.

4.1.2 Third Dimension of Parenting Style

In addition to differing on responsiveness and demandingness, the parenting styles also differ in the extent to which they are characterized by a third dimension: psychological control. Psychological control refers to control attempts that intrude into the psychological and emotional development of the child (Barber, 1996, p. 3296) through using parenting practices such as guilt induction, withdrawal of love, or shaming. One key difference between authoritarian and authoritative parenting is in the dimension of psychological control. Both authoritarian and authoritative parents place high demands on their children and expect their children to behave appropriately and obey parental rules. Authoritarian parents,

however, also expect their children to accept their judgments, values, and goals without questioning. In contrast, authoritative parents are more open to give and take with their children and make greater use of explanations. Thus, although authoritative and authoritarian parents are equally high in behavioural control, authoritative parents tend to be low in psychological control, while authoritarian parents tend to be high (Darling, 1999).

4.1.3 Research Results about Parenting Style

Parenting Style and Preschool and Preadolescence Children

Baumrind's typological parenting style theory (1971) implied that parenting style had a major impact on the degree of social competence achieved as well as on the behavioural adjustment of preschool children (Baumrind, 1991) and preadolescence children. In the domain of emotion socialization, Chan, Bowes and Wyver (2009) found that Hong Kong Chinese mothers of 6- to 8-year-old children adopted an authoritative style most often and an authoritarian style least often, that they valued both relational and individualistic emotional competence of their children as parental goals but regarded the former as more important than the latter, and that parental goals mediated the influences of parenting styles on parental practices. That is, parenting styles played an overarching role in emotion socialization, influencing both parental practices and goals. With a sample consisted of 112 children (6-11 years of age) and both their parents, Dekovic and Janssens (1992) examined relationships between parents' child-rearing style, the child's prosocial behaviour, and the child's sociometric status. Factor analyses of parental behaviour revealed that 2 factors, Authoritative/Democratic and Authoritarian/Restrictive, can be found in the subsamples of mothers and fathers. These 2 dimensions of maternal and paternal behaviour appeared to be predictive of both the child's prosocial behaviour and sociometric status. Another study reached similar results: to test the theory that preschool children, reared by parents with differing parenting attitudes or styles, would differ in their degrees of social competence, a two-year study was conducted by Slicker and Kim (1996). Adding to Baumrind's research result about impacts of parenting style on pre-schoolers, Paulussen-Hoogeboom et al. (2008) examined whether the relations between children's negative emotionality and problematic behaviour (internalizing and externalizing) were partially mediated by parenting style (authoritative and authoritarian) in a community sample of 196 3-year-old children and their mothers. Maternal perception of child negative emotionality and problematic child

behaviour was assessed. Their results showed that the relations between child negative emotionality and internalizing and externalizing behaviours were partially mediated by mothers' authoritative parenting style.

Parenting styles played an important role in students' self-regulated learning as well. In a study by Huang and Prochner (2004), the relationship between Chinese parenting style and children's involvement in self-regulated learning was examined with a sample of 177 grade 4 students and their parents. It was found that authoritative parenting style was significantly and positively related to students' self-regulated learning, whereas authoritarian parenting style was significantly and negatively related to students' self-regulated learning.

Parenting Style and Early Adolescents

However, most researchers concentrated on adolescents when considering the association between parenting style and academic, psychological and behavioural outcomes. In school achievement and attendance, Steinberg & Elmen's (1986) results revealed that adolescents from authoritative households (as opposed to either authoritarian or permissive households) performed better in school than their peers, even after controlling for social class and achievement test scores. School grades and attendance records examined one year after the study suggest that authoritative parenting actually promotes school success among high school students.

For early adolescents, parenting style, especially maternal concern could act as a predictor of life satisfaction, social competence. In short-term longitudinal study, the relations among maternal parenting style, academic competence, and life satisfaction in Chinese early adolescents in Hong Kong was examined by Leung and McBride-Chang, and Lai (2004). Results indicated that adolescents' perceived maternal concerns and academic competences significantly predicted life satisfaction over time, whereas perceived maternal restrictiveness did not. In another study, Rubin et al. (2004) examined parental support, best friendship quality and psychological functioning in early adolescence and found that perceived parental support and friendship quality predicted higher global self-worth and social competence and less internalizing problems, that perceived parental support predicted fewer externalizing problems, and that paternal (not maternal) support predicted lower rejection and victimization.

Furthermore, Smith et al. (2008) explored the socialization of adolescents' processing of identity-relevant information by examining perceived parenting dimensions and identity styles in a sample of middle and late adolescents. Results indicated that an information-oriented style was positively predicted by parental

support; contrary to expectations, however, an information-oriented style was also positively predicted by psychological control; a normative identity style was positively predicted by support and behavioural control; in line with expectations, a diffuse-avoidant identity style was positively predicted by psychological control and negatively by maternal (but not paternal) behavioural control.

Research also found that parenting style has impacts on motivational constructs, such as academic goal orientation, self-efficacy, autonomy in learning and self-esteem. For example, Hoang (2007) found that parenting style was related to adolescents' academic goal orientation in maths and autonomy in regulating academic behaviour. Specifically, firstly, authoritative parenting served as the strongest individual predictor of mastery orientation and permissive parenting also accounted for a significant portion of the variance in adopting a mastery orientation; secondly, parental behavioural involvement served as the strongest individual predictor of a performance approach orientation, while permissive parenting and authoritarian parenting also accounted for significant portions of the variance in adopting a performance approach orientation; thirdly, parental behavioural involvement served as the strongest individual predictor of a performance avoidance orientation. But interestingly, the analyses indicated no significant relation between behavioural involvement and the adoption of a mastery orientation. Meanwhile, authoritative parenting was found to serve as the strongest individual predictor of a higher level of autonomy. Reporting a more democratic parent was predictive of student's reporting feeling more autonomous in regulating their academic behaviours. Another study (Chan and Chan, 2007) examined goal orientations, perceived parenting styles, and their relationships in a sample of Hong Kong teacher education students. It was found that their most influential parents to be authoritative and that perceived parenting styles predicted goal orientations: authoritativeness was significantly and positively related to learning goals, whereas authoritativeness and authoritarianism were significantly and positively related to performance goals. In order to study parenting effects on self efficacy and self-esteem in late adolescence and how those factors impact adjustment to college, Smith (2007) firstly assessed 203 high school seniors self-efficacy, self-esteem, and their parents parenting styles approximately three months before starting college and two weeks after starting college he investigated the students' homesickness and adjustment to college. It was found that authoritarian parents had children with lower self-esteem and self-efficacy, while authoritative parents had children with higher self-esteem and self-efficacy and that students higher in self-esteem and self-efficacy experienced less homesickness and showed better emotional and behavioural adjustment to college. Moreover, Edward and Price (2002) examined the relationship between perceived parenting style and hope in college students and the results revealed that

authoritative parenting, with its high but balanced levels of nurturance, communication, control and maturity demands, appeared to consistently be related to positive outcome in children as well as adolescents.

Significant differences in behavioural adjustment were also been found in early and middle adolescents reared by parents using the four "classic" parenting styles (Durbin et al., 1993; Lamborn et al., 1991; Steinberg et al., 1993; Steinberg et al., 1992; Steinberg et al., 1991; Steinberg et al., 1994).

Parenting Style and Older Adolescents and Young Adults

Later the age range in parenting style research was further enlarged to older adolescents and young adults (Slicker, 1996; Slicker and Kim, 1996). With older adolescents and young adults, research results persisted in the relations between parenting style and behaviour outcomes. For example, Slicker (1996) investigated graduating high school seniors (HS) and university freshmen (UF) and searched for relations between their levels of participation in problem and conventional behaviours and the three parenting dimensions: acceptance, behavioural control, and democracy (or psychological control). It was found that the "democracy" dimension was not needed to effectively define authoritative parenting after the other two dimensions were considered. Results indicated that parenting style was significantly related to older adolescent behavioural outcome in problem and conventional behaviours in the HS sample ($\rho<.0001$) and in the UF sample ($\rho<.05$), and that previously established advantages and disadvantages of the four classic parenting styles persisted even when they were extended into older adolescents, and that the influence of parenting style appears to wane with increasing age of older adolescents, especially after a semester of college. Furthermore, Slicker and Kim (1996) studied the longitudinal relationship of parenting style and family type to older adolescent (higher school seniors and university freshmen) problem behaviours in the middle South of USA and the significant results at "Year 1" indicated that, in regard to a variety of problem behaviour outcome, authoritative parenting was superior to permissive and neglectful parenting, and that "balanced" and "moderately balanced" family types were superior to "mid-range" and "extreme" family types. In "Year 2" ($N = 261$), significant differences among parenting styles and family types persisted. Turner, Chandler and Heffer's (2009) study indicated that authoritative maternal parenting continued to influence the academic performance of college students.

There were other aspects of behavioural and psychological outcomes that were reported in the literature as associated with parenting style, including those in social competence (Baumrind, 1991; Lamborn et all., 1991; Steinberg, 1990),

academic achievement (Dornbusch et al., 1987; Lamborn et al., 1991; Steinberg et al., 1991; Steinberg et al., 1989), self-reliance (Steinberg et al., 1991), psychological distress and delinquency (Lamborn et al., 1991; Steinberg et al., 1991), substance use (Baumrind, 1991), adolescent drinking and delinquency (Barnes and Farrell, 1992), and peer group selection (Brown et al., 1993) etc.

Impact of Mother-Father Differences in Parenting Style

Very interesting research results were found by Simons & Conger (2007) by linking mother-father differences in parenting style and adolescent outcomes.Using longitudinal data from a sample of 451 families with a child in eighth grade at the time of study, they found that regardless of reporter, the most common family parenting styles were those in which both parents display the same style of parenting, that having two authoritative parents was associated with the most positive outcomes for adolescents, and that in the absence of this optimal family parenting style, there was evidence that having one authoritative parent could, in most cases, buffered a child from the deleterious consequences associated with less optimal styles of parenting.

Developmental Results of Parenting Style

Adolescence is a critical period of development. In their research review, Cripps and Zyromski (2009) found that parenting style greatly influenced children's development as well. The authoritative/democratic parenting style influences middle school children, leading to positive developmental outcomes, positive adolescent self-evaluations, higher levels of adolescent self-esteem and adjustment, while also positively influencing levels of intrinsic motivation for learning. In a recent longitudinal study by Williams et al. (2009) examined the impact of behavioural inhibition and parenting style on internalizing and externalizing problems from early childhood through adolescence by investigating a sample of 113 children from childhood till adolescence. And results revealed that internalizing problems at age 4 were greatest among behaviourally inhibited children who also were exposed to permissive parenting. Furthermore, greater authoritative parenting was associated with less of an increase in internalizing behaviour problems over time and greater authoritarian parenting was associated with a steeper decline in externalizing problems.

Consequences of Parenting Style

In reviewing the literature on parenting style, it seems there is a lasting consistency with the benefits of authoritative parenting style regardless of the age range or normal or abnormal children. Parenting style has been found to predict child well-being in the domains of social competence, academic performance, psychosocial development, and problem behaviour etc. Research consistently found that children and adolescents having authoritative parents were more socially and instrumentally competent than those whose parents are nonauthoritative (Baumrind, 1991; Weiss & Schwarz, 1996; Miller et al., 1993); that, in contrast, children and adolescents having uninvolved parents, perform most poorly in all domains; that, in general, parental responsiveness predicts social competence and psychosocial functioning, while parental demandingness is associated with instrumental competence and behavioural control (i.e., academic performance and deviance); that children and adolescents having authoritarian parents tend to perform moderately well in school and be uninvolved in problem behaviour, but they have poorer social skills, lower self-esteem, self-efficacy and higher levels of depression; and that children and adolescents having permissive parents are more likely to be involved in problem behaviour and perform less well in school, but they have higher self-esteem, better social skills, and lower levels of depression.

Influence of Gender, Ethnicity, or Family Type

As was realized by Darling (1999), it was important to distinguish between differences in the distribution and the correlates of parenting style in different subpopulations. Although authoritative parenting is most common among intact, middle-class families of European descent, the relationship between authoritativeness and child outcomes is quite similar across groups in this subpopulation. There are some exceptions for some subgroups. For example, first, in terms of gender differences, Weiss and Schwarz (1996) found that demandingness seemed not to be so critical to girls than to boys' outcomes. Another example of gender effect is the cross-sex parenting effect, in investigating senior high school students. Richards et al (1991) found that boys and girls who perceived their cross-sex parent to be warm and supportive were found to have higher self-esteem. Rubin et al. (2004) also found that having a supportive mother protected boys from the effects of low-quality friendships on their perceived social competence, and that high friendship quality buffered the effects of low maternal support on girls' internalizing difficulties. In the study of Chan and Chan (2005),

it was found that the positive relationship between authoritarian parenting style and performance orientation was significant in male but not in female students. On the contrary, the positive relationship between authoritative parenting and learning goal was significant only in female but not in male students.

Secondly, authoritative parenting predicts psychosocial outcomes and problem behaviours for adolescents in all ethnic groups studied (African-, Asian, European-, and Hispanic Americans), but it is associated with academic performance only among European Americans (Steinberg, Dornbusch, & Brown, 1992; Steinberg, Darling, & Fletcher, 1995). For instance, Chao (1994) and others (Darling & Steinberg, 1993) have argued that observed ethnic differences in the association of parenting style with child outcomes may be due to differences in social context, parenting practices, or the cultural meaning of specific dimensions of parenting style. And Baumrind (1996) herself also admitted that the association of parenting style with child outcomes was based on developmental and cultural factors.

Research about Asian-American and Chinese Parenting Style Effects

Researchers reached mixed results about Asian-American parenting style effects. In a study by Dornbusch, Ritter, Leiderman, Roberts, and Fraleigh (1987), although authoritative parenting style was consistently and positively related to the school grades of European American students, this style was unrelated to the school grades of Asian Americans. Another study by Steinberg, Lamborn, Dornbusch, and Darling (1992) found that for both European Americans and Asian Americans, authoritative parenting had positive effects on adolescent's school performance. Steinberg, Lamborn, Darling, Mounts, and Dornbusch (1994) tested whether there were ethnic group differences in the effects of parenting style by estimating interaction terms for ethnicity and parenting style. They noted that authoritative parenting was relatively more advantageous for European American youth than it was for Asian American youth, whereas authoritarian parenting was relatively more advantageous for Asian American youth. But these mixed parenting style effects are reached from the comparison of European Americans with Asian-American parenting style effect. How about the effects of Chinese parenting effects on Chinese students then?

Studies of Chinese families in Hong Kong and Mainland China also found different results about the effects of Chinese parenting style on school performance. Using Dornbusch et al.'s (1987) measures of parenting style, Leung, Lau, and Lam (1998) investigated Hong Kong Chinese high school students, European American and Australian high school students. Results revealed that the

authoritative style was unrelated to the grades of Hong Kong Chinese, but positively related to the grades of European Americans and Australians, and that authoritarian parenting was positively related to the grades of Hong Kong Chinese. In another study of Hong Kong Chinese, McBride-Chang and Chang (1998) found that, on base of parent self-report, both the authoritative and authoritarian styles were unrelated to adolescents' achievement test scores. In contrast, Chen, Dong, and Zhou (1997), examined Chinese families in Beijing and found that the authoritative style was positively related to children's school achievement, whereas the authoritarian style was negatively related to school achievement. As Chao (2001) inferred the possible reasons for Chen, Dong, and Zhou's differing results, in their study, much younger children (i.e., second graders) than the studies cited above were involved; additionally, there might be important differences in parenting between Chinese parents from Hong Kong and those from Mainland China. Therefore, it would be meaningful to examine further the associations between parenting style and adolescents' outcomes in Mainland China with adolescents.

*Explanations for Mixed Parenting Style Effects on Chinese Student*s

Chao (1993 and 1994) suggested the different effects of Chinese-American and Chinese parenting effects may be due to the culture. He argued that the idea of "training" in Chinese families may contribute to the differences.

Furthermore, Darling and Steinberg (1993) considered parenting style as the emotional climate between parents and children. Based on this idea, Chao (2001) suggested further that parenting style might influence adolescent outcomes through its effect on the parent–adolescent relationship. Therefore, we could take again a step further and suggest that: since parenting style is realized through parenting practices, but same parenting practices have different developmental and cultural meanings, thus, different specific family relations, such as family cohesions, are fostered. Parenting style is thus defined as a global Relationship construct that is explained by specific relationship qualities (Chao, 2001). This is probably why same parenting styles have different effects on offspring outcomes in different cultures. Chao (2001) examined the effects of parent–adolescent relationships on school performance to provide a clearer understanding of why authoritative parenting does not have as beneficial effects for Asian Americans as it does for European Americans. Positive effects of both authoritative parenting and relationship closeness on school performance were found for European Americans and, to some extent, second-generation Chinese, but not first-generation Chinese. These effects were also stronger for European Americans than

first-generation Chinese. Through examination of the mediating role of parent–adolescent relationships, this study also found that among European American families, the beneficial effects of authoritative parenting are explained through relationship closeness. But what would be the research results in Mainland China if similar research designs but with only Chinese adolescents there then?

4.2 General Family Environment

4. 2.1 Definition of General Family Environment

Woos et al (1981) believed that family as a general learning environment could be described and measured, and they designed the Family Environment Scale (FES) to measure family environment, which composed of 10 subscales underlying three dimensions: relationship, personal growth (or goal orientation), and system maintenance dimensions. The Relationship Dimension assesses the degree to which the family members are perceived to be involved with each other and how openly positive and negative feelings are expressed. The Relationship Dimension consists of 3 subscales: Cohesion (degree of perceived commitment, support, and help family members provide for each other), Expressiveness (degree to which family members are encouraged to express feelings and problems), and Conflict (amount of openly expressed anger, aggression, and conflict among family members). The Personal Growth Dimension reflects the family-of-origin's goal orientation or ways the family-of-origin encourages or inhibits an individual's personal growth. The Personal Growth Dimension is made up of the following 5 scales: Independence (extent to which family members are assertive, make own decisions, and self-sufficient); Achievement Orientation (extent to which school and work activities are cast as indices of achievement or areas of competition); Intellectual-Cultural Orientation (degree to which family members showed interest in political, social, intellectual, and cultural activities); Active-Recreational Orientation (extent to which family members emphasized participation in social and recreational activities); and Moral-Religious Emphasis (extent to which family members emphasized ethical and religious issues and values). Finally, the System Maintenance Dimensions reflect the degree to which the family emphasizes clear organization, control, structure, rules, and procedures in running family life. The System Maintenance Dimensions consists of two subscales: Organization (extent to which the family endorses clear organization and structure in planning family activities and responsibilities) and Control (extent to which rules and procedures are followed and enforced by family members). The Relationship and System Maintenance Dimensions reflect more perceived internal

family functioning, whereas the personal growth (or goal orientation) dimension reflects the link between the family and society.

4.2.2 Impacts of General Family Relations (Cohesion, Conflict and Expressiveness)

Impact of Family Relations on Career Development

First of all, general family environment has great impact on career development, such as career goals, career identity, career interest etc. Family relationship, especially expressiveness, was found to be related to vocational variables. Along with previous research (Blustein et al., 1991; Kenny, 1990; Kinnier et al., 1990; Lopez, 1989; Penick & Jepsen, 1992), the results of Johnson, Buboltz, and Nichols' study (1999) provided support to the theoretical contention that family environment plays a role in the career development process. Specifically, results indicate that each family relationship variable (i.e., conflict, cohesion, and expressiveness) is related to vocational identity for college students. Although expressiveness accounts for only about 3% of the variance, it appears to be the family relationship variable most predictive of vocational identity for college students. This finding supports previous research which indicates that expressiveness is the family relationship variable with the strongest effect on developmental task attainment for college students (Johnson & McNeil, 1998; Johnson & Nelson, 1998) and suggests that college-age children who grew up in families that encouraged direct and open communication between members may more easily develop a relatively clear and stable picture of their vocational goals and interests.

Ethnic Differences in the Impact of Family Relations

Ethnic differences were also found in the impact of family environment. With the purpose to explore the ethnic differences in family dynamics and career interests of European Americans and Chinese Americans and how these dynamics — cohesion, expressiveness, and conflict — influence one's career interests, Leong, Kao and Lee (2004) found significant ethnic differences in career interests. The Chinese Americans' highest career interest was enterprising, whereas the highest for European Americans was social. Ethnic differences in family dynamics were also found, though opposite from hypothesized; Chinese Americans reported more

family conflict, less cohesion, and less expressiveness than the European Americans.

Developmental Features of Family Relations Impact

The impact of family environment was found to be developmental. Based on a developmental contextual perspective advocated by Vondracek, Lerner, and Schulenberg (1986), Whiston & Keller (2004) provided a comprehensive review of the research published since 1980 related to family of origin influences on career development and occupational choice. Influential family contextual factors are identified within four developmental levels (i.e., children, adolescents, college students/young adults, and adults):

(a)The initial influence of parents includes both their occupations and their occupational expectations for their children. There is also some indication that children whose mothers are employed are likely to consider a greater number of occupations, including nontraditional occupations, than children whose mothers are not employed. Additionally, there is some evidence that children from non-two-parent homes are more likely to have limited occupational aspirations than children in two-parent homes.

(b) This review indicated that higher occupational expectations were associated with a family environment that is supportive and where parents have high expectations for the adolescents. Family support and parental expectations also influence females' career orientation. Parental support for a certain occupational area or career direction (e.g., entering the military) seems to have an influence, particularly on older adolescents' interests and preliminary career direction. The mother-daughter relationship may be significant in adolescent girls' developing a career orientation and may play a pertinent role in their feeling about career decision-making. Parental expectations during adolescence also seem to have an influence on later occupational attainment.

(c) Through review of 32 studies about college students, it was concluded that the family of origin influences college students' career development and maturity, occupational exploration, vocational identity, assessment of career-related abilities, career commitment or decidedness, and occupational selection. On the other hand, this review tended to indicate that families had a less direct influence on college students' career decision-making self-efficacy and career indecision. Although these trends were somewhat tentative, the family variables that seem most influential were family attitudinal and relational factors. Regarding family dynamic variables, attachment, emotional support,

autonomy support, encouragement, and boundaries seemed to be more important than other dynamic variables such as psychological separation. For example, college students' career development seemed to be enhanced by parental emotional support, autonomy support, encouragement, and warmth. Students who had higher levels of career commitment tended to have higher levels of parental attachment and fewer conflicts with their families. Furthermore, the influence of family variables on various career constructs varied depending on the gender of college students or young adults and the gender of the parent. For example, in terms of vocational exploration, maternal attachment seemed to have more influence than paternal variables. On the other hand, paternal relationship variables seemed to be more influential in terms of females entering a nontraditional career field. This review also indicated that both family demographic and family dynamic variables influence adults' career development.

Interaction Effect among Family Structure and Process Variables

Moreover, in the above-mentioned review and in my review of literature, it was found that several studies indicated career outcomes were influenced by an interaction among family structure variables and family process variables. For example, Hargrove, Creagh, and Burgess' study (2002) explored the family interaction patterns as predictors of vocational identity and career decision-making self-efficacy of college students. Achievement orientation in the family was found to be a significant predictor of career identity and a number of family variables including achievement, intellectual-cultural and moral-religious emphasis orientations and degree of family conflict and expressiveness were found to be predictors of career decision-making self-efficacy. Therefore, their findings suggested that family-of-origin interaction patterns may play small, yet significant roles in the formulation of clear and stable career goals and the promotion of self-confidence in regard to completing career planning activities (Hargrove, Inman and Crane, 2005).

Impact of Family Cohesion on Psychological Well-Being

Family cohesion influences physical and psychological well-being. Greenberger, Ellen, & Chen, Chuansheng (1996) examined perceived parent-adolescent relationships and depressed mood among early adolescents and college students, all of them being European or Asian American background. Ethnic differences in

depressed mood, not evident in the early adolescent sample, emerged in the college sample, with Asian Americans reporting more symptoms. Ethnic differences in depressed mood were reduced to nonsignificance when quality of parent-adolescent relationships was statistically controlled. And perceived parent-adolescent relationships accounted for more of the variance in depressed mood in early adolescence than in late adolescence: 44% to 51% for the junior high samples and about 10% for the college samples. Manzi et al (2006) also found that Family cohesion was associated with better psychological well-being of adolescents from UK and Italy. It was found by Behnke et al (2008) that family cohesion strongly mediated most of the relations between stress and parenting behaviours. Important ethnic and gender differences were evident. In contrast with other groups, Mexican American fathers reported higher levels of family cohesion when faced with economic pressures. Family cohesion and parental monitoring exerted even a protective-stabilizing effect on number of illicit drugs used and on problems with drugs and alcohol (Kliewer et al, 2006). In examining the influence of family cohesion and adaptability on college students' trauma symptoms and psychological well-being, Uruk et al's (2007) study revealed that the family adaptability and cohesion has a significant unique variance in explaining both trauma symptoms and psychological well-being. In order to test a model of suicidal ideation with family cohesion, expressiveness, conflicts, teacher support, teacher-student relationships and peer support as antecedents, and self-esteem and depression as mediators, Sun and Hui (2006) investigated 433 Hong Kong Chinese adolescents and found that only family cohesion, conflicts, teacher support and peer support significantly predicted self-esteem and depression, with depression being a strong mediator of suicidal ideation. In a second study by Sun and Hui (2007), with the purpose to investigate the family, school, peer and psychological factors that contribute to adolescent suicidal ideation with a sample of Hong Kong Chinese adolescents who were divided into younger (12.3 years, n = 694) and older (15.4 years, n = 664) age groups, the results showed that family cohesion and sense of school belonging were the core predictors of self-esteem and depression, and that depression was a strong mediator of suicidal ideation. In the prediction of suicidal ideation, peer support was significant among girls and younger adolescents only, whereas peer conflict was significant among older adolescents only. Family conflict, teacher support and academic pressure did not show any significant contribution in the prediction. Johnson et al (2001) examined relationship of family cohesion and interparental conflict with loneliness in late adolescents and found that feelings of loneliness were related to perceived levels of interparental conflict for males and females, and to decreased family cohesion for females. Feelings of social anxiety and social avoidance were related to feelings of loneliness. In a longitudinal study (Frank, 2000) of adolescent health,

it was found that adolescent involvement in four types of violent behaviours was related to race/ethnicity, gender, and family structure. Family cohesion was a protective factor against all types of violence. Wentzel and Feldman (1996) also found that the cohesive nature of family relationships affected adjustment more consistently for girls than boys, whereas family power structures more consistently affected boys' adjustment than girls'.

Impact of Family Cohesion on Academic Outcomes, Creativity and Leadership

Family cohesion was proved to have impact on academic outcomes, such as school engagement, GPA, adjustment to college etc. In the study of Annunziata et al (2006), results showed that both family cohesion and parental monitoring predicted school engagement of at-risk, inner-city adolescents, but neither family characteristic predicted their GPA. Important gender differences also emerged. For boys only, the relation between family cohesion and school engagement was stronger when parental monitoring was high. For girls only, the effects of cohesion and monitoring on school engagement were additive: girls with both high family cohesion and high parental monitoring were most likely to be engaged in school. Lagana (2004) also wanted to determine what factors predicted school dropout, with particular attention given to family and social support variables. School dropout was measured by proxy, using group membership as an indirect indicator of risk and the results indicated that family cohesion, adult support, and peer support were predictors of group membership. In another investigation of the influence of self-concept and perceived family environment on psychosocial adjustment among 180 early-entrance college students (ages range from 14 and 17 years old) by Caplan et al (2002), family cohesion, conflict, and expressiveness and overall self-concept were found to be predictive of adjustment to college and family cohesion, organization, control, conflict, and overall self-concept were found to predict first semester grade-point average.

Family cohesion has impact not only on academic outcomes, but also on creativity and leadership. In Chan's (2005) study of family environment and talent development of Chinese gifted students in Hong Kong, it provided opportunities to challenge a number of conjectures regarding the relationships between family environmental variables and perceived talents in academic skills, creativity, and leadership. Accordingly, it was assumed that family cohesion and parental expectations to achieve academically would favor academic achievement, but would impede creativity. In contrast, it was assumed that parental encouragement for independence was connected to the development of creativity. Further, it was assumed that leadership would be enhanced by parental expectations to achieve

and parental encouragement for independence, as well as by family cohesion. However, the findings did not fully support these conjectures. Rather, family cohesion and parental expectations to achieve emerged as significant predictors of perceived academic skills, creativity, and leadership. Thus, gifted students who perceived their family as more cohesive and their parents as having high expectations of them also perceived themselves as having more talents in academic skills, creativity, and leadership.

In the present study, among the three family relation variables, only family cohesion is considered because in Chinese culture, family expressiveness is traditionally not encouraged in a family, and family conflict as a negative aspect of family relations normally is deemed not to be reported.

5 Peer Relations

Ladd (1999) did a review of peer relations research and concluded that major periods of empirical activity and accomplishment in research on peer relations could be divided into three generations. Each generation had investigative agendas that were dominant or ascendant during these periods.

5.1 First Generation (from late 1920s till World War II)

5.1.1 Investigative Agenda of First Generation

The first generation of children's peer relations emerged in the late 1920s when social scientists began to study the nature of children's peer groups and the association between children's characteristics and their positions in peer groups. Investigations, based on methodologies, such as observation, sociometry and experimental interventions, addressed to these topics continued until the outbreak of World War II, after which they fell dormant for more than a decade (see Renshaw, 1981).

5.1.2 Research Review in First Generation

As Renshaw (1981, p. 1-2) reviewed: The extent of the contribution of the 1930s to current research on peer interaction and friendship can be appreciated by noting the classic theoretical works published during that decade. Moreno launched the field of sociometry by publishing Who Shall Survive in 1934. Sherif initiated a lifetime investigation of groups with the publication of The Psychology of Social Norms in 1936. Lewin's writings on field theory (Lewin, 1931) and group climates (Lewin, Lippitt, & White, 1939) established the experimental method as an indispensable tool for studying group phenomena. Piaget (1926, 1932) demonstrated the importance of studying the social cognitive development of children, and Murphy showed that even young children acted altruistically toward each other (Murphy, 1937). Renshaw also noted that all these above-mentioned

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DOI 10.1007/978-3-658-02226-6_5

classic studies, however, are only part of the large body of peer research that was conducted and reported during the era. Other studies, such as studies by Parten (1932) on children's play, by Koch (1933) on popularity, by Isaacs (1933) on children's social development, by Buhler (1930), Bridges (1933), Shirley(1933), and Maudry and Nekula (1939) on social interaction of children below the age of 2, are also noteworthy examples of peer relations studies in this era.

5.2 Second Generation (from 1970s and 1980s)

5.2.1 Investigative Agenda: Likely Causes of Peer Rejection and Peer Acceptance, Types and Functions of Peer Relations

The second generation of research on children's peer relations was triggered by a series of discoveries that emerged during the late 1960s and early 1970s. Harlow and colleagues (1969) found that young rhesus monkeys that were reared by their mothers but deprived of peer contact failed to develop essential social skills and traversed abnormal developmental trajectories. However, these investigators also showed that play with younger peers could compensate for some of the deficits that were attributable to maternal deprivation (see also Freud & Dann, 1951). Together, the evidence suggested that peers played an essential role in the socialization of interpersonal competence and that skills acquired in this manner affected the individual's long-term adjustment. This premise was further strengthened by findings from a series of longitudinal studies (e.g. Cowen et al, 1973, Roff & Sells, 1967). All these findings and their implications shaped the agendas of the second generation of researchers (from1970s and 1980s). Through correlations, researchers found support for the conclusion that whereas antisocial and disruptive behaviours were likely causes of poor peer relations (e.g. peer rejection), prosocial behaviours led to positive outcomes, such as peer acceptance (see review by Coie et al 1990). Researchers also found the behavioural antecedents of children's friendships: conversational) skills (see Gottman 1983).

5.2.2 Reasons for Social Skills and Skill Deficits

But why some children exhibited social skills in their interactions with peers and other children manifested skill deficits. Some researchers found reasons from interpersonal cognitions, such as goals, strategies, outcome expectations, and peer attributions, and/or from intrapersonal cognitions, such as self-perceptions, perceived competence, and self-efficacy (Dodge 1986, Ladd & Mize 1983), while

other researchers found reasons from early socialization contexts, such as the family — direct family influences (e.g. parents' attempts to influence children's peer relations) and/or indirect family influences (i.e. family processes with no direct bearing on children's peer relations, such as parenting, attachment, or child abuse) (Parke & Ladd 1992). Results indicated that children with high versus low peer acceptance tended to construct different types of goals and strategies for peer interactions (Dodge & Feldman 1990, Ladd & Crick 1989).

5.2.3 Friendship and Peer Acceptance

Researchers in this era began to differentiate the types and functions of peer relations: friendship and peer acceptance (Berndt & Ladd 1989). In general, friendship was defined as a voluntary, dyadic form of relationship that often embodied a positive affective tie, whereas peer acceptance was defined as a child's relational status in a peer group, as indicated by the degree to which they were liked or disliked by group members (see Bukowski & Hoza 1989). Friendship and peer acceptance may offer provisions such as support, intimacy and companionship etc. (Bukowski & Hoza, 1989; Furman & Robbins 1985).

5.2.4 Impact of Peer Relations on Children's Development

By the end of 1980s, researchers began to examine the contributions of peer relationships on children's development. As Berndt & Ladd (1989) concluded that little evidence had accumulated that could confirm or deny the existence of the functions of peer relationships in children's development. Anyway, it was found that children adapted better when in the presence of friends or familiar peers (see Ladd & Kochenderfer 1996) and that both the quantity of a child's friendships and the quality of those relationships (e.g. variations in support and closeness) predicted changes in children's social perceptions, competence, and adjustment (Bukowski & Hoza 1989, Ladd 1990).

5.3 Third Generation (1990s and beyond)

5.3.1 Investigative Agenda

Further investigations and progress were made by the third generation (1990s and beyond) researchers in addressing the question of whether distinct forms of peer

relationships, and the provisions they afford, differentially affect children's development and adjustment.

5.3.2 More about Contributions of Peer Relations

In addition to distinguishing among the forms and features of children's peer relationships, researchers have acquired more information about the potential contributions of peer relationships to children's adjustment and development. Longitudinal studies conducted in the 1990s strengthened earlier evidence indicating that peer rejection was a relatively stable characteristic that predicted both internalizing and externalizing problems as well as absenteeism during the grade school years (e.g. DeRosier et al 1994; Hymel et al 1990a); rejection also predicted grade retention and adjustment difficulties during the transition to middle school (Coie et al 1992). The DeRosier et al findings also showed that the severity of children's internalizing and externalizing problems varies as a function of the proximity and chronicity of peer rejection. Research results linking peer rejection with loneliness in middle childhood were replicated with younger samples (Cassidy & Asher 1992), and neglected peer status was found to be a correlate of adaptive outcomes such as achievement motivation (Wentzel & Asher 1995). Friendship and the quality of children's friendships were found to be important predictors of children's emotional well-being (Parker & Asher 1993) and adjustment trajectories during early and middle grade school (Ladd et al 1996). Considerable attention was focused on the potential effects of peer victimization on children's adjustment, and findings link abusive peer relations with a number of adjustment difficulties during childhood, including anxiety, loneliness, depression, and school maladaptation (Boulton & Underwood 1992, Kochenderfer & Ladd 1996).

5.3.3 Impacts of Friendship, Friendship or Best Friendship Quality and Quantity, and Peer Acceptance

Initial efforts to investigate differential relationship contributions focused on friendship and peer acceptance. Research results about adolescent showed that loneliness was more closely linked with friendship than peer acceptance, and feelings of isolation were more closely tied to peer group acceptance than friendship (see Bukowski & Hoza 1989).

Friendship quality was also found to be very important for adolescents. Veronneau and Vitaro (2007), after reviewing theoretical and empirical work

conducted over the last few decades on the relations between child and adolescent peer experiences and high school graduation, concluded that peer acceptance is a correlate of high school graduation, and that having numerous friends was not, in itself, a very efficient predictor of high school graduation, because friends might have a positive or a negative influence on school achievement, depending on their own characteristics, that is, friendship quality may moderate both the positive and negative effects of friendship on academic adjustment. Meanwhile, they recommended further research directions: first, all relevant variables (not only peer experiences) should be systematically included in empirical studies in order to control for confounding variables; second, the impact of the interplay between different peer experiences should be investigated; third, variables such as age, chronicity of peer experiences, and reciprocal effect between independent and dependent variables are also necessary to maximize the validity of empirical research. As a good example, Nelson and Debacker (2008) investigated associations among perceived peer relationships and achievement motivation during science class with middle school and high school students. Results indicated that perceived peer relationship variables explained variance in achievement motivation. Adolescents who perceived being valued and respected by classmates were more likely to report adaptive achievement motivation. Reports of adaptive achievement motivation were also related to having a good quality friendship and a best friend who values academics. Having a poor quality friendship and perceiving classmates to be resistant to school norms were related to reports of maladaptive achievement motivation. Another new cross-sectional study by Woods, Done, and Kalsi (2009) indicated that the higher quality of friendship was associated with the reduced levels of loneliness in their sample group.

Flanagan, Erath and Bierman's (2008) study examined the unique associations between social anxiety and peer relations (including positive peer nominations, peer- and self-reported peer victimization, and self-reported friendship quality) among adolescent students. The results provided support for the unique contribution made by peer relations to social anxiety. Research also found support for the role of peer relationships in adjustment to college (Swenson, Nordstrom & Hiester, 2008) and their results suggested that a close relationship with a high school friend was beneficial during the first weeks of college, but later in the first semester there were more benefits to having a close relationship with a new college friend. Cillessen et al (2005) also found that aggression was associated with self and partner perceptions of friendship conflict and low positive friendship qualities and that prosocial behaviour was associated with self and partner perceptions of positive friendship qualities and low conflict. Furthermore, Nelson and Teresa (2007) enlarged the contents of peer relations as dependent

variables and outcome variables of adolescents (middle school and high school students). They assessed peer classroom climate, achievement-related beliefs and values of a best friend, achievement goals, social goals, and self-efficacy. And their regression analyses indicated multifaceted impact: (a) Peer class-climate and best friend variables accounted for significant variance in mastery goals. Significant individual predictors were grade level (negative), class belongingness (positive), and best friend's academic valuing (positive).(b) Peer class-climate variables accounted for significant variance in performance-approach goals. Classmates' resistance to school norms and belongingness were significant positive predictors. (c) Peer class-climate variables accounted for significant variance in performance-avoidance goals, with the only significant individual predictor being classmates' resistance to school norms (positive). (d) Peer class-climate and best friend variables accounted for significant variance in social intimacy goals. Class belongingness and friendship quality were significant positive predictors. (e) Peer class-climate and best friend variables accounted for significant variance in social approval goals. Classmates' resistance to school norms and friendship quality was a unique positive predictor. (f) Peer class-climate and best friend variables accounted for significant variance in social responsibility goals. Significant positive predictors were class belongingness, best friend academic valuing, and friendship quality. (g) Peer class-climate variables accounted for significant variance in self-efficacy. Grade level was a significant negative predictor and class belongingness was a unique positive predictor. Adolescents who perceived being valued and respected by classmates were more likely to report adaptive achievement motivation. Reports of adaptive achievement motivation were also related to having a good quality friendship and a best friend who values academics. Having a poor quality friendship and perceiving classmates to be resistant to school norms were related to reports of maladaptive achievement motivation.Among grade school children, Parker and Asher (1993) found that many low-accepted children had best friends and were satisfied with these friendships. However, these children's friendships were lower than those of other children on most dimensions of quality, and that friendship, friendship quality, and group acceptance made separate contributions to the prediction of loneliness.

In peer relation research, best friends are seen as a source of interpersonal support as well as a source of beliefs and values. Having a trusting, caring, and intimate relationship with a best friend is associated with improved social and emotional adjustment (Buhrmester, 1990; Parker & Asher, 1993), self-esteem (Keefe & Berndt, 1996; Mannarino, 1980), and classroom behaviour (Berndt & Keefe, 1995). Friends in high-quality relationships are more likely to share similar beliefs and values than friends in lower quality relationships (Berndt, Hawkins, & Jiao, 1999; Berndt, Laychak, & Park, 1990; Hallinan, 1983; Hallinan & Williams,

1990). For example, Agnew (1991) reported that delinquency rates of adolescent friends increased over time only in high-quality friendships. Likewise, Berndt et al. (1999) found that behaviour problems increased over the course of a school year when students reported a higher quality relationship with a best friend who had behavioural problems.

Similarly, Vandell and Hembree (1994) found that mutual friendships and peer acceptance uniquely and additively predicted social competence, self-esteem, and achievement in elementary school children. In a developmental sense, one study (National Institute of Child Health and Human Development Early Child Care Research Network, 2008) investigated the association of third graders' social competence with earlier peer experiences in childcare. The results indicated that children who had more positive experiences with peers in childcare, had better social and communicative skills with peers in third grade, were more sociable and co-operative and less aggressive, had more close friends, and were more accepted and popular; and that children with more frequent negative experiences with peers in childcare were more aggressive in third grade, had lower social and communicative skills, and reported having fewer friends. With a total of 238 fifth to eighth graders (boys = 109) participants, Waldrip, Malcolm and Jensen-Campbell (2008) also examined the unique contributions of peer acceptance, friendship, and victimization to adjustment and investigated how these relational systems moderate the influence of one another to influence adjustment. Adolescents who had lower levels of peer acceptance, number of friends, and friendship quality had greater teacher-reported maladjustment. Moreover, friendship quality was an important buffer against adjustment problems when peer acceptance and number of friends were low. In study of Korean primary school children, Shin (2007) revealed that peer relationships, including peer acceptance, the number of friends, and positive friendship quality, uniquely contributed to loneliness. Peer relationships partially mediated between withdrawal and loneliness. Peer acceptance and friendship quality fully mediated the link between academic functioning and loneliness. Since childhood social anxiety consistently has been linked with low levels of peer acceptance, Greco and Morris (2005) investigated factors influencing the link between social anxiety and peer acceptance of grade school children. Their results revealed that, as expected, childhood social anxiety was associated with low levels of peer acceptance, that this relation was mediated in part by social skills difficulties, and that friendship quality (but not quantity) moderated this process for girls. Interestingly, friendship quantity and positive friendship quality did not serve a protective function for either boys or girls. In examining the main and interactive effects of fifth-graders' relationships with parents and friends on their psychosocial functioning, Rubin et al (2004) found that friendship quality predicted higher global self-worth and

social competence and less internalizing problems. Friendship quality predicted lower rejection and victimization for only girls. High friendship quality buffered the effects of low maternal support on girls' internalizing difficulties. In comparing later elementary schoolers with learning disabilities and their typically achieving peers, Estell et al (2009) conducted a two-year study and their research results indicated that students with learning disabilities were as likely to have a reciprocated best friend and had as many best friends as their typically achieving peers. However, they retained fewer friendships over time, and were more likely to have friends who also had learning disabilities.

As a rare, but valuable example study with children at a transition period, Kingery and Erdley (2007) examined the role of peer acceptance, number of mutual friends, and friendship quality in predicting adjustment across the transition from elementary to middle school and results revealed that there was a significant decrease in the average number of mutual friendships across time, and that peer acceptance and friendship quality and quantity play significant yet somewhat different roles in predicting loneliness and school involvement across the middle school transition. Specifically, the regression models using the peer variables to predict loneliness and school involvement across the transition were significant, with peer acceptance emerging as a unique predictor; children with lower peer acceptance are more likely to experience behavioural, emotional, academic, and peer difficulties; and these students are at a higher risk for having adjustment difficulties across the middle school transition; and the friendship quality variable was more highly correlated with school involvement.

With young children, Ladd (1990) found that friendship and peer acceptance uniquely predicted changes in kindergartners' school attitudes, avoidance, and performance. In another study (Ladd & Coleman, 1997), which assessed changes over time in kindergarten children's school attitudes and perceptions of peer acceptance and friendships, it was found that initial levels of peer group acceptance were associated with liking school at both assessments, while the number of mutual friendships was associated with an increase in school liking. However, in an investigation in which a broader range of peer relationships were examined (i.e. friendship, peer acceptance, and peer victimization (Ladd et al 1997), it was found that multiple relational influences played a role in most of the adjustment outcomes examined and that the adaptive significance of particular forms of relationship (i.e. presence of unique versus shared linkages) varied across adjustment domains.

Overall, these findings were consistent with the view that peer relationships are specialized in the types of social provisions they offer children but also diverse in the sense that some provisions may be found in more than one form of relationship.

5.3.4 Innovative Areas of Third Generation Peer Relations Research

As their innovative agendas and areas of investigation, the third generation researchers explored child behaviours versus peer relationships as potential causes of development and adjustment. One prominent objective was to examine the relative importance of childhood aggression and peer group rejection as predictors of subsequent adjustment outcomes. The evidence accumulated supported the causal model, suggesting that in addition to aggression, peer rejection increases children's risk for maladjustment. This includes evidence from a short-term longitudinal study (Panak & Garber 1992) in which aggression's contribution to depression was found to be partially mediated by gains in peer rejection. Findings from longer-term longitudinal studies (e.g. Coie et al 1992, Hymel et al 1990a) suggest that both aggression and peer rejection in grade school make unique contributions to maladjustment in early adolescence. In contrast, however, Kupersmidt & Coie (1990) found that the strength of these linkages varied with the type of adjustment outcome examined: Whereas aggression in middle childhood best predicted delinquency in adolescence, both aggression and peer rejection anteceded other types of externalizing problems. Similar results have emerged in studies where these linkages have been examined concurrently (see Boivin & Hymel 1997). The question of whether the same model holds for other behaviour patterns (e.g. withdrawn behaviour) has been examined. Renshaw & Brown (1993) found that withdrawn behaviour and low peer acceptance were additively associated with loneliness in grade school children. A similar pattern of concurrent linkages was also reported by Boivin & Hymel (1997).

5.3.5 Gender Differences

The construct of gender has been an enduring consideration in the study of children's peer relations. Greater attention has been devoted to gender differences in the study of peer rejection. As with boys, it has been possible to identify behavioural subtypes of rejected girls (French 1990), but the behaviours that distinguish the subtypes (i.e. withdrawal, anxiety, underachievement) are not the same as those that differentiate rejected boys (i.e. aggression), suggesting that the causes or consequences of peer rejection may be different in boys' and girls' peer groups. There is also evidence to suggest that the proximity and chronicity of peer rejection take a greater toll on boys' than girls' adjustment (DeRosier et al 1994), although research of this type has tended to focus on externalizing outcomes, which are more common among boys. Gender differences have also received further attention in the study of children's friendships. Friendship networks

(Parker & Seal 1996) revealed that boys' friendship networks, in contrast to girls', were more likely to become interconnected over time. The investigators suggested that girls may be more likely than boys to winnow network affiliations as a means of managing conflicts and rivalries among members. Other evidence implies that unskilled children, who may be disliked by peers, are more likely to seek friendships among opposite-sex peers. Kovacs et al (1996) found that although neither grade school boys nor girls were more likely to have primarily opposite-sex friends, those who did (as compared with children with primarily same-sex friends or friends of both genders) tended to have weaker social skills. However, it may also be the case that plays with same-sex peers is a risk factor for some children. Fabes et al (1997) found that for boys (but not girls) who were highly arousal, play among same-sex peers increased the likelihood of behaviour problems. Additionally, there is further support for the premise that boys and girls have different relational priorities that shape their interactions and responses to friends or well liked peers (see Maccoby 1990). In conflicts with friends, Hartup et al (1993) found that girls were more likely than boys to accompany assertive behaviours with rationales, suggesting that girls have greater concern for relationship issues whereas boys have greater concern for mastery and status. Likewise, Whitesell & Harter (1996) found that girls were more likely than boys to judge a friend's misdeeds from a relationship perspective, and Fabes et al (1996) found that boys were more likely than girls to express anger toward well-liked peers—a response that may be motivated by concerns about dominance and competition.

5.3.6 Cultural and Ethnic Similarities and Differences

The third generation researchers of peer relations have also been investigating the cultural and ethnic similarities and differences in children's peer relations and social competence. Although the study of children's peer relations has become a worldwide endeavor, systematic efforts to explore ethnic and cultural differences have been rare (Krappman 1996). Within North America, investigators have begun to draw of picture of the peer relations of majority (typically Euro-American) and minority (typically African-American) children. Kupersmidt et al (1995), for example, found that middle social economic status neighborhoods appeared to operate as a protective factor against aggressive behaviour for low-income, single-parent African-American children. Schools that enroll children from diverse backgrounds appear to promote ethnically diverse friendship and peer-interaction patterns (Howes & Wu 1990). Other studies reveal differences between minority and majority groups. Kovacs et al (1996) found that African-American children

tend to have more friendships as well as more opposite-sex friendships than do Euro-American children, and they infer that African-American children may be socialized to develop larger networks or may reside in family systems (e.g. extended families) that nurture broader ties. Other findings suggest that children who are members of minority groups are more likely to engage in self-protective, self-esteem-maintaining behaviours. Zakriski & Coie (1996) found that even though both Euro-American and African-American children were more likely to recast peer feedback about themselves in self-enhancing ways, self-protective distortions were more pronounced among African-American children, especially when the feedback was negative.

Cross-national comparisons of children's peer relations are rare. Researchers (Fonzi et al 1997) have argued that variations in cultural values may cause differences in the ways children interact and maintain friendships. In support of this contention, they found that friendships tend to be more stable in Italy than in Canada. Likewise, the role of children's social behaviours in determining relationship and adjustment outcomes may also vary by culture. Chen and colleagues (Chen et al 1992, and 1995) found that even though aggressive and leadership behaviours predicted similar adjustment outcomes in Canadian and Chinese samples, shy and sensitive behaviours did not. During childhood (but not adolescence), shy, sensitive behaviours and peer acceptance and competence were positively correlated for Chinese children but inversely related for Canadian children. Further studies are desired for a solid conclusion in this line.

5.3.7 Summary of Three Generations of Peer Relations Research

In summary, with dominant or ascendant investigative agendas, research in peer relations has been making progresses step by step. Some behaviours lead to peer rejections and others lead to peer acceptance. Reasons for this are found from interpersonal and intrapersonal cognition and early socialization contexts. Furthermore, several types of peer relations are identified and they have different provisions and hence function differently on children's development and adjustment. Finally, with deeper insight into peer relations investigation, researchers reached fruitful results by innovatively combining children's behaviour and peer relations to examine the impact of peer relations on children's adjustment and development. Generally speaking, research findings indicated that peer relations have impact on children's academic outcomes, social competence, problem behaviours, psychological and developmental well-beings etc., but on some outcome variables gender differences, cultural differences existed.

6 Teacher Interpersonal Behaviour

6.1 History of Teacher Interpersonal Behaviour as Learning Environment

The research program of Wubbels and his colleagues in the Netherlands on teacher-student relationships using the Questionnaire on Teacher Interpersonal Behaviour (QTI) can be considered one of the second pioneering contributions, which has around 30 years long history. And simultaneously another pioneering research program based in Australia and initially involving the use of the individualized classroom environment questionnaire (ICEQ) (Fraser & Fisher, 1982; Rentoul & Fraser, 1979) was also launched.

6.2 Research Results on Teacher Interpersonal Behaviour

6.2.1 International Feature of Research

Research on teacher-student interactions is truly international. Although the research program on teacher interpersonal behaviour originated in the Netherlands, this research has spread widely in many countries over the last 30 years. The QTI has been translated into and validated in at least 15 languages.

6.2.2 Theoretical Foundation

The solid theoretical foundation of this research program is built on two theories. First, its general theoretical basis is the systems theory of communication of Watzlawick, Beavin and Jackson (1967). Second, Leary's (1957) research on the interpersonal diagnosis of personality was used to create a two-dimensional model of interactional teacher behaviour. In the Leary model, two dimensions are important and Leary called them the Dominance-Submission axis and the Hostility-Affection axis. While the two dimensions have occasionally been given other names, they have generally been accepted as universal descriptors of human interaction. Adapting the Leary Model to the context of education, Wubbels et al.

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DOI 10.1007/978-3-658-02226-6_6

(1987) used the two dimensions, which they called Influence (describing who is in control in the teacher-student relationship) and Proximity (describing the degree of cooperation between teacher and students) (see Figure 4). The influence dimension is characterized by teacher dominance (D) on one end of the spectrum, and teacher submission (S) on the other end. Similarly, the proximity dimension is characterized by teacher cooperation (C) on one end, and by teacher opposition (O) on the other. The two dimensions can be depicted in a two-dimensional plane that can be further subdivided into eight categories or sectors of behaviour: leadership (DC), helpful/friendly behaviour (CD), understanding behaviour (CS), giving responsibility/freedom (SC), uncertain behaviour (SO), dissatisfied behaviour (OS), admonishing behaviour (OD) and strictness (DO) (see Figure 5). The Model for Interpersonal Teacher Behaviour (MITB) also assumes that the eight sectors of behaviour can be represented by two independent dimensions (i.e., Influence and Proximity).

6.2.3 Mostly Studied Research Questions and Answers

Researchers on teacher interpersonal behaviour investigated mostly associations between students' outcomes and student perceptions of their teacher interpersonal behaviour. It was empirically proved that there was a link between the quality of teacher-student relationships and student outcomes, especially affective outcomes. Specifically, teacher interpersonal behaviour with high dominance and proximity seemed to be conductive in terms of student outcomes, including cognitive outcomes and affective outcomes, and studies on non-verbal behaviour and the spatial position of the teacher in the class offered support to the need for beginning teachers to portray the image of an experienced teacher whenever they address the class as a group (Wubbels & Brekelmans, 2005). For instance, Henderson, Fischer and Fraser (2000) investigated associations between students' perceptions of their biology teacher's behaviour and their laboratory learning environment with student attitudinal, performance, and achievement outcomes and results revealed that associations between attitudinal outcomes and learning environment dimensions assessed by Science Laboratory Environment Inventory (SLEI) and Questionnaire on Teacher Interaction (QTI) were stronger than with either achievement or practical outcomes. In another study by Lang, Wong and Fraser (2005), associations were found between the interpersonal behaviour of chemistry teachers and students' enjoyment of their chemistry lessons. However, through student perceptions of teacher interpersonal behaviour, another study by den Brok,

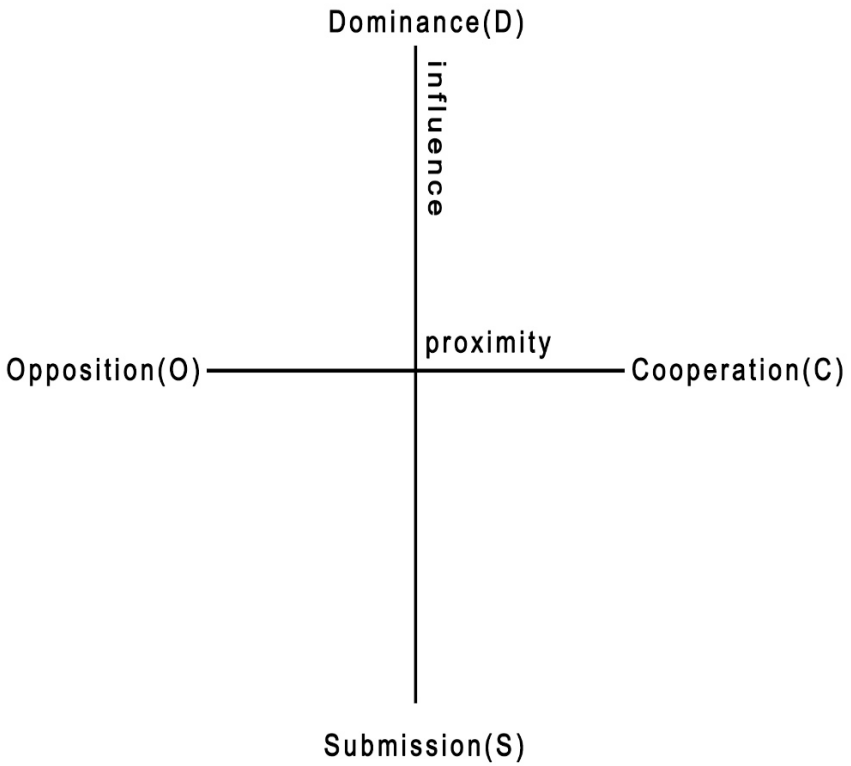

Figure 4 Two-dimensional coordinate system of the model for interpersonal behaviour

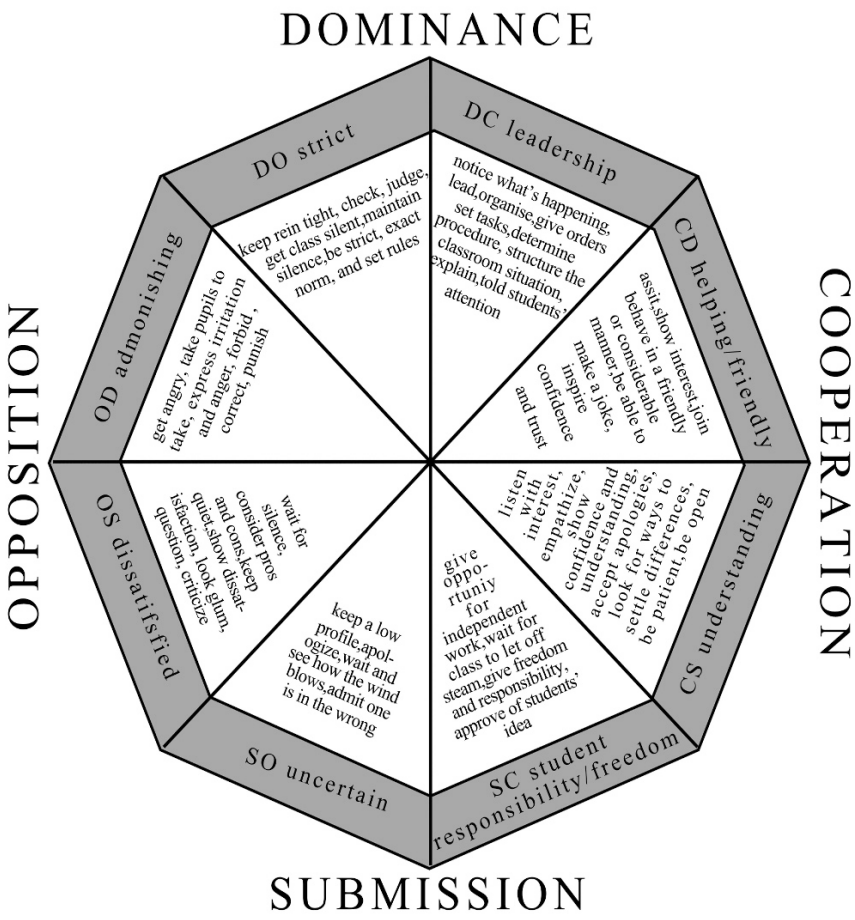

Figure 5 Model for teacher interpersonal behaviour

Brekelmans and Wubbels (2004) examined the effectiveness of secondary education teachers' interpersonal behaviour by analysing data from 2 samples: one study on 45 physics teachers and their 3rd-year classes and the other study on 32 English-as-a-Foreign-Language teachers and their 3rd-year classes. Results indicated that Influence and Proximity were positively related to both subject-specific cognitive and affective outcomes and that teacher interpersonal behaviour explained up to more than half of the variance in student outcomes at the teacher-class level.

6.2.4 Teacher Interpersonal Behaviour in China

Research on teacher interpersonal behaviour in China is too few (see Wei, den Brok, & Zhou, 2009) although Chinese versions of QTI existed, but the investigations happened in Taiwan and Singapore. Trough students' perceptions, his study examined the relationship between English as a Foreign Language (EFL) teachers' interpersonal behaviour ad students' fluency in English in secondary education in secondary education in southwestern China and results showed that teacher uncertainty was negatively correlated with student achievement, that the degree of teacher cooperation with students was the only significant predictor for student achievement, that there was a discrepancy between students' perceptions of preferred and actual teacher interpersonal behaviour, and that the tolerant-authoritative profile was the most common interpersonal style based on Chinese students' perceptions. But this study had not a trace of concentration on affective outcomes. In this aspect, it leaves much more to do for future research.

6.2.5 Trial in Connection with Other Aspects of Learning Environment

Several comparisons of student perceptions of teacher interpersonal behaviour among different cultures or ethnicities indicated the necessity of integrating culture element in learning environment studies. Wubbels and Levy (1989) did a comparison of Dutch and American interpersonal teacher behaviour and their results revealed that Dutch and American teachers displayed the same interpersonal behaviour toward their students in many aspects, that American teachers wanted to be stricter than did their Dutch colleagues, and that Dutch teachers wanted to give students more responsibility and freedom. This implied that Dutch teachers emphasized affective outcomes to a greater degree and that American teachers emphasize cognitive outcomes to a greater degree. Another study by Fisher and his colleagues (1997) investigated gender and cultural

differences in teacher interpersonal behaviour among secondary students in 35 coeducational schools in Western Australia and Tasmania. Their results indicated that generally, the dimensions of the QTI were found to be significantly associated with student attitude scores, that in particular, students' attitude scores were higher in classrooms in which students perceived greater leadership, helping/friendly, and understanding behaviours in their teachers, that Females perceived their teachers in a more positive way than did males, and that students from an Asian background tended to perceive their teachers more positively than those from the other cultural groups used in the study. Furthermore, in the study by den Brok et al. (2006), secondary teacher interpersonal behaviour in Singapore, Brunei and Australia was examined and results showed that differences in teacher influence and proximity existed among the countries. Therefore it is necessary to integrate teacher-student relationships as one aspect of learning environment to be in conjunction with other aspects of learning environment, for example, culture or ethnicity, in research field. Through their research, Fisher, Waldrip and den Brok (2005) concluded that teacher-student relationships are linked to student outcomes both directly and indirectly through associations with other aspects of the learning environment. In their study, Fisher, Waldrip and den Brok involved the QTI in conjunction with another instrument called the cultural learning environment questionnaire (CLEQ) with a large sample of over 3000 Australian primary school students. They found that, first, scores on the QTI were related to scores on the CLEQ and, second, QTI and CLEQ scales each have a joint and separate influence on student outcomes.

Goh and Fraser (1998) reached similar conclusion with primary school students in Singapore. The QTI was used in conjunction with the My Class Inventory (MCI) in their study of students' achievement in and liking of mathematics. Their analysis revealed that the QTI and MCI each made a sizeable unique contribution, and a small common contribution, to the variance in students' liking of mathematics. However, for achievement, there was a relatively large common variance and the QTI accounted for little variance that was unique of that attributable to the MCI. Therefore, they concluded that their study supports the usefulness of including the QTI and MCI together in the same study of attitudinal outcomes but not for a study of achievement outcomes.

In their review, den Brok and Levy (2005) focused on the effects of ethnicity on students' perceptions of teacher interpersonal behaviour and reviewed research in multicultural classes, but also included some investigations of differences in students' perceptions between countries. Their results revealed that ethnicity was consistently associated with students' perceptions of their teachers, that the way teachers communicated varied according to the ethnicity of their students, and that teacher interpersonal behaviour could be more important for immigrant minority students' outcomes than for their indigenous peers.

In short, all these results clearly indicate the necessity for learning environment researchers to think seriously about including other aspects of learning environments, such as cultural elements, in their study designs.

6.2.6 Changes of Teacher-Student Relationships in Teaching Career

Are there any changes in teacher-student relationships across the duration of the teaching career? By using both longitudinal data and a large cross-sectional sample, Brekelmans, Wubbels, and van Tartwijk (2005) explored the importance of teacher experience for building and sustaining teacher-student relationships during the professional career. Results showed that, on average, teachers' ideal perceptions of influence and proximity were rather stable during the career. Teachers' self-perceptions and students' perceptions of proximity in the teacher-student relationship were rather stable as well. Students' and teachers' perceptions of teacher influence on average grew in the first 6 years of the teaching career, but mainly the first three years before this stabilized. Influence also seemed to fall off somewhat towards the end of the career. In contrast, there was negligible change in proximity behaviour throughout the career. Furthermore, Fraser and Walberg (2005) emphasized that the research by Brekelmans, Wubbels, and van Tartwijk (2005) had practical implications for the differentiation of the provision of professional development for teachers at different stages of their careers.

6.2.7 Effects of Teacher Interpersonal Behaviour

As reported by Wubbels and Brekelmans (2005), the Brekelmans' (1989) study with physics teachers investigated the relationship between student outcomes and students' perceptions of teacher-student relationships. Altogether the study identified eight profiles of teachers in terms of their patterns teacher-student interaction: authoritative, directive, drudging, tolerant, repressive, tolerant/authoritative, uncertain/aggressive and uncertain/tolerant. In terms of the interpersonal profiles results showed that, on average, the teacher with a Repressive profile has the highest achievement outcomes. Teachers with disorderly classrooms, the Uncertain/Tolerant, Uncertain/Aggressive, and Drudging profiles reflect relatively low student achievement, whereas Directive, Authoritative and Tolerant teachers have relatively high outcomes. The Authoritative and Directive teachers have the highest student attitude scores. Students of the Drudging, Uncertain/Aggressive and Repressive teachers have the

worst attitudes toward physics. This conclusion again provided practical implications for teacher training.

6.2.8 Different Group Perceptions of Teacher-Student Relationships

Most researchers on teacher-student interaction focused on normal students from regular classes. However, Lapointe, Legault and Batiste (2005) did a study to compare learning disabled, average and talented students in terms of teacher interpersonal behaviour and student motivation in mathematics in two Quebec schools located in the Quebec city area (middle to upper-middle social economic class). It was found that at-risk students consider teachers as more punitive, dissatisfied and uncertain. Gifted students perceived more leadership and teachers being more friendly, understanding and permissive. Lang, Wong and Fraser (2005) studied gifted and non-gifted students in separate streams in Singapore and investigated associations between teacher-student interaction and students' attitudes towards chemistry. Statistically significant gender differences and stream differences (i.e. gifted vs. non-gifted) were observed for numerous QTI scales. Associations were found between the interpersonal behaviour of chemistry teachers and students' enjoyment of their chemistry lessons.

But we should be wise enough to see clearly whether the above mentioned differences happened within-class or between-class. As Fraser and Walberg (2005) warned that it was important to note that in different countries, there were different philosophies running in their school systems respectively: streaming or mainstreaming. For example, in French-speaking Quebec, the philosophy of streaming or setting is applied in that the disabled, average and talented students are educated in separate classes. Therefore, in interpreting the results of the comparison of these three groups of students (disabled, average and talented); it should be alerted that the different groups are in different classes, with different teachers and peer groups. In contrast, some school systems have a philosophy of 'mainstreaming' in which the three groups of students are educated in the same classrooms. For example, Orange and Fraser's (2004) comparison of disabled and non-disabled students in integrated classes in Georgia, USA. The differences would be within-class differences.

6.2.9 Summary

Positive teacher-student relationships are parts of positive classroom learning environment and should be considered both as a means and as an end (Fraser &

Walberg, 2005). When effort is taken to improve positive teacher-student relationships, learning environments are becoming more positive in terms of promoting positive student outcomes, especially affective outcomes. In this sense, a means is meant. However, positive teacher-student relationships could act as an educational goal of making great effort.

It has already been realized that there have been far too few intervention studies in which teachers use feedback from the actual and ideal forms of the QTI to guide their attempts to improve teacher-student interpersonal relationships in their classrooms (Wubbels and Brekelmans, 2005). Meanwhile, as a direction for future research, it has been suggested that such research could be guided by improvement studies involving the use of other learning environment instruments. In terms of research places, China has long been greatly ignored. That is, more research interests in this line or broader lines in learning environments are hungered.

7 Research Goals and Hypotheses

7.1 Why Present Study?

With further enforcement of China's One-Child Policy, the numbers of nuclear families are to be increasing. The vast number of new generation of Chinese only children has become a primary concern of society. The questions often asked are about their academic and psychosocial development. Thus, in present study, with Lewin's (1951) Field Theory, Bronfenbrenner's (1979) Bioecological Systems Theory and Social Network Analysis (Wasserman & Faust, 1994) as theoretical frameworks, three sub-learning environments of social interrelations and chronic self-concept levels are to be examined in connection with some academic and psychosocial development outcomes through the perceptions of the 1980s and 1990s Chinese only-children.at different education levels. Theoretically, on base of these theories, a theoretical model is proposed and through two investigations of the two generation Chinese only children, it is designed to see whether the growth of these Chinese only children fit into the model. Practically, through this field study, it is designed to find how the learning environments, chronic self-concept levels and the learning outcomes studies connect with each other, in order to find some practical implications for parents, teachers, educational practitioners and policy makers.

7.2 Why Are Chronic Self-Concept Levels Investigated?

7.2.1 State of the Person

In Lewin's field theory, it is emphasized that "Psychology has to view the life space, including the person and his environment, as one field." (Lewin, 1951, p.240) Meanwhile in Bronfenbrenner's bioecological systems theory, the biopsychological environment is also among the microsystem. Self-concept belongs to a personality variable and self-concept levels present trait- and state-like characteristics such as chronic self-concept levels and working self-concept levels. That is, self-concept levels have between persons and within persons differences and could act as a state of person-category variables. It is contended

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DOI 10.1007/978-3-658-02226-6_7

that the state of the person could have impact on the person's decision how he should interact with the persons within his learning environments.

7.2.2 Individual, Relational, and Collective Levels of Self-Concept

The self-concept is a multifaceted schema that houses all information relevant to the self (Lord and Brown, 2004). Furthermore, this schema can be divided into different levels. Brewer and Gardner (1996) and others (e.g. Lord et al., 1999) have distinguished among three levels of the self-concept: individual, relational, and collective levels. The individual-level involves interpersonal comparisons where one's sense of uniqueness and self-worth are derived from perceived similarities with and differences from other individuals. At this level, behavior is driven by self-interest (Brewer and Gardner, 1996; Lord et al., 1999 and Markus and Kottayam, 1991). The relational-level is based on the extent to which individuals define themselves in terms of dyadic connections and role relationships with others. At this level, individuals are motivated by the welfare of the specific other, and appropriate role behaviour regarding a specific person determines self-worth (Brewer and Gardner, 1996 and Markus and Kitayama, 1991). The collective-level involves self-definition based on one's social group memberships, where favorable intergroup comparisons give rise to self-worth. At this level, individuals are motivated by the welfare of the groups to which they belong to (Brewer and Gardner, 1996).

7.2.3 Chronic and Working Self-Concepts

Lord and Brown (2004) argued that self-concept could be activated and self-concept activation has both trait- and state-like qualities. The chronic self-concept refers to the relatively time-invariant (i.e., trait-like) accessibility of the individual, relational, and collective levels for a particular person that occurs because different learning histories produce stable differences among people's self-schemas. The working self-concept refers to the situation-specific, moment-to-moment (i.e., state-like) activation of one's self-concept levels (Markus and Wurf, 1987) which is produced by priming factors that vary across situations. Consequently the self-concept level that is currently active will vary across people and over time, along with the goals, attitudes, and information processing styles associated with each level.

7.2.4 Self-Concept and Prior Social Interactions, Social Context and Cultural Influences

With respect to the chronic self-concept, the three levels exhibit different levels of accessibility across different people. For some individuals, one level may even be chronically accessible. This baseline activation associated with the chronic self-concept is the product of social and cognitive development, which is associated with prior social interactions and cultural influences (Oyserman, 2001). For example, the individual self-concept may be chronically salient for members of individualistic cultures. In work contexts, phenomena such as organizational culture and routines contribute to chronic self-concept activation. Moorman and Blakely (1995) found that individuals with collectivistic values and norms (indicating chronic collective self-concept activation) are more likely to perform citizenship behaviours.

However, with respect to the working self-concept, the momentary social context is able to prime different self-concept levels depending on the cues that are currently present (Gardner et al., 1999 and Markus and Kunda, 1986). For example, cues within organizations include aspects of one's current work tasks and the performance feedback that is received. Cues within a social communicational system, such as a family, a peer group or between students and teachers, may include interactional relationships at the dyadic and group level.

7.3 Research Goal

7.3.1 Theoretical Purpose

Present research, first of all, belongs to a theoretically driven research. This investigation was designed to prove a theoretical model (see Figure 6) from bioecological systems and social networks perspectives and through the perceptions of the Chinese only-children. This theoretical model predicted that, when only consider the impact of a separate learning environment, little variance in the Chinese only-children's outcomes could be explained, but only when considering the direct and interaction impacts of the learning environments and biopsychological environment (here the personality variable chronic self-concept taken as examples variables of the biopsychological environment) on the outcomes within the larger settings of culture, public policy, etc., much more variance could

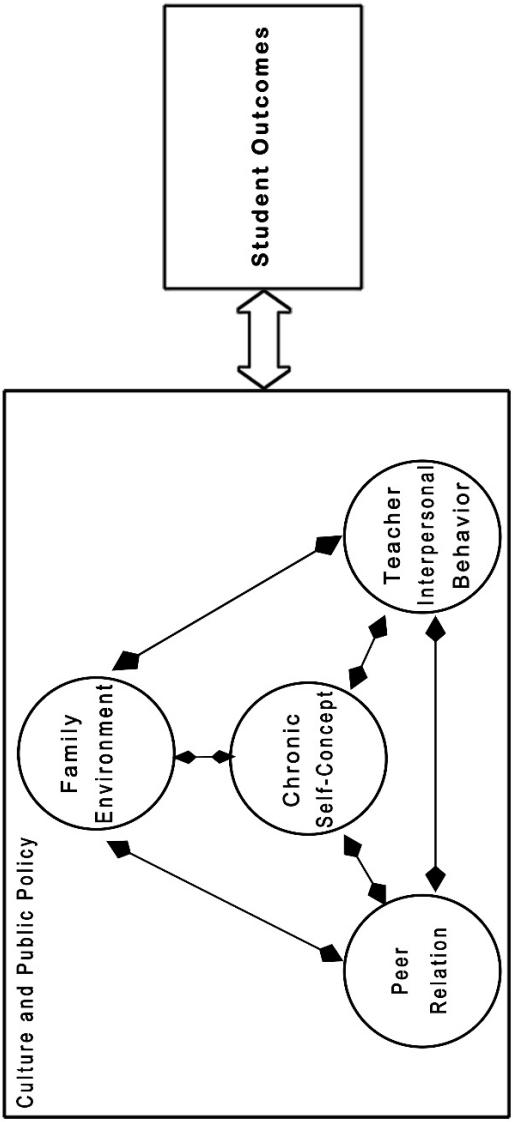

Figure 6 Proposed theoretical model

be explained. Through this theory model, a new way of thinking is provided for learning environment researchers or practitioners in that the specific social context (for example, China's One-Child Policy and Chinese culture) and culture-affected personality together with learning environments could offer greater explanations and/or contributions in explaining student outcomes; in that improvement or change of learning environments and even public policy in practices on basis of student outcomes should be executed from a systems perspective. That is another central idea of systems: the circularity. This implies that all aspects of a system are intertwined and changes in one system will not only affect the others, but will then return like ripples of water moving between river banks.

7.3.2 To Find Whether Differences between 1980s and 1990s Chinese Only Children Exist

As it was mentioned before, seemingly according to the public opinions regarding the 1980s and 1990s Chinese Only Children, there exist differences between them. Present study is going to see whether differences exist in their learning environments, chronic self-concept levels or learning outcomes.

7.3.3 To Find Uniqueness about Chinese Only Children

China's One-Child Policy has been in effect for more than thirty years, through which incidentally a huge laboratory has been created for psychologists, educational scientists, and sociologists. Meanwhile this policy has brought many new topics for education because this policy has altered some aspects of the immediate settings children living in. Therefore, there is a great need for more investigations in the actual settings within such a huge laboratory to find whether some generality exists with Chinese Only Children of different generations in comparison with previous research results of general children and whether some planned changes or reforms are necessary for facilitating the healthy development of this special group.

7.4 Hypotheses

It is important to examine to reach these goals. Based on previous literature review and the present research purposes, the following hypotheses are formulated:

H1: Career orientation would be influenced not only by family environment, but also by chronic self-concept levels; and individual level of chronic self-concept would be more closely related to individual-level-like career orientation, while relational and/or collective levels of self-concept would be more closely related to relational and collective-level-like career orientation.
H2: The impact of peer relations on social competence would be different due to different school groups (junior high group, senior high group and college group).
H3: There would be cross-sex parenting effects on social competence and positive self-esteem.
H4: Differences in father and mother parenting style matches in a family would make a difference in determining their children's learning outcomes.
H5: The three learning environments would alone, but mostly together with students' chronic self-concept levels exert their influences on student outcomes, such as academic achievement goals, social competence and self-esteem.

To further explain what Hypothesis 5 means, some elaborations follows. Theoretically, both Lewin (1951) and Bronfenbrenner (1979, 2005) held that interdependence between the person and environments and between environments themselves should be considered in studying behaviour and development. Furthermore, through Lewin's proposal of psychological ecology, some physical and social environments are considered as components of psychological investigation. But, in essence, he meant that all these physical and social environments must be present "as they are perceived or known" in the psychological field.

Secondly, according to the predictions of social network analysis (Wasserman & Faust, 1994), multiple aspects of student outcomes depend not only on different aspects and quality of the social relations with others, but also the way how they define themselves: in terms of interpersonal comparisons with other individuals, in terms of dyadic connections and role relationships with others, intergroup comparisons and/or interactions between social relations. Entire social structures and substructures may also be seen as displaying high or low levels of impacts as a result of variations in the patterns of ties (social relations) among actors, which

could be very relevant to predicting the behaviour of the network as a whole. For instance, Gifford-Smith and Brownell's (2003) review of peer relations found what happened in peer groups and friendship relations affected children's behaviour, development and the functioning in family, school and community, and that the goings-on in these settings in turn affected children's functioning in their peer groups as well as their behaviour and development. Therefore, social network analysis of students in class, family and community could reveal those with many in degree and out degree relations and hence it is argued by Gifford-Smith and Brownell (2003) that children's psychological development and their behaviours might be best informed by an integration of these independent research traditions.

Nevertheless, learning environment research has a history of approximately 40 years since Walberg developed the Learning Environment Inventory to assess students' perceptions (Walberg & Anderson, 1968) and Moos and Trickett (1974) developed the Classroom Environment Scale. However, in reviewing the previous literature, it was found that almost all researchers concentrated themselves on only one of the traditional learning environments, such as family, classroom climate, teacher-student relations, peer relations and community while important aspects of personal characteristics and the interactions between the person and the traditional learning environments were mostly ignored.

Furthermore, related to the hypotheses are the learning outcome variables that are to be investigated. As one of student outcomes, academic achievement was usually considered as an important one. However, learning condition variables should be considered as important student outcomes as well. Gagné thought that the causes of students' failure in learning were the gaps in their knowledge of the sub-components of the tasks, i.e. the prerequisite skills (Gredler, 1997). Thus, his principal assumption was that there were different kinds of learned outcomes, and that different internal and external conditions were necessary to promote each type (Gagné, 1965，1985). Accordingly five major categories of learning: verbal information, intellectual skills, cognitive strategies, motor skills and attitudes are identified (Gagné, 1985). Hence, attitude learning, as human behaviour, is due to the influence of chronic self-concept levels and peer relations. Meanwhile, as internal learning condition, it influences individuals' choices of activities, engagement and persistence in the activities (Weiner, 1992). Student learning condition variables in current study include career orientation, academic achievement orientation, anxious solitary behaviour, general prosocial orientation and self-esteem.

Educators have long recognized that successful and unsuccessful students usually displayed marked differences not only in academic achievement and ability, but also in certain affective dimensions. But which factors are accountable for the differences? Therefore, present study was designed, first of all, to test the

direct and joint effects of several learing environments and chronic self-concept on student outcomes such as academic achievement goals, anxious solitary behaviour, prosocial behaviour, and self-esteem. Proposed relations were illustrated in the proposed model (see Figure 6). Namely, how learning outcomes of these only children (individual actors) were, was not an individual attribute, but might arise from the direct effects and joint effects of these learning environments and the personal characteristics, such as chronic self-concept in terms of how the individuals defined themselves.

For example, as it is reviewed in relevant literature in chapter 5, peer relations were found to be influential on multiple student outcomes. Even more, Brookover (1962) proposed that student's self-concept of ability functioned as a threshold variable setting limits of achievement for the individual and that significant numbers of students were being needlessly hindered not by lack of ability but by inadequate self-concepts. If Brookover's idea was accepted, a logical conclusion would be that a correct self-concept would subsequently enable an increase in positive learning outcomes and a decrease in negative learning outcomes. Socially, self-concept, which was defined as individuals' understanding of their roles and their personalities, evolved to be understood from a global perspective to a multidimensional perspective. Lord, Brown and Freiberg (1999) distinguished among three levels: individual, relational, and collective levels. And Lord and Brown (2004) argued that self-concept could be activated and self-concept activation had both trait- and state-like qualities. The chronic self-concept refers to the relatively time-invariant (i.e., trait-like) accessibility of the individual, relational, and collective levels for a particular person that occurs because different learning histories produce stable differences among people's self-schemas. The working self-concept refers to the situation-specific, moment-to-moment (i.e. state-like) activation of one's self-concept levels (Markus & Wurf, 1987) which is produced by priming factors that vary across situations. Consequently the self-concept level that is currently active will differ across people and over time, along with the goals, attitudes, and information processing styles associated with each level. Specifically, chronic self-concept and peer relations would not only exert direct, but also indirect impacts on students' self-esteem, academic achievement orientation, anxious solitary behaviour and general prosocial orientation.

In research field, direct and mediating effects of self-concept were found on academic achievement (Guay, Marsh & Boivin, 2003) and on learning conditions (Eisenberg, Martin, & Fabes, 1996).

Peer relations were differentiated as friendship and peer acceptance (Bukowski & Hoza, 1989). Research evidence indicated that peer relations had impact on learning conditions. For instance, some aspects of friendship quality in school, such as intimacy, were found to be connected with academic goal

orientation (Levy-Tossman, Kaplan & Assor, 2007). And neglected peer status was found to be a correlate of adaptive outcomes such as achievement motivation (Wentzel & Asher, 1995). Having a friend, friendship quality, and group acceptance made separate contributions to loneliness (Kingery & Erdley, 2007; Ladd & Coleman, 1997; Parker and Asher, 1993). Similarly, other research results provided support for the unique contribution made by peer relations to social anxiety (Flanagan, Erath & Bierman, 2008), achievement goals, social goals and self-esteem (Nelson & DeBacker, 2008). Moreover, poorly accepted young children were lonelier than other young children (Cassidy & Asher, 1992). Meanwhile, there was evidence (Freud & Dann, 1951) indicating that peers played an essential role in the socialization of interpersonal competence and that both the quantity and quality of friendships predicted changes in children's social competence and adjustment (Bukowski & Hoza, 1989). Studies found that the quality and stability of adolescents' friendships were related not only to their self-esteem, but also to the changes over time in specific areas of self-esteem (Bishop & Inderbitzen, 1995). Moreover, empirical evidence showed links between peer relations and academic achievement as well (Kochenderfer, & Coleman, 1996). Peer relationships had been linked with academic achievement concurrently and longitudinally (Wentzel, 2003； Wentzel & Caldwell, 1997). Furthermore, most children who had positive peer relationships also did well academically (Fantuzzo, Sekino, & Cohen, 2004), and children who were rejected at an early stage by peers tended to encounter more academic difficulties in later years (Ladd, 1990).

Therefore, if the similar logic follows for each learning environment and chronic self-concept, Hypothesis 5 could be divided into the following sub-hypotheses:

H5a: Peer relations as a learning environment would, not only alone, but also together with chronic self-concept levels, influence student learning outcomes.

H5b: Family environment as a learning environment would, not only alone, but also together with chronic self-concept levels, influence student learning outcomes.

H5c: Teacher interpersonal behaviour as a learning environment would, not only alone, but also together with chronic self-concept levels, influence student learning outcomes.

H6: These 3 learning environments would not only have direct, but also joint effects on student outcomes, such as academic achievement goals, social competence and self-esteem as outcome variables.

Finally, so frequently in China, I have been hearing that the generation who were born in the 1970s said, “I don’t like the selfish generation after-1980s—the first generation of China’s only children!” Later on, as the after-1980s generation of only children grows up, I continue to hearing similar remarks: “I don’t like the after-1990s generation only children — the generation of the self-centered!” Therefore, I would be of interest to find whether there is really anything wrong with the two generations with two investigations by researching on the two generations to test all the above mentioned hypotheses by only comparing each studies’ research results concerning the relations between their learning environments and some of their important growing outcomes and how differently these learning environments interact with each other to influence these only children’s growing outcomes.

8 Methodology

8.1 Participants for Two Studies

8.1.1 Participants for Study 1

Participants were investigated in the last half of the year of 2007 in medium-sized to large-sized cities in mid-China and they are 405 Chinese only children including senior high school students (n = 188) coming from mainly mid-China, and college students (n = 217) coming from all over the country, consisted of 44.7% girls and 55.3% boys. The participants ranged in age from 18 to 22 years old, with a median of 19.5 years old. In comparing within their family household's community where they lived, their family economic status belonged to lower (42% of the sample) and middle class (56.8% of the sample). Most of their parents' jobs belonged to conventional jobs, such as ordinary employees in companies, factory workers, farmers or civil servants.

8.1.2. Participants for Study 2

Participants were investigated in the last half of the year of 2013 in small-sized, medium-sized to large-sized cities in east, middle and west of China and they all belonged to the 1990s Chinese only children group (N= 2105, male=1054, female=1051). Among them were 697 college students (female=347, male=350), 704 senior high students (female=350, male=354), and 704 junior high students (female=351, male=353), Age ranged from 13 and 26 years old (M=17.08, SD=3.52). In comparing within their family household's communities where they lived, their family economic status belonged to lower (38% of the sample) and middle class (57.8% of the sample). Most of their parents' jobs belonged to conventional jobs, such as ordinary employees in companies, factory workers, farmers or civil servants.

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8.2 Instrument

The self-report questionnaire in the current two studies includes scales designed to measure three learning environments, student chronic self-concept levels and student outcomes. The three learning environments were teacher interpersonal behaviour; family environment including family cohesion and parenting style of father and mother's; peer relations including peer group acceptance and best friendship quality. And outcome variables were self-esteem, anxious solitary behaviour and prosocial behaviour, academic achievement orientation and career orientation. Most of the items in each scale were adapted from published instruments and only a few of the items were designed by the author. Instruments used in the current study all employed a 5-point Likert scale ranging from 0 (strongly disagree) to 4 (strongly agree).

8.2.1 Questionnaire on Teacher Interaction

This instrument is a short version of the Questionnaire on Teacher Interpersonal Behaviour (QTI) (Wubbels & Levy (1993) including 48 items and was used to measure an average teacher and the favourite teacher's interpersonal behaviour. QTI is designed to measure 2 dimensions (influence and proximity) or eight categories or sectors of teacher interpersonal behaviour: leadership (DC), helpful/friendly behaviour (CD), understanding behaviour (CS), giving responsibility/freedom (SC), and uncertain behaviour (SO), dissatisfied behaviour (OS), admonishing behaviour (OD) and strictness (DO) (for detail, see Section 6.2.2).

8.2.2 Family Cohesion Scale

This scale included 3 items and was designed to measure one important aspect of family relations: family cohesion. And it was partly adapted from Moos and Moos (1981) and partly designed by the author. Here it is:

(a) Family members really help and support one another (adapted from Moos & Moos, 1981).
(b) There is a feeling of togetherness in our family (self-designed).
(c) We are pleased with and proud of being a member in our family (self-designed).

8.2.3 Parenting Authority Questionnaire

This instrument was adopted from Buri (1991) and altogether 30 items were used to classify parenting styles into Baumrind's (1971) groupings of authoritarian (e.g., "My mother felt that wise parents should teach their children early just who is boss in the family."), authoritative (e.g., "As I was growing up I knew what my mother expected of me in my family, but I also felt free to discuss those expectations with my mother when I felt that they were unreasonable."), and permissive (e.g., "As I was growing up, my mother seldom gave me expectations and guidelines for my behaviour.") parenting styles. It was used to measure students' perceptions of their fathers' and mothers' parenting styles.

8.2.4 Peer Group Acceptance

This scale was adapted from the Belonging subscale of Voelkl's (1996) Identification with School Questionnaire and it included 7 items. Sample items are offered here: "I feel proud of being part of my class; and School is one of my favourite places to be." It was used to assess the students' perceptions of the degree, to which they themselves felt they belong to their peer groups. It was reported in the coefficient-alpha reliability for the scores on the subscale belonging was .76 (Voelkl, 1996).

8.2.5 Positive Friendship Quality

This instrument was found from Rose's (2002), being adapted from Parker and Asher's (1993) Friendship Quality Questionnaire to measure students' perceptions of their positive relationship qualities with their best friend at school. This scale included 10 items and the following are sample items: First please write down the name of your very best friend at school and think of this best friend as you complete the following items such as "helps me so I can get done quicker;" "makes me feel good about my ideas;" and so on.

8.2.6 Chronic Self-Concept Scale

This scale was adapt from Selenta & Lord (2005). And it was designed to measure the individual, relational, and collective levels of students' chronic self-concept (for details, see Section 2.3). Sample items in individual level or comparative

identity subscale are “I thrive on opportunities to demonstrate that my abilities or talents are better than others;” and “I often compete with my friends”. In relational level or concern for others subscale, sample items are “If a friend was having a personal problem, I would help him/her even if it meant sacrificing my time or money” and “Knowing that a close other acknowledges and values the role that I play in their life makes me feel like a worthwhile person”. Regarding collective level or group achievement focus subscale, 2 sample items are shown here: “Making a lasting contribution to groups that I belong to, such as my class, is very important to me” and “I feel great pride when my team or group does well, even if I’m not the main reason for its success”. Altogether 15 items, that is, 5 items for each subscale, are included in this instrument.

8.2.7 Academic achievement goals

This instrument was adapted from Elliot and Church (1997) and measured performance approach goal (e.g., “It is important to me to do better than the other students.”, and “My goal in this class is to get a better grade than most of the students.”), mastery goal (e.g., “I want to learn as much as possible from this class.” and “I hope to have gained a broader and deeper knowledge when I am done with this class.”), and performance avoidance goal (e.g., “I often think to myself, ‘What if I do badly in this class?’ ” and “I just want to avoid doing poorly in this class.”). For assessing each of the three goals such as performance goal, mastery goal and avoidance goal, 6 items were included.

8.2.8 Anxious Solitary Behaviour

Anxious solitary behaviour was partly adapted from Gazelle’s measure (Gazelle & Ladd, 2003; Gazelle & Rudolph, 2004) and partly designed by the author herself, which consisted of 8 items: I am a person who “prefers to be alone”, “refuses to talk”, “is too fearful or anxious”, “is worried”, “is nervous, high-strung, or tense”, “is self-conscious or easily embarrassed”, “is shy and timid”, and “is anxious around peers”. This instrument was used to measure whether Chinese only-children hold anxious solitary behaviour since they live in nuclear families and have no siblings and hence later have similar problems when communicating with their peers and teachers.

8.2.9 General Prosocial Orientation

Prosocial behavioural tendency was measured by a newly constructed instrument by being adapted from Cheung et al's (1998) idea of prosocial orientation, which included 4 subscales: (1) Helping Behaviour—tendency to help others in various situations (e.g. "I would spend time and money to help those in need"); (2) Co-operation and Sharing—tendency to co-operate with others to share things with others (e.g. "I welcome other classmates to join in while I am playing"); (3) Affective Relationship—tendency to maintain an affective, friendly, and sympathetic relationship with others (e.g. "I feel very sad when my family member is sick"); and (4) Normative Behaviour—tendency to behave in compliance with the social norm (e.g. "I am very attentive during class lesson"). For these 4 subscales, except for the sample items given for the 4 subscales, 24 newly self-designed items were included as the new Prosocial Orientation Questionnaire. The average of the scores of the four subscales is a measure of the general tendency to perform prosocial acts.

8.2.10 Self-Esteem

Self-Esteem was assessed by Rosenberg's (1965) Self-Esteem Questionnaire containing 5 items positively worded (e.g., I feel that I am a person of worth at least on an equal basis with others) and 5 negatively worded (e.g., All in all, I am inclined to feel that I am a failure). Exploratory factor analysis in present study was conducted on the items of self-esteem scale. It was indicated that the items fell under two factors and confirmed exactly the original two factors: positive and negative self-esteem, which validated the constructs in a different culture.

8.2.11 Six Broad Vocational Orientations

Holland's (1959; 1962; and 1963) Six Broad Vocational Orientations were used to measure students' career orientations, which included the following 6 career orientations:

(1) Motoric orientation (realistic): These people "enjoy activities requiring physical strength, aggressive action, motor coordination and skill" (Holland, 1963, p.36)

(2) Intellectual orientation (investigative): These are “task-oriented people who generally prefer to 'think through,' rather than 'act out,' problems. They have marked needs to organize and understand the world” (Holland, 1963, p.36)
(3) Esthetic orientation (artistic): These people “prefer indirect relations with others. They prefer dealing with environmental problems through self-expression in artistic media. ..They resemble persons with an intellectual orientation in their introspectiveness and lack of sociability” (Holland, 1963, p. 37)
(4) Supportive orientation (social): These people “prefer teaching or therapeutic roles, which may reflect a desire for attention and socialization in a structured, and therefore sage, setting. They possess verbal and interpersonal skills” (Holland, 1963, p.37)
(5) Persuasive orientation (enterprising): These people “prefer to use their verbal skills in situations which provide opportunities for dominating, selling, or leading others. ... They avoid well-defined language or work situations as well as situations requiring long periods of intellectual effort” (Holland, 1963, p. 37)
(6) Conforming orientation (conventional): These people “prefer structured verbal and numerical activities, and subordinate roles. They achieve their goals through conformity” (Holland, 1963, p.37)

8.3 Procedure

8.3.1 Back Translation

The whole questionnaire was translated from English into Chinese by the author. Then a back-translation was done independently by a second translator who is proficient both in Chinese and English and whose first mother language is Chinese and second mother language English by translating the questionnaire from Chinese into English. Through comparison of this translated version in English with the original English version of the questionnaire, equivalence was reached.

8.3.2 Distributing and Collecting Questionnaires

Then the next step is to prepare for the distribution of the questionnaires. After obtaining parent and teacher consent and student assent, the questionnaires were administered in a 45-minute session after students’ regularly scheduled classes, which is normally used by students and teachers for asking and answering

questions or doing exercises for deeper understanding what they have learned in regularly scheduled classes. The study of the 1980s Chinese only children was conducted in natural classes of different senior high schools and universities in middle China from the beginning of June till end of December 2007. And the study of the 1990s Chinese only children was conducted also in natural classes of different junior high and senior high schools, and universities in east, west and middle China from the beginning of June till end of December 2013. Before the questionnaire was distributed, instructions were given in emphasizing that "this questionnaire is not a test, therefore there is no right or wrong answers and the most important thing is to provide true answers!" Instructions about how to mark their answers are also given. Immediately after instructions, Questionnaires were distributed by the author herself. Firstly, students were asked to provide some demographic information about them regarding gender, age, favourite subject, family economic status, mother and father's occupation. Finally, students were asked to answer the questionnaire by marking their answers with a circle. In the Questionnaire, the contents were presented by following this order: Questionnaire on Teacher Interpersonal Behaviour regarding favourite teacher and an average teacher (i.e., most of their teachers) respectively, Parenting Authority Questionnaire regarding of father and mother's parenting styles, Family Cohesion, Peer Group Acceptance, Best Friendship Quality, Levels of Chronic Self-Concept Questionnaire, Academic Achievement Goals, Anxious Solitary Behaviour, General Prosocial Orientation, Self-Esteem and Six Broad Vocational Orientations. The author was present during the process of student answering questionnaires in case there were questions or need of explanations. In about 50 minutes all questionnaires were collected.

9 Analyses and Results

9.1 Descriptive Statistics of Two Studies

9.1.1. Descriptive Statistics and Correlation Coefficients

The descriptive statistics and correlation coefficients for all variables were presented in Table 1, Table 2, Table 3, Table 4 and Table 5. As it was observed in Table 1, almost all of the measures had acceptable levels of reliability with the values of coefficient alpha ranging from .61 and .85, except for one of the subscales of prosocial orientation, i.e., normative behaviour (α = .44). Since prosocial orientation or prosocial behaviour consisted of helping behaviour, sharing and cooperative behaviour, affective relations and normative behaviour and the coefficient alpha of prosocial behaviour was .85, it was determined that in hypotheses testing, only prosocial behaviour was considered and the subscales of prosical behaviour were not considered any more. Therefore it could be concluded that generally the measures used in present study had a good or very good reliability. Meanwhile, an item-by-item analysis was performed to determine if the coefficient alpha could be improved by removing items. The item-total statistics showed that most of the corrected item-total correlations range from .25 to .60. In study 1 and 2, the values of "alpha if item deleted" showed that, if items 12, 13 and 38 in QTI were removed, the coefficient alpha of the subscales such as favourite teacher and average teacher's leadership, admonishing and student responsibility/freedom could be improved; that, if items 13, 21, and 28 in Parental Authority Questionnaires for father and mother were removed, subscales of father permissive parenting style and mother permissive parenting style could be improved; and that, if item 3 and 6 in the scale of peer group acceptance were deleted, the scale of peer group acceptance could be improved. Finally, in order to reach reliable results of analyses, it was determined that all the scale reliabilities were calculated on basis of the improved instrument by deleting the above-mentioned items and all the data analyses were based on these improved scales of measurement as well. Other analyses regarding the dimension and scales of the instruments should refer to results of principle component analyses in this chapter.

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DOI 10.1007/978-3-658-02226-6_9

Table 1 Descriptive statistics of Study 1 and 2

Variables	Item Number	α1	α2	M1	SD1	M2	SD2
FT Leadership behaviour	5	.68	.66	3.47	.57	3.38	.60
FT Understanding behaviour	6	.74	.73	3.47	.60	3.39	.62
FT Uncertain behaviour	6	.68	.73	.88	.73	.93	.78
FT Admonishing behaviour	5	.72	.73	.71	.82	.79	.85
FT Helpful/Friendly behaviour	6	.73	.77	3.43	.61	3.28	.71
FT Responsibility/Freedom behaviour	5	.64	.61	2.99	.73	2.85	.73
FT Dissatisfied behaviour	6	.78	.79	.98	.80	1.01	.85
FT Strict behaviour	6	.59	.69	2.32	.66	2.38	.71
AT Leadership behaviour	5	.73	.67	2.51	.72	2.57	.72
AT Understanding behaviour	6	.76	.72	2.50	.75	2.60	.72
AT Uncertain behaviour	6	.68	.69	1.39	.74	1.37	.77
AT Admonishing behaviour	5	.76	.71	1.50	.90	1.42	.85
AT Helpful/Friendly behaviour	6	.78	.75	2.34	.77	2.45	.76
AT Responsibility/Freedom behaviour	5	.65	.63	2.15	.72	2.21	.74
AT Dissatisfied behaviour	6	.79	.79	1.76	.83	1.66	.90
AT Strict behaviour	5	.60	.70	2.32	.62	2.38	.69
Father permissive parenting style	7	.71	.72	2.24	.74	2.05	.59
Father authoritarian parenting style	10	.71	.71	2.16	.65	2.13	.68

(Continued)

Variables	Item Number	α1	α2	M1	SD1	M2	SD2
Father Authoritative parenting style	10	.82	.81	2.53	.78	2.55	.77
Mother permissive parenting style	7	.70	.71	2.24	.73	2.02	.59
Mother authoritarian parenting style	10	.69	.71	2.15	.63	2.12	.65
Mother Authoritative parenting style	10	.83	.81	2.54	.77	2.52	.76
Family cohesion	3	.83	.85	3.19	.84	3.08	.94
Peer group acceptance	5	.67	.61	2.63	.70	2.58	.64
Best friendship quality	10	.83	.82	2.98	.64	2.94	.69
Individual level of self-concept	5	.68	.73	2.29	.75	2.14	.84
Relational level of self-concept	5	..73	.77	3.38	.59	3.22	.71
Collective level of self-concept	5	.82	.79	3.28	.67	3.11	.74
Performance goal	6	.80	.80	2.44	.80	2.33	.83
Mastery goal	6	.76	.79	3.20	.64	3.10	.71
Avoidance goal	6	.79	.75	1.98	.95	1.91	.90
Anxious solitary behaviour	8	..84	.83	1.96	.88	1.89	.89
Prosocial behaviour	18	.85	.85	2.87	.56	2.85	.57
Positive self-esteem	5	.76	.74	2.85	.71	2.79	.74
Negative self-esteem	5	.71	.72	1.87	.86	1.88	.86

(Continued)

Variables	Item Number	α1	α2	M1	SD1	M2	SD2
Realistic career orientation	1			2.03	1.23	2.04	1.28
Investigative career orientation	1			2.64	1.12	2.55	1.15
Artistic career orientation	1			2.23	1.15	2.16	1.15
Social career orientation	1			2.51	1.08	2.59	1.06
Enterprising career orientation	1			2.59	1.10	2.46	1.20
Conventional career orientation	1			1.80	1.24	1.92	1.29

Note. Because of missing data, for study 1, N ranged from 398 to 405; for study 2, N ranged from 2098 to 2105. FT=favourite teacher; AT= average teacher; α1, M1, and SD1stand for α, M and SD for study 1; α2, M2, and SD2 stand for α, M and SD for study 2.

Table 2 Zero-Order correlations between dependent variables in study 1

ggggfgfgfgfgzvariable	1	2	3	4	5	6	7
1. performance goal	-						
2. mastery goal	.18**	-					
3. avoidance goal	.24**	-.17**	-				
4. anxious solitary behaviour	.20**	-.11*	.43**	-			
5. prosocial behaviour	0	.64**	-.14**	-.21**	-		
6. positive self-esteem	0.08	.47**	-.14**	-.25**	.59**	-	
7. negative self-esteem	0.08	-0.21	.42**	.47**	-.22**	-.35**	-

Note. Because of missing data, N ranged from 398 to 405. FT=favourite teacher; AT=average teacher; ** ρ < .01 (2-tailed); * ρ < .05 (2-tailed)

Table 3 Zero-Order correlations between independent variables in study 1

Variable	1	2	3	4	5	6	7	8
1. father parenting style	-							
2. mother parenting style	.78**	-						
3. family cohesion	.33**	.35**	-					
4. peer group acceptance	.21**	.13*	.28**	-				
5. best friendship quality	.28**	.27**	.34**	.42**	-			
6.individual level of self-concept	.08	.10*	.10*	.15**	.05	-		
7.relational level of self-concept	.20**	.24**	.34**	.26**	.50**	.19**	-	
8.collective level of self-concept	.23**	.25**	.40**	.47**	.50**	.13**	.60**	-
9. FT cooperative behaviour	.16**	.13**	.25**	.20**	.39**	.12**	.40**	.40**
10. FT opposition behaviour	.06	.04	-.18**	-.12*	-.24**	.08	-.25**	-.23**
11. FT strict behaviour	.18**	.20**	.06	.06	-.04	.15**	.01	.03
12. AT cooperative behaviour	.06	.06	.23**	.28**	.16**	.10*	.14**	.26**
13. AT opposition behaviour	.17**	.18**	-.11*	-.17*	-.06	.12*	-.05	-.12*

Note. Because of missing data, N ranged from 398 to 405. FT = favourite teacher; AT = average teacher; ** $\rho < .01$ (2-tailed); * $\rho < .05$ (2-tailed)

Table 4 Zero-Order correlations between independent variable in study 2

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. father parenting style	-											
2. mother parenting style	-.36**	-										
3. family cohesion	.30**	-.34**	-									
4. peer group acceptance	.15**	-.08**	.26**	-								
5. best friendship quality	.18**	-.17**	.41**	.31**	-							
6.individual level	.17**	.15**	.12**	.06**	.09**	-						
7.relational level	.15**	-.18**	.39**	.25**	.53**	.26**	-					
8.collective level	.20**	-.19**	.44**	.33**	.50**	.19**	.63**	-				
9. FT cooperative behaviour	.12**	-.10**	.27**	.21**	.38**	.19**	.50**	.46**	-			
10. FT opposition behaviour	.23**	.15**	-.19**	-.16**	-.27**	.11**	-.32**	-.23**	-.40**	-		
11. AT cooperative behaviour	.23**	-.17**	.24**	.25**	.18**	-0.01	.18**	.24**	.23**	-0.04	-	
12. AT opposition behaviour	.20**	.18**	-.10**	-.14**	-.09**	.22**	-.07**	-.04*	-0.03	.59**	-.28**	-

Note. Because of missing data, N ranged from 2098 to 2105. FT=favourite teacher; AT=average teacher; ** $\rho < .01$ (2-tailed); * $\rho < .05$ (2-tailed)

Table 5 Zero-Order correlations between dependent variables in study 2

variable	1	2	3	4	5	6	7
1. performance goal	-						
2. mastery goal	.19**	-					
3. avoidance goal	.24**	-.11**	-				
4. anxious solitary behaviour	.19**	-.07**	.36**	-			
5. prosocial behaviour	.08**	.57**	-0.03	-.12**	-		
6. positive self-esteem	.17**	.39**	-.05*	-.12**	.54**	-	
7. negative self-esteem	.09**	-.15**	.43**	.43**	-.17**	-.24**	-

Note. Because of missing data, N ranged from 2098 to 2105. FT=favourite teacher; AT=average teacher; ** $\rho < .01$ (2-tailed); * $\rho < .05$ (2-tailed).

9.1.2 Favourite and Average Teacher Interpersonal Behaviour Profiles

Moreover, on basis of the descriptive statistics of favourite teacher and average teacher in study 1 and study 2, the profiles of favourite teacher and average teacher interpersonal behaviour were approximately illustrated in Figure7and Figure 8. In comparison with the two figures, it was obvious that Chinese only children's favourite teachers were characterized with very high level of leadership (Study 1: M=3.47, SD=.57; Study 2: M=3.38, SD=.60), understanding (Study 1: M=3.47, SD=.60; Study 2: M=3.39, SD=.62), helpful and friendly (Study 1: M=3.43, SD=.61; Study 2: M=3.28, SD=.71), responsibility and freedom given behaviour (Study 1: M=2.99, SD=.73; Study 2: M=2.85, SD=.73) and middle level of strict behaviour (Study 1: M=2.32, SD=.66; Study 2: M=2.38, SD=.71), but very low level of uncertain (Study 1: M=.88, SD=.73; Study 2: M=.93, SD=.78), admonishing (Study 1: M=.71, SD=.82; Study 2: M=.79, SD=.85), and dissatisfied behaviour (Study 1: M=.98, SD=.80; Study 2: M=1.10, SD=.85) when they interacted with their students. However, their average teachers, that is, most of their teachers had a profile of middle level of leadership (Study 1: M=2.51, SD=.72; Study 2: M=2.57, SD=.72), understanding (Study 1: M=2.50, SD=.75; Study 2: M=2.60, SD=.72), helpful and friendly (Study 1: M=2.34, SD=.77; Study 2: M=2.45, SD=.76), responsibility and freedom given (Study 1: M=2.15, SD=.72; Study 2: M=2.21, SD=.74) and strict behaviour (Study 1: M=2.32, SD=.62; Study 2: M=2.38, SD=.69), but, relative to favourite teachers, much higher levels of uncertain (Study 1: M=1.39, SD=.74; Study 2: M=1.37, SD=.77), admonishing (Study 1: M=1.50, SD=.90; Study 2: M=1.42, SD=.85), and dissatisfied behaviour (Study 1: M=1.76, SD=.83; Study 2: M=1.66, SD=.90) when they interacted with their students.

Thus, according to the model of Wubbels et al. (1987) (see Figure 4 and 5), a general conclusion could be reached about Chinese only children: It seemed that the dimension of control was not so important as the dimension of proximity because their differentiation of favourite teachers from average teachers was mainly based on whether favourite teachers interacted with students cooperatively, similar middle level of strict behaviour, and less lower level of opposition behaviour. And the dimension of control seemed to have been ignored by these Chinese only children. On the other hand, it might be a reflection of the impact of the One-Child Policy and teacher interpersonal behaviour indicated an orientation of democracy toward students. This was surprising because Chinese culture was hierarchical to a large degree. In the later section of exploratory factor analyses seemed proved this point.

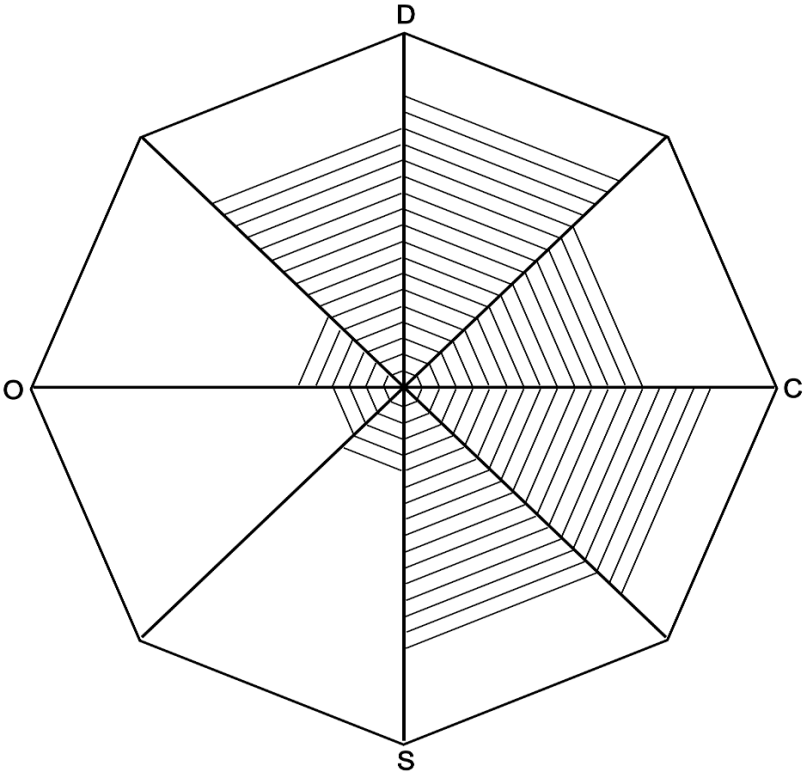

Figure 7 Interpersonal profile of favourite teacher

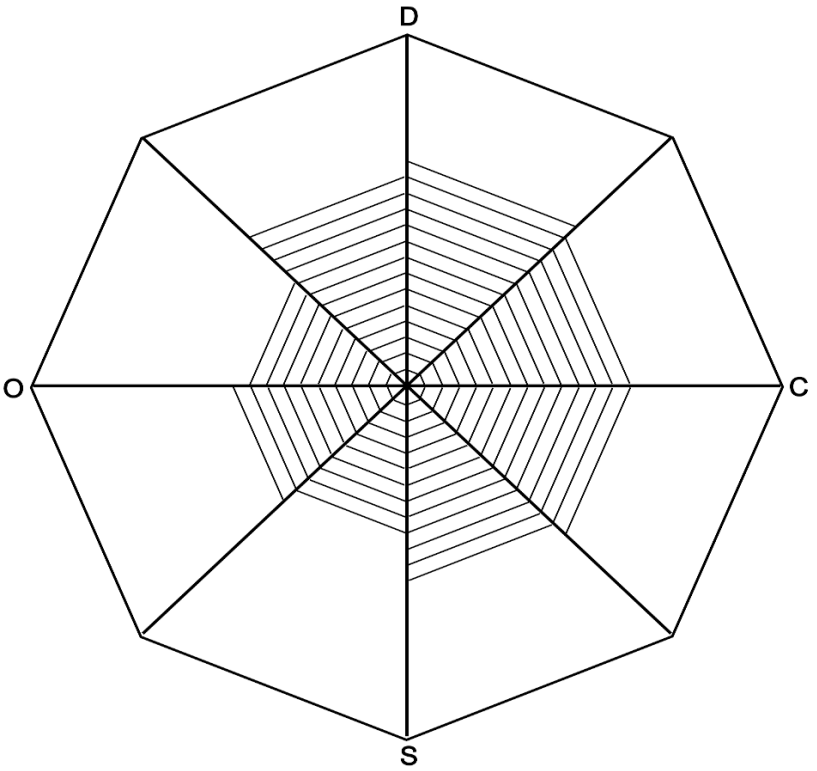

Figure 8 Interpersonal profile of average teacher

9.1.3 Career Orientations of Chinese Only Children

From descriptive statistics in Table 1, a general picture of the career orientations of Chinese only children was that the most welcome career orientations were investigative (Study 1: M = 2.64, SD = 1.12; Study 2: M = 2.55, SD = 1.15), enterprising (Study 1: M = 2.59, SD = 1.10; Study 2: M = 2.46, SD = 1.20), and social career orientations (Study 1: M = 2.51, SD = 1.08; Study 2: M = 2.59, SD = 1.06); and that the least welcome were conventional (Study 1: M = 1.80, SD = 1.24; Study 2: M = 1.92, SD = 1.29), realistic (Study 1: M = 2.03, SD = 1.23; Study 2: M = 2.04, SD = 1.28) and artistic (Study 1: M = 2.23, SD = 1.15; Study 2: M = 2.16, SD = 1.15) career orientations.

9.1.4 Gender Differences

As usual, gender differences were also examined and some gender difference results were reached (see Table 6). There were some differences and similarities when comparing the results of the 1980s generation only children in study 1 and the 1990s generation only children in study 2. In study 1, for the 1980s generation only children, it indicated that gender differences existed in all chronic self-concept levels: male students had significantly higher individual level of self-concept ($F(1, 403) = 4.23$, $\rho<.05$), but significantly lower relational level ($F(1, 403) = 4.20$, $\rho<.05$) and collective level of self-concept ($F(1, 403) = 3.94$, $\rho<.05$) than female students; in general prosocial orientation ($F(1, 399) = 37.83$, $\rho<.001$), male students had very significantly lower levels of prosocial behaviour than female students; in positive self-esteem, male students had also very significantly lower positive self-esteem than female students ($F(1, 403) = 7.83$, $\rho<.01$); and in career orientation, male students had very significantly higher investigative ($F(1, 403) = 15.38$, $\rho<.001$), but significantly lower social career orientations ($F(1, 403) = 5.84$, $\rho<.05$) than female students.

In comparison with the 1980s only children's results, for the 1990s only children in study 2, it indicated that gender differences existed only in individual and relational chronic self-concept levels: male students had significantly higher individual level of self-concept ($F(2, 2103) = 5.00$, $\rho<.01$), but significantly lower relational level ($F(2, 2103) = 2.53$, $\rho<.05$) than female students; in general prosocial orientation ($F(2, 2103) = 9.29$, $\rho<.001$), male students had very significantly lower levels of prosocial behaviour than female students; but in positive self-esteem, no gender difference existed between male and female students ($F(2, 2103) = 1.80$, $\rho>.05$); and in career orientation, male students had

Table 6 Gender differences

Dependent variable	Study 1 male=181 female=224			Study 2 male=1054 female=1051		
	M	SD	F	M	SD	F
Individual SCL	2.38 2.22	0.72 0.77	4.23*	2.23 2.05	0.86 0.8	5.00**
Relational SCL	3.32 3.44	0.63 0.56	4.20*	3.18 3.26	0.73 0.68	2.53*
Collective SCL	3.21 3.34	0.74 0.6	3.94*	3.09 3.14	0.75 0.73	1.46
Prosocial behaviour	2.69 3.02	0.6 0.48	37.83***	2.74 2.96	0.57 0.55	9.29***
Positive self-esteem	2.74 2.94	0.76 0.65	7.83**	2.76 2.82	0.77 0.69	1.8
Investigative career orientation	2.87 2.44	1.06 1.13	15.38***	2.73 2.38	1.13 1.15	7.08***
Social career orientation	2.36 2.63	1.11 1.05	5.84*	2.52 2.66	1.12 0.99	2.97**

Note. Study 1: N= 405; Study 2: N=2105. SCL= self-concept level; *ρ<.05. **ρ<.01. ***ρ<.001.

very significantly higher investigative (F (2, 2103) = 7.08, ρ<.001), but significantly lower social career orientations (F (2, 2103) = 2.97, ρ<.01) than female students.

In sum, although, in comparison with the gender differences of the 1980s Chinese only children, there were less gender differences in the number of outcomes variables among the 1990s Chinese only children, generally, in combination of the two generations' gender difference results, it seemed that Chinese female only-children were more socially oriented than male only children.

9.1.5 Differences between 1980s and 1990s Chinese Only Children

Total group differences existed

Independent samples T tests were conducted to determine if there were total group differences between 1980s and 1990s Chinese only children. If consider the 1980s and the 1990s Chinese only children as a total group respectively, total group differences were found not only in the learning environments and chronic self-concept levels, but also in the learning outcome variables. Specifically, the 1980s Chinese only children were higher than the 1990s Chinese only children in favourite teacher leadership behaviour (for the1980s: M=3.47, SD=.57; for the 1990s: M=3.38, SD=.60; t(2508) = 2.79, ρ<.01), favourite teacher understanding behaviour (for the1980s: M=3.47, SD=.60; for the 1990s: M=3.39, SD=.62; t(2508)=2.48, ρ<.05), favourite teacher helpful/friendly behaviour (for the1980s: M=3.43, SD=.61; for the 1990s: M=3.28, SD=.71; t(2508) = 4.41, ρ<.001), favourite teacher giving responsibility/freedom behaviour (for the1980s: M=2.99, SD=.73; for the 1990s: M=2.85, SD=.73; t(2508) = 3.44, ρ<.01), average teacher dissatisfied behaviour (for the1980s: M=1.76, SD=.83; for the 1990s: M=1.66, SD=.90; t(2508) = 2.27, ρ<.05), family cohesion (for the1980s: M=3.19, SD=.84; for the 1990s: M=3.08, SD=.94; t(2508) = 2.32, ρ<.05), chronic individual level of self-concept (for the1980s: M=2.19, SD=.75; for the 1990s: M=2.14, SD=.84; t(2508) = 3.74, ρ<.001), chronic relational level of self-concept (for the1980s: M=3.38, SD=.59; for the 1990s: M=3.22, SD=.71; t(2508) = 4.82, ρ<.001), chronic collective level of self-concept (for the1980s: M=3.28, SD=.67; for the 1990s: M=3.11, SD=.74; t(2508) = 4.63, ρ<.001), performance goal (for the1980s: M=2.44, SD=.80; for the 1990s: M=2.32, SD=.83; t(2508) = 2.44, ρ<.05), mastery goal (for the1980s: M=3.20, SD=.64; for the 1990s: M=3.10, SD=.71; t(2508) = 2.75, ρ<.01) and prosocial behaviour orientation (for the1980s: M=2.93, SD=.59; for the 1990s: M=2.85, SD=.57; t(2508) = 2.43, ρ<.05). However, the 1980s

Chinese only children were lower than the 1990s Chinese only children in average teacher helpful/friendly behaviour (for the1980s: M=2.34, SD=.75; for the 1990s: M=2.45, SD=.76; t(2508) = -2.58, ρ<.05) and peer group acceptance (for the1980s: M=2.35, SD=.55; for the 1990s: M=2.58, SD=.64; t(2508) = -7.60, ρ<.001) (see Table 7).

No Difference between Same Education Level Subgroups of 1980s and 1990s Chinese Only Children

Although there were senior high schoolers and college students both among the 1980s and 1990s Chinese only children, there included junior high schoolers in the 1990s Chinese only children group. Therefore, it would be meaningful to compare the same education level subgroups: senior high subgroups and college subgroups of the 1980s and 1990s Chinese only children. Two more independent samples of t-tests were conducted to see whether there existed group differences between the 1980s and 1990s senior high students, and between the 1980s and 1990s college students. And no statistically significant differences were found either between the two generations college students and the senior high schoolers (ρ>.05).

Therefore, although, in comparing the 1980s and 1990s Chinese only children, total group differences existed in a number of learning environment, chronic self-concept level, and learning outcome variables, which, to some degree, was reflected in the public opinions. However, when comparing the same education level groups of the 1980s and 1990s Chinese only children, no group differences were found. This might be a reflection of the only children's growing effects. It would be meaningful to see next accurately where the differences existed among the 1980s and 1990s Chinese only children.

Subgroup Differences between 1980s and 1990s Only Children

As can be seen in Table 1 and Table 2, a meaningful pattern of correlations was observed amongst most of the variables, suggesting the appropriateness of a MANOVA. On base of all the learning environment variables, chronic self-concept levels and learning outcome variables and a newly coded variable by integrating the education level group (junior high, senior high and college level) variable and the generation variable (the 1980s and 1990s) Chinese only children, A multivariate analysis of variance (MANOVA) was conducted to see where the group differences existed accurately. A statistically significant MANOVA effect

was obtained (Roy's largest root = .63, partial η2 =.39, F (4, 2492) = 44.46, ρ<.001), which implied that 39% of the variance in the canonically derived dependent variable was accounted for by this newly coded group variable by integration of the education level (junior high, senior high and college level) variable and the generation variable.

A series of one-way ANOVAs (see Table 8) on each of the learning environment, chronic self-concept levels, and learning outcome variables were conducted as follow-up tests to the MANOVA. Except for father authoritarian parenting style and mother authoritarian parenting style, all of the ANOVAs were statistically significant (ρ<.05), with effect sizes (partial eta squared) ranging from a low of .01 (average teacher giving responsibility/freedom) to a high of .11 (peer group acceptance and relational level of self-concept).

Table 7 Total group differences between 1980s and 1990s Chinese Only Children

Outcome	Groups compared	M	SD	T
FT leadership	1980s only children	3.47	.57	2.79**
	1990s only children	3.38	.60	
FT understanding	1980s only children	3.47	.60	2.48*
	1990s only children	3.39	.62	
FT helpful /friendly	1980s only children	3.43	.61	4.41***
	1990s only children	3.28	.71	
FT giving responsibility/freedom	1980s only children	2.99	.73	3.44**
	1990s only children	2.85	.73	
AT helpful /friendly	1980s only children	2.34	.77	-2.58*
	1990s only children	2.45	.76	
AT dissatisfied	1980s only children	1.76	.83	2.27*
	1990s only children	1.66	.90	
family cohesion	1980s only children	3.19	.84	2.32*
	1990s only children	3.08	.94	
Peer group acceptance	1980s only children	2.35	.55	-7.60***
	1990s only children	2.58	.64	

(Continued)

Outcome	Groups compared	M	SD	T
Individual level of self-concept	1980s only children	2.29	.75	
	1990s only children	2.14	.84	3.74***
Relational level of self-concept	1980s only children	3.38	.59	
	1990s only children	3.22	.71	4.82***
Collective level of self-concept	1980s only children	3.28	.67	
	1990s only children	3.11	.74	4.63***
Performance goal	1980s only children	2.44	.80	
	1990s only children	2.33	.83	2.44*
Mastery goal	1980s only children	3.20	.64	
	1990s only children	3.10	.71	2.75**
Prosocial behaviour	1980s only children	2.93	.59	
	1990s only children	2.85	.57	2.43*

Note. 1980s only children: N = 405; 1990s only children: N = 2105. *ρ<.05. **ρ<.01. ***ρ<.001.

Finally, in order to see where the group differences existed, series of Bonferrioni post-hoc analyses (see Table 9) were performed to examine mean difference comparisons between the 1980s senior high group and the 1990s junior high group, senior high group and college group respectively, and between the 1980s college group and the 1990s junior high group, senior high group and college group respectively. Firstly, between the 1980s senior high group and the1990s college group, group differences existed only in peer group acceptance. Specifically, the 1980s senior high group had very significantly lower peer group acceptance than the 1990s college group (Mean d=-.335, ρ<.001). Secondly, between the 1980s senior high group and the 1990s senior high group, in comparison with the 1990s senior high group, the 1980s senior high group was significantly higher in favourite teacher giving responsibility/freedom behaviour (Mean d=-.335, ρ<.001), but significantly lower in favourite teacher dissatisfied behaviour (Mean d=-.207, ρ<.05), average teacher dissatisfied behaviour (Mean d=-.251, ρ<.01),average teacher strict behaviour (Mean d=-.231, ρ<.001), father permissive parenting style (Mean d=-.156, ρ<.01), father authoritative parenting style (Mean d=-.179, ρ<.05), mother permissive parenting style (Mean d=-.195, ρ<.001), and mother authoritative parenting style (Mean d=-.244, ρ<.001). Finally, in comparison with the 1990s junior high group, the 1980s senior high group was significantly higher in favourite teacher leadership behaviour (Mean

Table 8 One-way ANOVAs with compared variables and subgroups of 1980s and 1990s only children as independent variable

Variables	80s college group		90s college group		80s senior high group		90s senior high group		90s junior high group		ANOVAS	
	M	SD	M	SD	M	SD	M	SD	M	SD	F	η^2
FT leadership	3.50	.53	3.49	.50	3.43	.61	3.44	.64	3.22	.61	23.86***	.04
FT understanding	3.50	.58	3.57	.50	3.44	.63	3.45	.63	3.16	.64	45.11***	.07
FT uncertain	.90	.71	.80	.59	.86	.75	.85	.74	1.14	.92	21.12***	.03
FT admonishing	.65	.82	.55	.64	.79	.82	.78	.81	1.05	.98	33.76***	.05
FT helpful /friendly	3.44	.59	3.45	.56	3.41	.64	3.41	.64	2.98	.80	58.69***	.09
FT giving freedom and responsibility	3.06	.73	3.07	.62	2.91	.73	2.89	.74	2.63	.73	38.29***	.06
FT dissatisfied	.87	.73	.82	.70	1.10	.87	1.08	.85	1.14	.94	16.69***	.03
FT strict	2.27	.62	2.19	.58	2.38	.69	2.38	.72	2.56	.76	26.51***	.04
AT leadership	2.45	.77	2.46	.68	2.58	.66	2.57	.70	2.68	.75	9.80***	.02
AT understanding	2.44	.75	2.51	.73	2.57	.74	2.55	.76	2.75	.64	13.49***	.02
AT uncertain	1.48	.71	1.41	.66	1.29	.75	1.32	.76	1.37	.88	2.81*	.00
AT admonishing	1.44	.96	1.34	.78	1.57	.82	1.59	.83	1.33	.92	12.09***	.02
AT helpful /friendly	2.31	.82	2.33	.72	2.38	.71	2.37	.72	2.64	.80	19.00***	.03
AT giving freedom and responsibility	2.13	.73	2.15	.69	2.17	.71	2.15	.73	2.34	.76	8.94***	.01

(Continued)

	80s college group		90s college group		80s senior high group		90s senior high group		90s junior high group		ANOVAS	
Variables	M	SD	M	SD	M	SD	M	SD	M	SD	F	η^2
AT dissatisfied	1.64	.84	1.64	.79	1.90	.80	1.89	.82	1.46	1.02	25.07***	.04
AT strict	2.20	.57	2.29	.59	2.45	.64	2.43	.66	2.38	.79	8.14***	.01
F_permissive	1.96	.56	1.95	.57	2.09	.59	2.12	.61	2.08	.60	9.50***	.02
F_authoritative	2.44	.73	2.50	.73	2.63	.82	2.62	.84	2.54	.72	3.94***	.01
M_permissive	1.92	.63	1.90	.59	2.08	.55	2.11	.58	2.04	.58	13.70***	.02
M_authoritative	2.43	.73	2.47	.73	2.67	.80	2.67	.82	2.40	.70	14.72***	.02
Family cohesion	3.26	.75	3.33	.74	3.10	.93	3.06	.98	2.86	1.01	25.49***	.04
Peer group acceptance	2.40	.52	2.73	.61	2.29	.58	2.29	.59	2.72	.62	74.30***	.11
Best friendship quality	3.02	.56	3.07	.54	2.94	.72	2.94	.75	2.83	.74	11.16***	.02
Individual	2.31	.66	2.29	.74	2.27	.84	2.22	.85	1.91	.88	24.18***	.04
Relational	3.41	.53	3.45	.55	3.35	.66	3.34	.68	2.89	.75	77.52***	.11
Collective	3.32	.59	3.26	.57	3.24	.75	3.25	.76	2.82	.80	48.76***	.07
Performance goal	2.48	.76	2.37	.73	2.39	.85	2.38	.83	2.23	.92	5.53***	.01
Mastery goal	3.18	.61	3.11	.61	3.22	.68	3.23	.71	2.99	.78	12.16***	.02
Avoidance goal	1.95	.95	1.76	.90	2.02	.95	1.97	.94	2.01	.84	8.70***	.01

(Continued)

Variables	80s college group		90s college group		80s senior high group		90s senior high group		90s junior high group		ANOVAS	
	M	SD	M	SD	M	SD	M	SD	M	SD	F	η^2
Anxious solitary behaviour	2.01	.85	1.93	.82	1.91	.92	1.92	.93	1.81	.93	2.88*	.01
Prosocial behaviour	2.89	.59	2.88	.53	2.96	.59	3.00	.62	2.69	.51	28.72***	.04
Positive self-esteem	2.86	.71	2.94	.68	2.84	.71	2.82	.75	2.64	.74	16.17***	.03
Negative self-esteem	1.88	.80	1.74	.80	1.86	.92	1.87	.91	2.01	.84	9.20***	.02

Note. *ρ<.05. **ρ<.01. ***ρ<.001. N = 2497; Partial eta squared; for 80s college group: n=216, 90s college group: n=695, 80s senior high group: n=189, 90s senior high group: n=704, 90s junior high group: n= 693; FT = favourite teacher, AT = average teacher, F=father, M= mother.

Table 9 Mean differences in compared variables between subgroups of 1980s and 1990s Chinese only children on base of education levels

	80sen vs. 90col	80sen vs. 90sen	80sen vs. 90jun	80col vs. 90col	80col vs. 90sen	80col vs. 90jun
FT leadership	.00	.06	.28***	-.06	-.00	.22***
FT understanding	-.07	.06	.34***	-.14	-.01	.27***
FT uncertain	.10	.05	-.24***	.06	.01	-.28***

(Continued)

FT admonishing	.10	-.13	-.40***	.24**	.01	-.26**
FT helpful /friendly	-.02	.03	.46***	-.04	.01	.44***
FT giving responsibility/freedom	-.01	.18*	.43***	-.17*	.02	.28***
FT dissatisfied	.05	-.21*	-.27***	.28***	.02	-.04
FT strict	.08	-.11	-.29***	.19**	.00	-.18*
AT leadership	-.01	-.12	-.24***	.12	.02	-.11
AT understanding	-.07	-.11	-.31***	.06	.02	-.18*
AT uncertain	.07	.16	.11	-.12	-.03	-.08
AT admonishing	.11	-.15	.12	.23*	-.02	.24**
AT helpful /friendly	-.02	-.06	-.33***	.05	.01	-.26***
AT giving responsibility/freedom	-.18	-.02	-.21**	.03	.02	-.17*
AT dissatisfied	.00	-.25**	.18	.27**	.01	.44***
AT strict	-.09	-.23***	-.18**	.16*	.02	.06
F_permissive	.02	-.16**	-.12	.14*	-.03	.00
F_authoritative	-.06	-.18*	-.10	.13	.01	.09
M_permissive	.02	-.20***	-.12	.17**	-.04	.03

(Continued)

M_authoritative	-.05	-.24***	.03	.20*	-.00	.27***
Family cohesion	-.07	.20	.40***	-.23**	.04	.24*
Peer group acceptance	-.34***	.10	-.32***	-.44***	-.01	-.43***
Best friendship quality	-.04	.09	.20**	-.13	-.00	.11
Individual	.03	.10	.41***	-.02	.05	.36***
Relational	-.04	.07	.52***	-.10	.02	.47***
Collective	.07	.07	.50***	-.02	-.01	.42***
Performance goal	.11	.10	.25**	.02	.01	.16
Mastery goal	.08	-.05	.19**	.12	-.01	.23***
Avoidance goal	.19	-.02	-.06	.27**	.05	.01
Anxious solitary behaviour	.07	.09	.20*	-.02	-.00	.10
Prosocial behaviour	.01	-.10	.21***	.09	-.03	.28***
Positive self-esteem	-.08	.04	.23**	-.10	.02	.20**
Negative self-esteem	.15	.01	-.13	.13	-.01	-.15

Note. *ρ<.05. **ρ<.01. ***ρ<.001. N = 2497; for 80col = 80s college group: n=216, 90col = 90s college group: n=695, 80sen = 80s senior high group: n=189, 90sen = 90s senior high group: n=704, 90jun = 90s junior high group: n= 693; FT = favourite teacher, AT = average teacher, F=father, M= mother; All post-hoc comparisons were based on Bonferroni's test.

d=.279, ρ<.001), favourite teacher understanding behaviour (Mean d=.341, ρ<.001), favourite teacher helpful/friendly behaviour (Mean d=.463, ρ<.001), favourite teacher giving responsibility/freedom behaviour (Mean d=.434, ρ<.001), family cohesion (Mean d=.404, ρ<.001), best friendship quality (Mean d=.195, ρ<.01), individual level of self-concept (Mean d=.405, ρ<.001), relational of self-concept (Mean d=.522, ρ<.001), collective level of self-concept (Mean d=.500, ρ<.001), performance goal (Mean d=.252, ρ<.01), mastery goal (Mean d=.194, ρ<.01), anxious solitary behaviour (Mean d=.197, ρ<.05), prosocial behaviour (Mean d=.205, ρ<.01), positive self-esteem (Mean d=.227, ρ<.01), but significantly lower in favourite teacher uncertain behaviour (Mean d=-.243, ρ<.001), favourite teacher admonishing behaviour (Mean d=-.404, ρ<.001), favourite teacher dissatisfied behaviour (Mean d=-.274, ρ<.001), favourite teacher strict behaviour (Mean d=-.293, ρ<.001), average teacher leadership behaviour (Mean d=-.235, ρ<.001), average teacher understanding behaviour (Mean d=-.306, ρ<.001), average teacher helpful/friendly behaviour (Mean d=-.328, ρ<.001), average teacher giving responsibility/freedom behaviour (Mean d=-.214, ρ<.01), average teacher strict behaviour (Mean d=-.183, ρ<.01), and peer group acceptance (Mean d=-.324, ρ<.001). Additionally, some group differences were found between the 1980s college group and 1990s junior high group, senior high group and college group respectively as well. Firstly, in comparison with the 1990s college group, the 1980s college group was significantly higher in favourite teacher admonishing behaviour (Mean d=.239, ρ<.01), favourite teacher dissatisfied behaviour (Mean d=.278, ρ<.001), favourite teacher strict behaviour (Mean d=.188, ρ<.001), average teacher admonishing behaviour (Mean d=.230, ρ<.05), average teacher dissatisfied behaviour (Mean d=.266, ρ<.01), average teacher strict behaviour (Mean d=.161, ρ<.05), father permissive parenting style (Mean d=.140, ρ<.05), mother permissive parenting style (Mean d=.173, ρ<.01), mother authoritative parenting style (Mean d=.198, ρ<.05), and avoidance goal (Mean d=.267, ρ<.01). However, in comparison with the 1990s college group, the 1980s college student group was significantly lower in favourite teacher giving responsibility/freedom behaviour (Mean d=-.165, ρ<.05), family cohesion (Mean d=-.230, ρ<.01), and peer group acceptance (Mean d=-.443, ρ<.001). Secondly, in comparison with the 1990s senior high student group and the 1980s college student group, there was no group difference (ρ>.05). Finally, in comparison with the 1990s junior high student group, the 1980s college student group was significantly higher in favourite teacher leadership behaviour (Mean d=.217, ρ<.001), favourite teacher understanding behaviour (Mean d=.273, ρ<.001), favourite teacher helpful/friendly behaviour (Mean d=.438, ρ<.001), favourite teacher giving responsibility/freedom behaviour (Mean d=.278, ρ<.001), average teacher admonishing behaviour (Mean d=.242, ρ<.01), average teacher dissatisfied

behaviour (Mean d=.443, ρ<.001), mother authoritative parenting style (Mean d=.269, ρ<.001), family cohesion (Mean d=.242, ρ<.05), individual level of self-concept (Mean d=.355, ρ<.001), relational level of self-concept (Mean d=.467, ρ<.001), collective level of self-concept (Mean d=.420, ρ<.001), mastery goal (Mean d=.233, ρ<.001), prosocial behaviour (Mean d=.277, ρ<.001), and positive self-esteem (Mean d=.202, ρ<.01). But in comparison with the 1990s junior high student group, the 1980s college student group was significantly lower in favourite teacher uncertain behaviour (Mean d=-.282, ρ<.001), favourite teacher admonishing behaviour (Mean d=-.261, ρ<.01), favourite teacher strict behaviour (Mean d=-.183, ρ<.05), average teacher understanding behaviour (Mean d=-.180, ρ<.05), average teacher helpful/friendly behaviour (Mean d=-.260, ρ<.001), average teacher giving responsibility/freedom behaviour (Mean d=-.171, ρ<.05), and peer group acceptance (Mean d=-.432, ρ<.001).

In sum, there were no subgroup differences between the 1980s senior high group and the 1990s college group and between the 1980s college group and the 1990s senior high group except that the 1980s senior high group had very significantly higher peer group acceptance than the 1990s college group. Furthermore, although there existed subgroup differences among other subgroups in learning environments and self-concept levels, the subgroup differences in learning outcome variables existed mainly between the 1980s senior high group and the 1990s junior high group, and between the 1980s college group and the 1990s junior high group of Chinese only children.

9.2 Exploratory Factor Analyses

9.2.1 Favourite Teacher Interpersonal Behaviour: Three or Two Components

In order to see whether some constructs hold the same meaning for this Chinese sample and to simplify data analysing, exploratory factor analyses were conducted on items regarding favourite and average teacher interpersonal behaviour, father parenting style, mother parenting style and chronic self-concept levels, using principle component analyses and varimax rotation. The first four principle component analyses were conducted on the 48 items of favourite teacher interpersonal behaviour and average teacher interpersonal behaviour respectively with varimax rotation in study 1 and study 2. In study 1 for investigating the 1980s Chinese only children, the Kaiser-Meyer-Olkin (KMO) measure verified the sampling adequacy for the analyses. For all items of favourite teacher interpersonal behaviour, KMO value = .73, and all KMO values for individual items ranged from .50 and .79. Bartlett's Test of sphericity χ^2 (28) = .001, ρ = .000,

indicated that correlations between items were sufficiently large for principle component analysis. An initial analysis was run to obtain Eigen values for each component in the data. Three components had Eigen values over Kaiser's criterion of 1 and in combination explained 76.19% of the variance in favourite teacher interpersonal behaviour. Table 10 showed the factor loadings after rotation. The items that cluster on the same components suggest that component 1: represents favourite teacher cooperative behaviour, component 2: favourite teacher opposition behaviour, component 3: favourite teacher strict behaviour. The favourite teacher cooperative behaviour and opposition behaviour subscales had high reliabilities (Cronbach's α were .87 and .70 respectively). However, favourite teacher strict behaviour subscale had relatively low reliability (Cronbach's α = .59). In comparison with this measure's original design (Wubbels & Levy, 1993), there are only two dimensions: influence and proximity. But here in the present study. It seemed that the dimension of control in favourite teacher interpersonal behaviour was weakly expressed by strict behaviour by being a third component, but with relatively low scale reliability.

Another factor analysis as above was run with all items of favourite teacher interpersonal behaviour of the 1990s Chinese only children in study 2 as well. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analyses. For all items of favourite teacher interpersonal behaviour, KMO value = .79, and all KMO values for individual items ranged from .40 and .78. Bartlett's Test of sphericity $\chi 2$ (28) = .07, ρ = .000, indicated that correlations between items were sufficiently large for principle component analysis. An initial analysis was run to obtain Eigen values for each component in the data. However, unlike the results in study 1, two components had Eigen values over Kaiser's criterion of 1 and in combination explained 64.73% of the variance in favourite teacher interpersonal behaviour.Table 11 showed the factor loadings after rotation. The items that cluster on the same components suggest that component 1 represents favourite teacher cooperative behaviour, and component 2 represents favourite teacher opposition behaviour. The favourite teacher cooperative behaviour and opposition behaviour subscales had high reliabilities (Cronbach's α were .83 and .75 respectively). In comparison with this measure's original design (Wubbels & Levy, 1993), there are two dimensions: influence and proximity. It seemed that, in study 2, favourite teacher interpersonal behaviour as a construct held the only meaning of the dimension of proximity for the 1990s Chinese only children and the dimension of influence was not expressed. This was, on one hand, surprising when considering the characteristics of the Chinese culture.

Table 10 Factor loadings (>.30) for favourite teacher interpersonal behaviour using principle component analysis and varimax rotation in Study 1

Scale Item Topics	Factor Loadings			Communality
	Factor1: FT cooperative	Factor 2: FT opposition	Factor 3: FT strict	
FT Responsibility/Freedom	**.87**			.81
FT Helpful/Friendly	**.83**			.74
FT Understanding	**.78**	-.37		.75
FT Leadership	**.57**	-.39	.52	.74
FT Uncertain		**.87**		.82
FT Admonishing	-.34	**.76**		.77
FT Dissatisfied	-.39	**.66**		.67
FT Strict			**.88**	.80
Eigen values	3.48	1.25	1.36	6.09
Percent of Variance	32.99	26.56	16.64	76.19
α	.82	.75	.59	

Note. Because of missing data, N ranged from 398 to 405. *ρ<.05. **ρ<.01. ***ρ<.001. FT = favourite teacher

Table 11 Factor loadings (>.30) for favourite teacher interpersonal behaviour using principle component analysis and varimax rotation in Study 2

Scale Item Topics	Factor Loadings		Communality
	Factor1: FT cooperative	Factor 2: FT opposition	
FT Student Responsibility/Freedom	**.76**	.08	.58
FT Helpful/Friendly	**.85**	-.22	.76
FT Understanding	**.80**	-.27	.72
FT Leadership	**.74**	-.23	.61
FT Uncertain	-.25	**.75**	.63
FT Admonishing	-.36	**.81**	.78
FT Dissatisfied	-.27	**.80**	.71
FT Strict	.28	**.56**	.40
Eigen values	3.66	1.52	5.18
Percent of Variance	45.72	19.01	64.73
α	.83	.75	

Note. Because of missing data, N=2105. *ρ<.05. **ρ<.01. ***ρ<.001. FT = favourite teacher

Table 12 Factor loadings (>.30) for average teacher interpersonal behaviour using principle component analysis and varimax rotation in Study 1 and Study 2

Scale Item Topics	Factor Loadings		Communality
	Factor 1: AT cooperative	Factor 2: AT opposition	
AT Leadership	**.85(.78)**	-.21(-.36)	.77(.73)
AT Understanding	**.83(.77)**	-.28(-.33)	.78(.70)
AT helpful/Friendly	**.83(.83)**	-.25(-.21)	.74(.73)
AT Responsibility/Freedom	**.72(.78)**	-.10(.01)	.53(.61)
AT Dissatisfied	-.26(-.16)	**.82(.81)**	.73(.68)
AT Admonishing	.42(-.22)	**.76(.86)**	.75(.79)
AT Uncertain	-.23(-.08)	**.64(.79)**	.47(.63)
AT Strict	.46(.52)	**.59(.40)**	.56(.43)
Eigen values	3.84(3.54)	1.47(1.76)	5.31(5.30)
Percent of Variance	48.03(44.20)	18.40(22.04)	66.43(66.24)
α	.87(.85)	.70(.71)	

Note. The corresponding data reported for study 2 are in brackets. Because of missing data, for study 1, N ranged from 398 to 405, for study 2, N=2105. *ρ<.05. **ρ<.01. ***ρ<.001. AT=average teacher

9.2.2 Two Components of Average Teacher Interpersonal Behaviour

Two components of average teacher interpersonal behaviour were reached for the 1980s and 1990s Chinese only children in both studies. In study 1, for all items of average teacher interpersonal behaviour, KMO value = .82, Bartlett's Test of sphericity χ^2 (28) = .0015, ρ= .000. And all KMO values for individual items ranged from .50 and .84. Two components were reached and in combination explained 66.43% of the variance in average teacher interpersonal behaviour.

In study 2, for all items of average teacher interpersonal behaviour, KMO value = .81, Bartlett's Test of sphericity χ2 (28) = .0720, ρ= .000. And all KMO values for individual items ranged from .43 and .79. Two components were reached and in combination explained 66.24% of the variance in average teacher interpersonal behaviour. Table 12 showed the factor loadings after rotation. The items that cluster on the same components suggested that component 1 represented average teacher cooperative behaviour, component 2 average teacher opposition behaviour. The average teacher cooperative behaviour and opposition behaviour subscales had high reliabilities (Cronbach's α were .85 and .71 respectively). Meanwhile, an item-by-item analysis showed that, if items regarding average teacher strict behaviour were removed, the subscale average teacher opposition behaviour could reach higher reliability (Cronbach's α = .81).

9.2.3 Different Understanding of QTI of Chinese Only Children

Firstly, it seemed that, in Chinese students' understanding of teacher interpersonal behaviour, only the dimension of proximity was strongly felt, but the dimension of control, only in favourite teacher interpersonal behaviour: strict behaviour has a weak trait of being distinct. This was out of expectation in consideration of the traditional views of the Chinese culture.

Secondly, when the results of the above four principle component analyses regarding strict behaviour were considered in combination with the descriptive statistics in Table 1 and the intercorrelation table in regression part regarding strict behaviour of favourite teacher and average teacher, it seemed that there were culturally different understanding of teachers' strict behaviour and that Chinese students considered teachers' strict behaviour as a positive aspect of teacher interpersonal behaviour. This was a desired signal of student understanding of the seemingly ugly strict behaviours of their teachers.

Finally, it should be noted that being a favourite teacher, in comparison with the average teacher, need to have a characteristics of showing strict behaviour to students.

Table 13 Factor loading (>.30) for father parenting style (PSF) using principle component analysis and varimax rotation in Study 1

Scale Item Topics	**Factor loading**	**Communality**
	Factor 1:	
	Father parenting style	
Authoritative PSF	.91	.83
Permissive PSF	.90	.80
Authoritarian PSF	-.27	.07
Eigen values	1.70	1.70
Percent of Variance	56.77	56.77
α	.80	.80

Note. Because of missing data, N ranged from 398 to 405. *ρ<.05. **ρ<.01. ***ρ<.001.

Table 14 Factor loadings (>.30) for mother parenting style (PSM) using principle component analysis and varimax rotation in Study 1

Scale Item Topics	**Factor loading**	**Communality**
	Factor 1:	
	Mother parenting style	
Authoritative PSM	.91	.83
Permissive PSM	.90	.81
Authoritarian PSM		.09
Eigen values	1.73	1.73
Percent of Variance	57.53	57.53
α	.81	.81

Note. Because of missing data, N ranged from 398 to 405. *ρ<.05. **ρ<.01. ***ρ<.001.

Table 15 Factor loadings (>.30) for father parenting style (PSF) using principle component analysis and varimax rotation in Study 2

Scale Item Topics	Factor loading		Communality
	Factor 1: Father permissive-authoritative	Factor 2: Father authoritarian	
Authoritative PSF	**.83**	-.30	.77
Permissive PSF	**.85**	.25	.78
Authoritarian PSF	-.01	**.96**	.93
Eigen values	1.41	1.07	2.48
Percent of Variance	46.84	35.77	82.61

Note: N=2105. *ρ<.05. **ρ<.01. ***ρ<.001.

Table 16 Factor loadings (>.30) for mother parenting style (PSM) using principle component analysis and varimax rotation in Study 2

Scale Item Topics	Factor loading		Communality
	Factor 1: Mother permissive-authoritative	Factor 2: Mother authoritarian	
Authoritative PSM	.83	-.28	.77
Permissive PSM	.84	.25	.77
Authoritarian PSM	.03	.97	.93
Eigen values	1.40	1.07	2.47
Percent of Variance	46.71	35.65	82.36

Note. N=2105. *ρ<.05. **ρ<.01. ***ρ<.001.

9.2.4 Factor Analyses of Father or Mother Parenting Styles

Another four principle component analyses were run on all the items of father and mother parenting styles in study 1 and 2. In study 1 for investigation of the 1980s Chinese only children, for all items of father (KMO value = .50; Bartlett's Test of sphericity χ^2 (3) = 253.013, ρ= .000) and mother parenting styles (KMO value = .51. Bartlett's Test of sphericity χ^2 (3) = 262.806, ρ= .000), one component was reached respectively and only items of permissive and authoritative parenting styles loaded on this component, which explained 56.77% and 57.53% of the variance in father parenting style and mother parenting style respectively (see Table 13 and Table 14). Since permissive and authoritative parenting style items cluster on one component and the component was named as permissive-authoritative parenting style. The father permissive-authoritative parenting style scale and mother permissive-authoritative parenting style scale had high reliabilities (Cronbach's α were .80 and .81 respectively).

In study 2 for investigation of the 1990s Chinese only children, for all items of father (KMO value = .42; Bartlett's Test of sphericity $\chi 2$ (3) = 504.667, ρ= .000) and mother parenting styles (KMO value = .43. Bartlett's Test of sphericity $\chi 2$ (3) = 487.466, ρ= .000), two components were reached respectively and items of permissive and authoritative parenting styles loaded on one component, and authoritarian parenting style on the other component, which explained 82.61% and 82.36% of the variance in father parenting style and mother parenting style respectively (see Table 15 and Table 16). Since permissive and authoritative parenting style items cluster on one component and the component was named as permissive-authoritative parenting style. And authoritarian parenting style loaded on the other component, which was kept to be named as authoritarian parenting style.

The above analyses revealed that the parenting styles of Chinese only children's parents held not pure authoritative parenting style or permissive parenting style, but a mixture of these two styles and the other one, authoritarian parenting style. The difference between the results of factor analyses in study 1 and study 2 was worthy of attention because in study 1, one component permissive-authoritative parenting style was reached while, in study 2, two components of parenting style were reached: permissive-authoritative parenting style and authoritarian parenting style. Why there was such a difference? It might be due to the age group difference in the subjects: in study 1, only older adolescents and younger adults were investigated, but in study 2, besides older adolescents and younger adults, younger adolescents were included as well in the investigation. Because parents might execute different parenting styles due to age differences of their only children. That is, for younger children, authoritarian parenting style

might appear while for older children or younger adults, permissive-authoritative parenting style might be executed.

If we turn to the three theoretical dimensions (i.e., demanding, responsive and psychological control) on which the typology of permissive, authoritative and authoritarian parenting styles were named, it was obvious that the permissive-authoritative parenting style of these Chinese only children's parents were exerting a parenting style of high responsiveness, low psychological control and a level of demandingness, which is lower to some degree than the demandingness of the usual authoritative parenting style. In other words, compared with authoritative parenting style, this permissive-authoritative parenting style is like an authoritative parenting style but with less behavioural control or more freedom given. This change of parenting style probably is a reflection of an impact of China's One Child Policy happening in Chinese culture.

9.2.5 One Component of Chronic Self-Concept Levels

Another two principle component analyses were conducted on all items of chronic self-concept levels in study 1 and 2, and one component was reached for both studies (see Table 17), loaded on by relational level, collective level and individual level of self-concept with loadings respectively (Study 1: KMO value = .53, Bartlett's Test of sphericity χ^2 (3) = 195.347, ρ= .000; Study 2: KMO value = .55, Bartlett's Test of sphericity χ^2 (3) = .012, ρ= .000), which explained 55.88% (in study 1) and 58.66% (in study 2) of variance in chronic self-concept levels. Since individual level of self-concept's loading was very small and its communality was also very small, this component was named as relational-collective self-concept levels and had a high reliability (Study 1: Cronbach's α= .75; Study 2: Cronbach's α= .77). Since the relational and collective levels of chronic self-concept loaded mostly on the scale of relational-collective chronic self-concept, it could be inferred that the impact of Chinese culture was still great on Chinese only-children's chronic self-concept.

But how is the case of Chinese only children's career orientations? Are they still more relational and/or collective like or, to be exact, more socially oriented, on the other end of extreme, more individual-like? (See next section for details).

Table 17 Factor loadings (>.30) for chronic self-concept levels using principle component analysis and varimax rotation in Study 1 and Study 2

Scale Item Topics	Factor loading	Communality
	Factor 1: Relational-collective chronic self-concept level	
Relational level	.88(.88)	.77(.77)
Collective level	.86(.85)	.74(.73)
Individual level	.41(.51)	.17(.26)
Eigen values	1.68(1.76)	1.68(1.76)
Percent of Variance	55.88(58.66)	55.88(58.66)
α	.75(.77)	.75(.77)

Note: Because of missing data, N in study 1 ranged from 398 to 405. In study 2, N=2105; Data reported about study 2 are in brackets; *ρ<.05. **ρ<.01. ***ρ<.001.

Table 18 Factor loadings (>.30) for career orientation (CO) using principle component analysis and varimax rotation in Study 1 and 2

Scale Item Topics	Factor Loadings		Communality
	Factor 1: CO1	Factor 2: CO2	
CO3 Artistic	**.71(.68)**		.51(.47)
CO2 Investigative	**.65**	**(.81)**	.43(.66)
CO6 Conventional	**.61(.69)**		.38(.50)
CO5 Enterprising	**(.48)**	**.71**	.58(.17)
CO4 Social		**.63(.77)**	.47(.60)
CO1 Realistic	**(.48)**	**.63**	.39(.35)
Eigen values	1.47(1.09)	1.29(1.67)	2.76(2.76)
Percent of Variance	24.43(27.78)	21.57(18.23)	46.00(46.01)
α	.58(.60)	.59(.61)	

Note. Because of missing data, N ranged from 398 to 405 in study 1; in study 2, N=2105; Data reported about study 2 are in brackets; *ρ<.05. **ρ<.01. ***ρ<.001.

9.2.6 Two Components of Career Orientation

The final principle component analyses were conducted on all items of career orientation and two components were reached for study 1 and 2, but the component contents for each study are different (see Table 18). In study 1, Artistic, Investigative, and Conventional Career Choices loaded on the first component (loadings were .71, .65, and .61 respectively), named as individual-level-like career orientation; and Enterprising, Social, and Realistic Career Choices loaded on the second component (loadings were .71, .63, and .63 respectively), named as relational and collective-level-like career orientation (KMO value = .52, Bartlett's Test of sphericity χ^2 (3) = 104.092, ρ= .000;). These two components explained 46.00 % of variance. In study 2, Realistic, Artistic, Enterprising and Conventional Career Choices loaded on the first component (loadings were .48, .68, .48 and .69 respectively) named as ACER career orientation; and Investigative and Social Career Choices loaded on the second component and named as Social-Investigative career orientation (loadings were .81, and .77 respectively) (KMO value = .60, Bartlett's Test of sphericity χ^2 (15) = 624.291, ρ= .000). These two components explained 46.01 % of variance in the whole concept of career orientation. But these two components did not have high reliabilities. Hence this result was used only in one of the hypotheses testing in the next section: Career orientation would be influenced not only by family environment, but also by chronic self-concept levels.

9.3 Hypotheses Testing

9.3.1 Impact of Family Environment and Self-Concept on Career Orientation (Hypothesis 1)

Hypothesis 1 predicted that career orientation would be influenced not only by family environment, but also by chronic self-concept levels and interactions between family environment and chronic self-concept levels; and individual level of chronic self-concept would be more closely related to individual-level-like career orientation, while relational and/or collective levels of self-concept would be more closely related to relational and collective-level-like career orientation.

In study 1, two multiple hierarchical regression analyses were run respectively with individual-level-like career orientation and relational and collective-level-like career orientation as dependent variables and with the following 3 blocks of variables as independent variables: family environment variables such as family cohesion, father parenting style and mother parenting

style (1st step), 3 chronic self-concept levels, i.e., individual level, relational level and collective level (2nd step), interactions between family environment variables and 3 chronic self-concept levels (3rd step).

In the regression model with individual-level-like career orientation as dependent variable (see Table 19), among the family environment variables, only family cohesion acted as a significant predictor (ß = .12, ρ = .02) in the 1st step (ΔR^2 = .02, ρ <.05) ; in the 2nd step, only individual level of chronic self-concept (ß = .14, ρ <.01; ΔR^2 = .02, ρ <.05); and in the 3rd step, only correlation between family cohesion and relational level of chronic self-concept (ß = -1.24, ρ <.01; ΔR^2 = .04, ρ <.05) acted as significant predictors of individual-level-like career orientation. The overall model was significant as well (F (15, 389) = 2.29, R^2 = .08, ρ < .01). Therefore, it could be concluded that family cohesion, individual level of chronic-self-concept, and the interaction between family cohesion and relational level of chronic self-concept were important in predicting individual-level-like career orientation.

Meanwhile, in the regression model with relational and collective-level-like career orientation as dependent variable (see Table 19), it was shown that among the family environment variables, only father permissive-authoritative parenting style acted as a significant predictor (ß = .20, ρ = .01) in the 1st step (ΔR^2 = .07, ρ = .000) ; in the 2nd step, only collective level of chronic self-concept (ß = .12, ρ = .047; ΔR^2 = .04, ρ = .000); and in the 3rd step, no significant R^2 change was reached. Therefore, the regression model only include the first two steps of results in Table 19 and this two-step regression model was significant as well (F(6, 398) = 8.19, R^2 = .11, ρ < .001). Therefore, it could be concluded that father permissive-authoritative parenting style, and collective level of chronic-self-concept were capable to predict relational and collective-level-like career orientation. In a word, Hypothesis 1 was proved in study 1.

In study 2, two similar 3-step multiple hierarchical regression analyses as above were conducted, however, on base of the 1990s only children's father and mother parenting style factor analyses (see Table 15 and Table 16), two factors were reached for father and mother parenting styles respectively. In the regression model with ACER (artistic, conventional, enterprising and realistic) career orientation as dependent variable (see Table 20), among the family environment variables, father permissive-authoritative parenting style (ß = .17, ρ = .000) and father authoritarian parenting style (ß = .19, ρ = .000) acted as significant predictors in the 1st step (ΔR^2 = .06, ρ = .000) ; in the 2nd step, family cohesion (ß = -.06, ρ = .02), father permissive-authoritative parenting style (ß = .16, ρ = .000) and father authoritarian parenting style (ß = .18, ρ = .000) and collective level of chronic self-concept (ß = .14, ρ = .000; Δ R^2 = .02, ρ = .000) acted as significant predictors; and in the 3rd step, father authoritarian parenting style (ß =

.59, ρ = .000), mother permissive-authoritative parenting style (ß = .50, ρ = .001), collective level of chronic self-concept (ß = .72, ρ = .000), family cohesion×relational level of chronic self-concept (ß = -.48, ρ = .009), family cohesion×collective level of chronic self-concept (ß = .56, ρ = .001), father permissive-authoritative parenting style ×relational level of chronic self-concept (ß = .73, ρ = .02), father permissive-authoritative parenting style ×collective level of chronic self-concept (ß = -.59, ρ = .03), father authoritarian parenting style ×relational level of chronic self-concept (ß = -.57, ρ = .02), and mother permissive-authoritative parenting style ×collective level of chronic self-concept (ß = -.89, ρ = .000; ΔR^2 = .04, ρ = .000) acted as significant predictors. The overall model was significant as well (F (23, 2102) = 12.11, R^2 = .12, ρ = .000). Therefore, it could be concluded that father authoritarian parenting style, mother permissive-authoritative parenting style, collective level of chronic self-concept, the interaction between family cohesion and relational level of chronic self-concept, the interaction between family cohesion and collective level of chronic self-concept, the interaction between father permissive-authoritative parenting style and relational level of chronic self-concept, the interaction between father permissive-authoritative parenting style and collective level of chronic self-concept, the interaction between father authoritarian parenting style and relational level of chronic self-concept, and the interaction between mother permissive-authoritative parenting style and collective level of chronic self-concept were important in predicting ACER (artistic, conventional, enterprising and realistic) career orientation.

And in the regression model with social-investigative career orientation as dependent variable (see Table 20), among the family environment variables, family cohesion (ß = .22, ρ = .000) and father permissive-authoritative parenting style (ß = .15, ρ = .000) acted as a significant predictor in the 1st step (ΔR^2 = .10, ρ = .000) ; in the 2nd step, family cohesion (ß = .08, ρ = .000) and father permissive-authoritative parenting style (ß = .12, ρ = .000), individual level (ß = .11, ρ = .000), relational level (ß = .09, ρ = .001) and collective level of chronic self-concept (ß = .22, ρ = .000) acted as significant predictors (ΔR^2 = .08, ρ = .000); and in the 3rd step, family cohesion ×collective level of chronic self-concept (ß = -.39, ρ = .01), father authoritarian parenting style × relational level of chronic self-concept (ß = .50, ρ = .02), mother authoritarian × individual level of chronic self-concept (ß = .30, ρ = .02), mother authoritarian × relational level of chronic self-concept (ß = -.87, ρ = .000), and mother authoritarian × collective level of chronic self-concept (ß = -.38, ρ = .04) acted as significant predictors (ΔR^2 = .04, ρ = .000). The overall model was significant as well (F (23, 2102) =

Table 19 Regression of career orientation on family environment variables and self-concept levels in study 1

Step	Predictor	Individual-level-like CO						Relational and collective-level-like CO		
		B	β	B	β	B	β	B	β	B
1	family cohesion	.35	.12*	.30	.11	1.51	.53	.03	.01	-.18
	father_PS	.05	.00	-.01	.00	-.06	-.04	.32	.20*	.32
	mother_PS	-.21	-.12	-.22	-.13	.53	.31	.11	.06	.05
2	Individual			.43	.14**	-.59	-.19			.23
	Relational			-.22	-.06	.57	.14			.41
	Collective			.23	.06	2.02	.58			.41
3	feco × individual					.16	.20			
	feco × relational					-.79	-1.24*			
	feco × collective					.32	.53			
	father_PS × individual					.15	.32			
	father_PS × relational					.09	.23			
	father_PS × collective					-.17	-.44			
	mother_PS × individual					-.06	-.12			
	mother_PS × relational					.23	.59			
	mother_PS × collective					-.42	-1.09			
	ΔR^2	.02*		.02*		.04*		.07***		.04***
	R^2	.02		.04		.08		.07		.11

Note. Because of missing data, N ranged from 398 to 405. *ρ<.05. **ρ<.01. ***ρ<.001. CO = career orientation.

Table 20 Regression of career orientation on family environment variables and self-concept levels in Study 2

Step	Predictor	ACER Career Orientation						Social-Investigative Career Orientation			
		B	β	B	β	B	β	B	β	B	β
1	cohesion	.01	.01	-.05	-.06*	-.03	-.03	.21	.22***	.08	.08***
	Father permissive_authoritative	.21	.17***	.20	.16***	-.01	-.01	.24	.15***	.19	.12***
	Father authoritarian	.20	.19***	.19	.18***	.62	.59***	.04	.03	.00	.00
	Mother permissive_authoritative	-.03	-.03	-.04	-.03	.64	.50**	.03	.02	.02	.02
	Mother authoritarian	.02	.02	.02	.02	-.14	-.13	.04	.03	.02	.01
2	Individual			.00	.01	-.05	-.05			.12	.11***
	Relational			.04	.04	.01	.01			.11	.09**
	Collective			.13	.14***	.70	.72***			.27	.22***
3	cohesion×individual					-.02	-.12				
	cohesion×relational					-.08	-.48**				
	cohesion×collective					.10	.56**				
	Fpermauthv×individual					.00	-.01				

(Continued)

Step	Predictor	ACER Career Orientation						Social-Investigative Career Orientation			
		B	β	B	β	B	β	B	β	B	β
	Fpermauthv×relational					.20	.73*				
	Fpermauthv×collective					-.16	-.59*				
	Fauthoritarian×individual					.05	.19				
	Fauthoritarian×relational					-.15	-.57*				
	Fauthoritarian×collective					-.02	-.06				
	Mpermauthv×individual					.04	.12				
	Mpermauthv×relational					.01	.05				
	Mpermauthv×collective					-.23	-.89***				
	Mauthoritarian×individual					-.04	-.13				
	Mauthoritarian×relational					.05	.19				
	Mauthoritarian×collective					.02	.09				
	ΔR^2	.06***		.02***		.04***		.10***		.08***	
	R^2	.06		.08		.12		.10		.18	

Note. Because of missing data, N ranged from 398 to 405. *ρ<.05. **ρ<.01. ***ρ<.001. CO = career orientation

Table 21 Regression of prosocial behaviour on peer relations and different school groups in Stuy 1

Step	Predictor	prosocial behaviour					
		B	SE B	β	B	SE B	β
1	PGA	.14	.04	.17***	.07	.06	.09
	BFQ	.38	.04	.43***	.40	.06	.46***
	School group	.14	.05	.13**	.01	.25	.01
2	BFQ × school group				.01	.08	-.13
	PGA × school group				.11	.08	.26
	Δ R^2	.28***			.00		
	R^2	28			.28		

Note. Because of missing data, N ranged from 400 and 405; *** ρ<.001. ** ρ < .01. * ρ<.05; PGA = peer group acceptance; BFQ = best f riendship quality; here reference group is college group.

Table 22 Regression of prosocial behaviour on peer relations and different school groups in Study 2

Step	Predictor	Prosocial behaviour					
		B	SE B	β	B	SE B	β
1	PGA	.26	.02	.29***	.24	.03	.27***
	BFQ	.32	.02	.39***	.20	.03	.24***
	college group	.12	.03	.10***	-.42	.14	-.34**
	senior high group	.39	.03	.32***	-.27	.12	-.23*
2	PGA×college group				.08	.04	.20*
	PGA×senior high group				-.02	.04	-.05
	BFQ×college group				.11	.04	.28**
	BFQ×senior high group				.25	.04	.63***
	ΔR^2	.34***			.02***		
	R^2	.34			.36		

Note. N=2105; *** ρ<.001. **ρ< .01. * ρ <.05; PGA = peer group acceptance; BFQ = best friendship quality; here reference group is junior high group.

25.14, $R^2 = .22$, $\rho < .001$). Therefore, it could be concluded that the predictors of social investigative career orientation were family cohesion, father permissive-authoritative parenting style, individual level, relational level, collective level of chronic self-concept, the interaction between family cohesion and collective level of chronic self-concept, the interaction between father authoritarian parenting style and relational level of chronic self-concept, the interaction between mother authoritarian and individual level of chronic self-concept, the interaction between mother authoritarian and relational level of chronic self-concept, and the interaction between mother authoritarian and collective level of chronic self-concept.

It could be concluded that, for the 1980s Chinese only children, they have two very typical career orientation, one of which is more individual like, and the other of which is more social. Regression analyses proved that family cohesion, individual level of chronic-self-concept, and the interaction between family cohesion and relational level of chronic self-concept were important in predicting individual-level-like career orientation, and that father parenting style, and collective level of chronic-self-concept were capable to predict relational and collective-level-like career orientation. However, the 1990s Chinese only children have two career orientations as well, but their career orientation is not so typical as the above mentioned more individual like or relational and collective like, but a mixture of individual like and relational and collective like. In predicting ACER (artistic, conventional, enterprising and realistic) career orientation, father authoritarian parenting style, mother permissive-authoritative parenting style, collective level of chronic self-concept had direct effects, and chronic self-concept exerted their effects through interaction effects between relational family cohesion, father permissive-authoritative, father authoritarian, mother permissive-authoritative and relational and/or collective level of self-concept. On social investigative career orientation, family environment variables, such as family cohesion and father permissive-authoritative parenting style, and all chronic self-concept levels, such as individual level, relational level, collective level of chronic self-concept had direct effects; and the indirect effects were exerted by the interactions between family environment variables, such as family cohesion, father authoritarian and mother authoritarian parenting styles, and chronic self-concept levels. Therefore, Hypothesis 1 was proved.

9.3.2 Testing of School Group Differences (Hypothesis 2)

Hypothesis 2 was about school group differences in the impact of peer relations. It predicted that the impact of peer relations on social competence would be

different due to different school groups (e.g., junior high, senior high group and college group). For example, senior high group students mostly stay together as classmates longer (at least three years) than college group students, the impact of peer relations on them might be greater than on college group.

Based on the data of 1980s Chinese only children in Study 1, several multiple hierarchical regression analyses were conducted with social competence variables as dependent variables and with peer relations, school groups (college group as reference group) and interactions between peer relations and school groups as independent variables. School group and peer relations variables such as peer group acceptance and best friendship quality were entered in the first step; and in the second step, interactions between peer group acceptance and school group, and between best friendship qualities were entered. Analyses indicated that Hypothesis 2 was true with prosocial behaviour (see Table 21). Specifically, as the results in Table 21 illustrated, in the regression model of prosocial behaviour on peer relations and school groups, peer group acceptance (ß = .17, ρ < .001), best friendship quality (ß = .43, ρ <.001), and school group (ß = .13, ρ < .01) acted as significant predictors in the 1st step (ΔR^2 = .28, ρ <.001) ; but when the interaction variables in the 2nd step were considered, the model was not significant (ΔR^2 = .00, ρ >.05).

To further prove hypothesis 2, on base of data of 1990s Chinese only children in Study 2, a multiple hierarchical regression analysis was conducted with prosocial behaviour variable as dependent variables and with peer relations, school groups (junior high as reference group) and interactions between peer relations and school groups as independent variables. School group and peer relations variables such as peer group acceptance and best friendship quality were entered in the first step; and in the second step, interactions between peer group acceptance and school group, and between best friendship qualities were entered. Analyses indicated that Hypothesis 2 was true with prosocial behaviour variables in study 2 as well (see Table 22). Specifically, as the results in Table 22 illustrated, in the regression model of prosocial behaviour on peer relations and school groups, peer group acceptance (ß = .29, ρ < .001), best friendship quality (ß = .39, ρ <.001), senior high group (ß = .32, ρ < .001) and college group (ß = .10, ρ < .001) acted as significant predictors in the 1st step (ΔR^2 = .34, ρ <.001) ; when the interaction variables in the 2nd step were considered, the model was significant as well (ΔR^2 = .02, ρ <.001), significant predictors were peer group acceptance (ß = .27, ρ < .001), best friendship quality (ß = .24, ρ <.001), senior high group (ß = -.23, ρ < .05), college group (ß = -.34, ρ < .01), PGA×college group (ß = .20, ρ < .05), BFQ×college group (ß=.28, ρ<.01), BFQ×senior high group (ß=.63, ρ<.001) and the overall model is significant as well (F(8, 2104)=149.18, R^2=.36, ρ<.001).

Hence, the conclusion is that not only peer relations influence students' social competence, but also being a student of junior high group, senior high group or college group would make great difference in predicting the social competence such as prosocial behaviour. In study 1, among the 1980s Chinese only children, senior high students have higher tendency than college students to behave prosocially, such as helping others, sharing and cooperating with others. In study 2, among 1990s Chinese only children, peer relations have great impacts on prosocial behaviour, and both college group and senior high group are more prosocial than junior high group, in interaction effects between peer relations and school groups, best friendship quality interacted greater than peer group acceptance with college group and senior group than junior high group.

9.3.3 Testing of Cross-Sex Parenting Effects (Hypothesis 3)

Hypothesis 3 predicted that there would be cross-sex parenting effects on social competence and positive self-esteem. Firstly, on base of data of 1980s Chinese only children in study 1, multiple regression analyses were run on social competence variables and positive self-esteem respectively with father parenting style, mother parenting style, gender of students (reference group is male student group), and interaction terms such as "father parenting style × gender" and "mother parenting style × gender" as independent variables entered with forced entry method. Results indicated that (see Table 23): Firstly, the regression model of prosocial behaviour showed that father authoritative parenting style (ß = .29, ρ < .01), mother authoritative parenting style (ß = .35, ρ < .01), student gender (ß = .89, ρ < .001), and the interaction between father authoritative parenting style and student gender (ß = -.52, ρ < .05) were significant predictors and the model is significant as well ($F(5, 395) = 35.20$, $R^2 = .31$, ρ < .001). Secondly, the regression model of positive self-esteem revealed that father authoritative parenting style (ß = .37, ρ < .01) and student gender (ß = .54, ρ < .01) were significant predictors and the model was significant as well ($F (5, 399) = 16.79$, $R^2 = .17$, ρ < .001). However, the interactions between parenting style and student gender were not significant predictor. Therefore, different from previous literature, for this Chinese only children sample, cross-sex parenting effect existed only on prosocial behaviour, not on positive self-esteem. It would be interesting to further explore the reasons for future researchers. Specifically, father authoritative parenting style had significantly greater impact on male students than on female students'

Table 23 Regression results of cross-sex parenting effects in Study 1

Predictor	Prosocial behaviour			Positive SE		
	B	SE B	β	B	SE B	β
Father authoritative	.12	.05	.29**	.19	.06	.37**
Mother authoritative	.14	.04	.35**	07	.06	.14
gender	1.00	.18	.89***	.77	.25	.54**
Fauthoritative×gender	.19	.06	-.52*	-.03	.08	-.12
Mauthoritative×gender	-.03	.06	-.15	-.09	.08	-.34
R^2	.31***			.17***		

Note. Because of missing data, N ranged from 401 and 405. ***.ρ<.001, **.ρ<.01, *. ρ<.05; reference group is male student group. Fauthoritative = father authoritative parenting style; Mauthoritative = mother authoritative parenting style.

Table 24 Regression results of cross-sex parenting effects in Study 2

Predictor	Prosocial behaviour			Positive SE		
	B	SE B	β	B	SE B	β
F-Permissive	-.05	.05	-.06	-.14	.06	-.11*
F-Authoritarian	.10	.03	.12**	.40	.04	.37***
F-Authoritative	.12	.03	.16***	.24	.04	.25***
M-Permissive	.05	.05	.05	.05	.06	.04
M-Authoritarian	-.08	.04	-.09*	-.22	.05	-.19***
M-Authoritative	.23	.04	.30***	.19	.05	.20***
gender	.33	.13	.29**	.37	.17	.25*
F-Permissive ×gender	.27	.07	.51***	.48	.09	.71***
F-Authoritarian×gender	.06	.05	.12	-.32	.07	-.48***
F-Authoritativ×gender	.00	.05	.01	-.04	.06	-.07
M-Permissive×gender	-.18	.07	-.35**	-.29	.09	-.44**
M-Authoritarian×gender	-.06	.05	-.11	.20	.07	.32**
M-Authoritative×gender	-.12	.045	-.28*	-.13	.06	-.24*
R^2	.20***			.18***		

Note. Because of missing data, N ranged from 2103 and 2105. ***.ρ<.001, **.ρ<.01, *. ρ<.05; reference group is male student group. F = parenting style of father; M = parenting style of mother.

prosocial behaviour (ß = -.52, ρ < .05; and male student group as reference group). Secondly, similarly on base of data of 1990s Chinese only children in study 2, multiple regression analyses were conducted on social competence variables and positive self-esteem respectively with father parenting style, mother parenting style, gender of students (reference group is male student group), and interaction terms such as "father parenting style × gender" and "mother parenting style × gender" as independent variables entered with forced entry method. Results indicated that (see Table 24) in study 2, the regression model of prosocial behaviour showed that father authoritarian parenting style (ß = .12, ρ < .01), father authoritative parenting style (ß = .16, ρ < .001), mother authoritarian parenting style (ß = -.09, ρ < .05), mother authoritative parenting style (ß = .30, ρ < .001), student gender (student male group is reference group, ß = .29, ρ < .01), the interaction between father permissive parenting style and student gender (ß = .51, ρ < .05), the interaction between mother permissive parenting style and student gender (ß = -.35, ρ < .01), and the interaction between mother authoritative parenting style and student gender (ß = -.28, ρ < .05) were significant predictors and the model is significant as well ($F(13, 2102) = 39.91$, $R^2 = .20$, ρ < .001) (See Table 24).

In study 2, the regression model of positive self-esteem revealed that father permissive parenting style (ß = -.11, ρ < .05), father authoritarian parenting style (ß = .37, ρ < .001), father authoritative parenting style (ß = .25, ρ < .001), mother authoritarian parenting style (ß = -.19, ρ < .001), mother authoritative parenting style (ß = .20, ρ < .001), student gender (ß = .25, ρ < .05), the interaction between father permissive parenting style and student gender (ß = .71, ρ < .001), the interaction between father authoritarian parenting style and student gender (ß = -.48, ρ < .01), the interaction between mother permissive parenting style and student gender (ß = -.44, ρ < .01), the interaction between mother authoritarian parenting style and student gender (ß = .32, ρ < .01) and the interaction between mother authoritative parenting style and student gender (ß = -.24, ρ < .05) were significant predictors and the model is significant as well ($F(13, 2102) = 39.91$, $R^2 = .18$, ρ < .001) (See Table 24).

Therefore, for this sample of 1990s Chinese only children, same as previous literature, cross-sex parenting effect existed both on prosocial behaviour and positive self-esteem. Specifically, father permissive parenting style had significantly greater impact on female students than on male students in prosocial behaviour (ß = .51, ρ < .001) and in positive self-esteem (ß = .71, ρ < .001); father authoritarian parenting style had significantly greater impact on male students than on female student group in positive self-esteem (ß = .48, ρ < .001) mother permissive (for prosocial behaviour: ß = -.35, ρ < .01; for positive self-esteem: ß = -.44, ρ < .01) and authoritative parenting style (for prosocial behaviour: ß = -.28,

$\rho < .05$; for positive self-esteem: ß = -.24, $\rho < .05$) had greater impact on male students than on female students both in prosocial behaviour and positive self-esteem; and mother authoritarian parenting style had greater impact on female than male student group only in positive self-esteem.

9.3.4 Impact of Different Matches of Father and Mother's Parenting Styles (Hypothesis 4)

Hypothesis 4 posited that differences in father and mother parenting style matches in a family would make a difference in determining their children's learning outcomes. That is, parents or at least one parent in a family should have the right parenting style if they hope their children to have better outcomes, such as academic achievement goals, social competence, or self-esteem.

In study 1, in order to test this hypothesis, with mother and father matching group variable as independent variable, several ANOVAs were conducted with social competence variables, academic achievement goals, positive and negative self-esteem as independent variables respectively. As it is known, through exploratory factor analyses, father and mother parenting styles loaded on one factor (father permissive-authoritative parenting style and mother permissive-authoritative parenting style). In order to create a mother and father matched parenting style group variable (in short: mofa), first of all, mother parenting style group (in short: mother_group) and father parenting style group (in short: father_group) variables were created according to the factor scores by giving a value of "1" to the first half of students having lower permissive-authoritative scores, and giving a value of "2" to the other half having higher permissive-authoritative scores; secondly, based on these mother and father parenting style group variables, another new variable was created to represent a group variable of mother and father matches in parenting styles. Then with ANOVA (GLM) analyses, the newly coded variable representing for the father and mother match in parenting styles was entered as independent variable, and with different dependent variables separately, very significant differences were found on prosocial behaviour ($F(3, 397) = 20.84$, $\rho<.001$, $\eta2 = .14$), mastery goal ($F(3, 401) = 10.89$, $\rho<.001$, $\eta2 = .08$) and positive self-esteem ($F(3, 401) = 13.18$, $\rho<.001$, $\eta2 = .09$). And significant difference was found on negative self-esteem ($F(3, 401) = 3.73$, $\rho<.05$, $\eta2 = .03$) (see Table 25). When referring to descriptive statistics in Table 25, it was obvious that, when both parents in a family held higher permissive-authoritative parenting style to their child, best children outcomes were produced; when both parents presented authoritarian parenting style, worst children outcomes were resulted in; when one parent figure held authoritarian, the

other held permissive-authoritative to their child, children outcomes produced were somewhere in the middle locating between the best outcomes and worst outcomes. Therefore, Hypothesis 4 proved to be true in study 1.

However, in study 2, on base of the data of 1990s Chinese only children, relatively different results were reached (See Table 26). In order to create a mother and father matched parenting style group variable (in short: mofa), same method was applied as the above section. Then with ANOVA (GLM) analyses, the newly coded variable representing for the father and mother matches in parenting style was entered as independent variable, and with respectively different dependent variables such as academic achievement goals, social competence, and self-esteem, very significant differences were found on performance goal ($F(3, 2104) = 21.21$, $\rho<.001$, $\eta2 = .03$), mastery goal ($F(3, 2104) = 38.80$, $\rho<.001$, $\eta2 = .05$), avoidance goal ($F(3, 2104) = 31.13$, $\rho<.001$, $\eta2 = .04$), anxious solitary behaviour ($F(3, 2104) = 29.74$, $\rho<.001$, $\eta2 = .04$) prosocial behaviour ($F(3, 2104) = 68.74$, $\rho<.001$, $\eta2 = .09$), positive self-esteem ($F(3, 2104) = 58.85$, $\rho<.001$, $\eta2 = .08$) and negative self-esteem ($F(3, 2104) = 37.14$, $\rho<.001$, $\eta2 = .05$) (see Table 26). When referring to post hoc test statistics in Table 26, it was obvious that, different from the parents of 1980s Chinese only children results, in study 2, if both parents of the 1990s Chinese only children held permissive-authoritative parenting styles, best outcomes would be reached in comparison with other subgroups only in some of the outcomes, such as performance goal, avoidance goal, but worst outcomes in anxious solitary behaviour. Surprisingly, on the normally desired outcomes such as mastery goal, prosocial behaviour and positive self-esteem, the best match of parenting styles is father authoritarian and mother permissive-authoritative parenting style. In contrast, on these normally desired outcomes such as mastery goal, prosocial behaviour and positive self-esteem, and on the normally undesired learning outcomes, such as avoidance goal, anxious solitary behaviour and negative self-esteem, the worst match of parenting styles is mother authoritarian and father permissive-authoritative parenting style. However, when both parents in the family held authoritarian or permissive-authoritative parenting style, moderate outcomes were produced on the normally desired outcomes, such as mastery goal, prosocial behaviour and positive self-esteem. Therefore, Hypothesis 4 proved to be partly true in study 2 in that, when both parents in a family held authoritative parenting style to their child, best children outcomes were produced only in some learning outcomes.

Table 25 Impact of different matches of father and mother parenting style on children's outcomes in Study 1

Outcome/father and mother PS matches				
Prosocial behaviour	M	SD	F	η^2
A. both parents authoritarian	2.61	.04	20.84***	.14
B. mother authoritarian and father permissive- authoritative	2.96	.08		
C. mother permissive-authoritative and father authoritarian	2.96	.08		
D. both parents permissive-authoritative	3.06	.04		
Mastery goal				
A	3.00	.05	10.89***	.08
B	3.23	.10		
C	3.25	.09		
D	3.38	.05		
Positive Self-Esteem				
A	2.63	.05	13.18***	.09
B	2.87	.11		
C	2.72	.10		
D	3.09	.05		
Negative Self-Esteem				
A	2.03	.07	3.73*	.03
B	1.72	.14		
C	1.97	.13		
D	1.74	.07		

Note. Because of missing data, N ranged from 401 and 405, for group A , n ranged from 153 and 156, for B, n = 39, for C, n ranged from 42 and 43, and for D, n = 167; *** ρ<.001, ** ρ<.01, * ρ<.05.

Table 26 Impact of different matches of father and mother parenting style on Children's outcomes in Study 2

	A		B		C		D				Scheffe Post-Hoc Test[a]
	n = 357		n = 683		n = 649		n = 416		F	η^2	
Outcomes/Matches	M	SD	M	SD	M	SD	M	SD			
Performance goal[b]	2.11	.04	2.33	.03	2.29	.03	2.57	.04	21.21***	.03	D>B.C>A
Mastery goal[b]	3.10	.04	2.92	.03	3.33	.03	3.06	.03	38.80***	.05	C>A.D>B
Avoidance goal[b]	1.63	.05	2.02	.03	1.80	.03	2.17	.04	31.13***	.04	D>B>C>A
Anxious solitary behaviour[b]	1.59	.05	2.02	.03	1.78	.03	2.09	.04	29.74***	.04	D.B>C>A
Prosocial behaviour[b]	2.88	.03	2.63	.02	3.06	.02	2.86	.03	68.74***	.09	C>A.D>B
Positive self-esteem[b]	2.78	.04	2.52	.03	3.01	.03	2.92	.04	58.85***	.08	C>D.A>B
Negative self-esteem[b]	1.59	.04	2.11	.03	1.75	.03	1.95	.04	37.14***	.05	B>D>C>A

Note. N = 2105; A: both authoritarian; B: mother authoritarian and father authoritative; C: mother permissive-authoritative and father authoritarian; D: both permissive-authoritative; b: df = (3, 2104); * p<.05. ** p<.01. *** p<.001.

Table 27 Regression of academic achievement goals on peer relations and self-concept levels in Study 1

Predictor	Perform goal				Mastery goal						Avoidance goal			
	Step 1		Step 2		Step 1		Step 2		Step 3		Step 1		Step 2	
	B	β	B	β	B	β	B	β	B	β	B	β	B	β
PGA	.15	.13*	.07	.06	.11	.12*	-.02	-.02	-.72	-.80**	-.15	-.11*	-.17	-.12*
BFQ	.05	.04	.06	.05	.35	.35***	.10	.10*	.24	.25	-.06	-.04	.03	.02
sclindiv			.60	.56***			.09	.10*	.32	.37			.32	.25***
sclrelat			.03	.03			.29	.27***	.31	.29			-.11	-.07
sclcollect			-.05	-.04			.32	.34***	.04	.04			-.09	-.07
PGA × sclindiv									-.09	-.38				
PGA × sclrelat									.05	.24				
PGA × sclcollect									.15	.80*				
BFQ × sclindiv									.00	.01				
BFQ × sclrelat									-.08	-.42				
BFQ × sclcollect									-.01	-.06				
Δ R^2	.02**		.31***		.17***		.21***		.04***		.02*		.06***	
R^2			.33				.38		.43				.08	

Note. Because of missing data, N ranged from 398 and 405. ***.ρ<.001, **.ρ<.01, *. ρ<.05. PGA=peer group acceptance, BFQ=best friendship quality, sclindiv = individual level of self-concept, sclrelat = relational level of self-concept, sclcollect = collective level of self-concept.

Table 28 Regression of academic achievement goals on favourite teacher interpersonal behaviour and self-concept levels in Study 1

step	predictor	Performance goal				Mastery goal				Avoidance goal			
		B	β	B	β	B	β	B	β	B	β	B	β
1	FT cooperative	.06	.15*	.01	.03	.10	.32***	.03	.08	.01	.03	.02	.05
	FT opposition	.03	.08	.00	.00	-.03	-.10	-.02	-.07	.10	.20***	.08	.16**
	FT strict	.01	.01	-.07	-.06	.10	.10*	.07	.07	.11	.08	.08	.06
2	sclindiv			.61	.56***			.08	.09*			.26	.21***
	sclrelat			.04	.03			.29	.27***			-.06	-.04
	sclcollect			-.01	-.01			.31	.33***			-.16	-.11
	ΔR^2		.02*		.31***		.15***		.25***		.05***		.05***
	R^2				.33				.40				.10

Note. Because of missing data, N ranged from 398 to 405. *ρ<.05. **ρ<.01. ***ρ<.001. It was found that there were no interaction effects between favourite teachers' interpersonal behaviour and self-concept, therefore the result table only show the results of the first two steps. FT = favourite teacher; sclindiv = individual level of self-concept; sclrelat = relational level of self-concept; sclcollect = collective level of self-concept

9.3.5 Testing of Direct and Joint Effects of Learning Environments and Self-Concept Levels on Student Outcomes (Hypothesis 5)

Hypothesis 5 predicted that the three learning environments would alone, but mostly together with students' chronic self-concept levels exert their impacts on student outcomes.

Study 1

In study 1, a series of multiple hierarchical regression analyses were conducted respectively with academic achievement goals, social competence and self-esteem as dependent variables and with the following 3 blocks of variables as independent variables: corresponding learning environment variables (1st block), individual level, relational level and collective level of self-concept (2nd block), and interaction terms between each learning environment variable and self-concept levels (3rd block). Results about these multiple hierarchical regression analyses are presented in the following corresponding tables.

Effects on Academic Achievement Goals

Table 27 showed the results about regression of academic achievement goals on peer relations and self-concept levels. Firstly, in the regression model of performance goal on peer relations and self-concept levels, peer group acceptance acted as a significant predictor (ß = .13, ρ < .05) in the 1st step (ΔR^2 = .02, ρ < .01); in the 2nd step, only individual level of chronic self-concept (ß = .56, ρ < .001; ΔR^2 = .31, ρ < .001) was a significant predictor; and in the 3rd step, no significant R^2 change was reached. Therefore, data reported included only the first two steps in Table 27 and the regression model with these 2 steps was significant as well (F(5, 399) = 39.03, R^2 = .33, ρ < .001). Secondly, in the regression model of mastery goal on peer relations and self-concept levels, peer group acceptance (ß = .12, ρ <.05) and best friendship quality (ß = .35, ρ <.001) were significant predictors in the first step (ΔR^2 = .17, ρ <.001); in the second step (ΔR^2 = .21, ρ <.001), significant predictors were individual level (ß = .10, ρ <.05), relational level (ß = .27, ρ <.001) and collective level (ß = .34, ρ <.001) of self-concept; the interaction between peer group acceptance and collective level of self-concept (ß = .80, ρ <.05) were significant predictors in the third step (ΔR^2 = .04, ρ <.001), and the overall regression model was also significant (F(12, 392) = 24.37, R^2 = .43, ρ < .001). Finally, in the regression model of avoidance goal on peer relations and self-

concept levels, peer group acceptance (ß = .11, ρ <.05) was significant predictor in the first step (ΔR^2 = .02, ρ <.05); individual level of self-concept (ß = .25, ρ <.001) were significant predictors in the second step (ΔR^2 = .02, ρ <.05); and in the 3rd step, no significant R^2 change was reached. Therefore, data reported included only the first two steps in Table 27 and the regression model with these 2 steps was significant as well (F(5, 399) = 7.16, R^2 = .08, ρ < .001).

A conclusion could be reached that peer relations and chronic self-concept levels exert their impacts on student academic achievement goals mainly through their direct effects, while interaction effect between peer relations and chronic self-concept levels (peer groups acceptance × collective level of self-concept) was found only in the impact on mastery goal. Furthermore, more attention should be given to the greater impact of self-concept levels in comparison with the impact of peer relations as a learning environment on academic achievement orientation.

Table 28 showed the regression results of academic achievement goals on favourite teacher interpersonal behaviour and self-concept levels. Due to no significant interaction effects on academic achievement goals in the analyses in the third step, data in the third step were not reported in this table. Firstly, in the regression model of performance goal on favourite teacher interpersonal behaviour and self-concept levels, favourite teacher cooperative behaviour acted as a significant predictor (ß = .15, ρ < .05) in the 1st step (ΔR^2 = .02, ρ <.05); in the 2nd step, only individual level of chronic self-concept (ß = .56, ρ < .001; ΔR^2 = .31, ρ < .001) and the regression model with these 2 steps was significant as well (F(6, 398) = 32.30, R^2 = .33, ρ < .001). Secondly, in the regression model of mastery goal on favourite teacher interpersonal behaviour and self-concept levels, favourite teacher cooperative behaviour (ß = .32, ρ <.001) and favourite teacher strict behaviour (ß = .10, ρ <.05) were significant predictors in the first step (ΔR^2 = .15, ρ <.001); in the second step (ΔR^2 = .25, ρ <.001), individual level (ß = .09, ρ <.05), relational level (ß = .27, ρ <.001) and collective level (ß = .33, ρ <.001) of self-concept acted as significant predictors and the regression model including these two steps of favourite teacher interpersonal behaviour and self-concept levels was also significant (F(6, 398) = 43.12, R^2 = .40, ρ < .001). Finally, in the regression model of avoidance goal on favourite teacher interpersonal behaviour and self-concept levels, favourite teacher opposition behaviour (ß = .20, ρ <.001) was significant predictor in the first step (ΔR^2 = .05, ρ <.001); individual level of self-concept (ß = .21, ρ <.001) was also a significant predictor in the second step (ΔR^2 = .05, ρ <.001) and the model including two steps was also significant (F(6, 398) = 7.15, R^2 = .10, ρ < .001).

A conclusion again could be reached that some aspects of favourite teacher interpersonal behaviour and chronic self-concept levels exert impacts on student academic achievement goal orientation through their direct effects. It was obvious

that chronic self-concept levels contribute more than or at least equally with (e.g., on avoidance goal) favourite teacher interpersonal behaviour in terms of the variance explained in academic goals.

In comparison with the effect of favourite teacher interpersonal behaviour and self-concept levels, Table 29 revealed the results about regression of academic achievement goals on average teacher interpersonal behaviour and self-concept levels. Firstly, in the regression model of performance goal on average teacher interpersonal behaviour and self-concept levels, average teacher cooperative behaviour (ß = .18, ρ < .01) and average teacher opposition behaviour (ß = .15, ρ < .01) acted as significant predictors in the 1st step (ΔR^2 = .03, ρ <.01); in the 2nd step, only individual level of chronic self-concept (ß = .55, ρ < .001; ΔR^2 = .30, ρ < .001); in the third step, no significant R^2 was reached. Anyway, the regression model with the first 2 steps was significant as well (F (5, 399) = 38.87, R^2 = .33, ρ < .001). Secondly, in the regression model of mastery goal on average teacher interpersonal behaviour and self-concept levels, average teacher cooperative behaviour (ß = .19, ρ <.01) was a significant predictor in the first step (ΔR^2 = .03, ρ <.01); in the second step (ΔR^2 = .35, ρ <.001), individual level (ß = .08, ρ <.05), relational level (ß = .30, ρ <.001) and collective level (ß = .36, ρ <.001) of self-concept acted as significant predictors; in the third step (ΔR^2 = .02, ρ <.05) and the overall model was significant as well (F (5, 399) = 49.06, R^2= .40, ρ < .001). Finally, in the regression model of avoidance goal on average teacher interpersonal behaviour and self-concept levels, average teacher opposition behaviour (ß = .22, ρ <.001) was a significant predictor in the first step (ΔR^2 = .05, ρ <.001); individual level of self-concept (ß = .22, ρ <.001) was also a significant predictor in the second step (ΔR^2 = .06, ρ <.001); in the third step (ΔR^2 = .03, ρ <.05), interaction terms AT (average teacher) cooperative behaviour × individual level (ß = -.54, ρ <.05) and AT opposition behaviour ×individual level (ß = -.54, ρ <.05) were significant predictors and the overall model was significant as well (F(11, 393) = 5.40, R^2 = .14, ρ < .001).

In sum, some aspects of average teacher interpersonal behaviour and chronic self-concept levels exert impacts on student academic achievement goal orientation through direct effects and interaction effects and again chronic self-concept levels contribute more than average teacher interpersonal behaviour in terms of the variance explained in academic goals. Furthermore, average teacher interpersonal behaviour seemed to have more interactions with student chronic self-concept levels than favourite teacher interpersonal behaviour.

In Table 30, results were revealed about the regression of academic achievement goals on family environment (i.e., family cohesion, father and mother parenting styles) and self-concept levels. Firstly, in the regression model of performance goal on family environment and self-concept levels, the model with

the first step ($\Delta R^2 = .01$, $\rho > .05$) was not significant, in the second step ($\Delta R^2 = .32$, $\rho < .001$), significant predictors were found to be mother authoritative parenting style ($ß = -.14$, $\rho < .05$) and individual level of self-concept ($ß = .56$, $\rho < .001$), and the third step did not reach a significant R^2 change ($\rho > .05$), but the regression model including the first two steps was significant as well ($F(6, 398) = 32.82$, $R^2 = .33$, $\rho < .001$). Secondly, in the regression model of mastery goal on family environment and self-concept levels, family cohesion ($ß = .14$, $\rho < .01$) and mother parenting style ($ß = .17$, $\rho < .05$) were significant predictors in the first step ($\Delta R^2 = .12$, $\rho < .001$); in the second step ($\Delta R^2 = .29$, $\rho < .001$), individual level ($ß = .09$, $\rho < .05$), relational level ($ß = .29$, $\rho < .001$) and collective level ($ß = .35$, $\rho < .001$) of self-concept acted as significant predictors; in the third step ($\Delta R^2 = .03$, $\rho < .05$), family cohesion ($ß = -.70$, $\rho < .01$), mother authoritative parenting style ($ß = .91$, $\rho < .05$), and interaction between family cohesion and collective level of self-concept ($ß = .85$, $\rho < .05$) were significant predictors and the overall model was significant as well ($F (15, 389) = 19.81$, $R^2 = .44$, $\rho < .001$). Finally, in the regression model of avoidance goal on family environment and self-concept levels, the first step and third step did not reach a significant R^2 change, and only the second step reached a significant model ($F (3, 398) = 10.60$, $R^2 = .07$, $\rho < .001$) and significant predictors were individual level ($ß = .24$, $\rho < .001$) and collective level ($ß = -.14$, $\rho < .05$) of self-concept. Generally, family environment variables seemed to have no contribution to performance goal and avoidance goal, but family environment, especially family cohesion and mother authoritative parenting style explained 12% of variance in mastery goal. Still chronic self-concept contributed much more than family environment to all the three academic achievement goals.

In sum, in terms of the direct effects of each of the three learning environments on academic goal orientation, almost all of them (except family environment on avoidance goal) made little contribution to the explanation of the variance in either performance goal or avoidance goal (explaining variance ranging from 2% and 5%), but peer relations, favourite teacher interpersonal behaviour and family environment had great impact (explaining variance ranging from 12% and 15%) on mastery goal. In terms of the direct effects of chronic self-concept on academic orientation, greater impacts were found on performance goal and mastery goal (explaining variance ranging from 21% and 35%), while on avoidance goal, the impact was relative much smaller (somewhat around 5% of variance explained). Finally, except for favourite teacher interpersonal behaviour, the interaction effects between chronic self-concept and each of the 3 learning environments existed mainly on mastery goal and avoidance goal, but the effect size was quite small although significant (around 2 or 3% of variance explained).

Table 29 Regression of academic achievement goals on average teacher interpersonal behaviour and self-concept levels in Study 1

Predictor	Performance goal				Mastery goal					
	Step 1		Step 2		Step 1		Step 2		Step 3	
	B	β	B	β	B	β	B	β	B	β
AT cooperative	.06	.18**	.03	.08	.05	.19**	.01	.03	-.05	-.21
AT opposition	.21	.15**	.05	.04	.10	.08	.07	.07	.56	.49*
sclindiv			.59	.55***			.07	.08*	.25	.30
sclrelat			.06	.04			.33	.30***	-.24	-.22
sclcollect			-.02	-.01			.34	.36***	.91	.95**
AT cooperative × sclindiv									-.02	-.30
AT cooperative × sclrelat									.07	1.17**
AT cooperative × sclcollect									-.04	-.71
AT opposition × sclindiv									-.01	-.02
AT opposition × sclrelat									-.03	-.10
AT opposition × sclcollect									-.11	-.38
ΔR^2	.03**		.30***		.03**		.35***		.02*	
R^2			.33				.38		.40	

(Continued)

Predictor	Avoidance goal					
	Step 1		Step 2		Step 3	
	B	β	B	β	B	β
AT cooperative	.00	.00	.00	-.01	.26	.69*
AT opposition	.36	.22***	.29	.17**	-.24	-.14
sclindiv			.27	.22***	1.21	.96**
sclrelat			-.10	-.06	-.30	-.19
sclcollect			-.14	-.10	-.20	-.14
AT cooperative × sclindiv					-.05	-.54*
AT cooperative × sclrelat					-.04	-.47
AT cooperative × sclcollect					.00	.02
AT opposition × sclindiv					-.25	-.54*
AT opposition × sclrelat					.31	.72
AT opposition × sclcollect					.01	.02
Δ R^2	.05***		.06***		.03*	
R^2			.11		.14	

Note: Because of missing data, N ranged from 398 to 405. *ρ<.05. **ρ<.01. ***ρ<.001; AT = average teacher; sclindiv = individual level of self-concept, sclrelat = relational level of self-concept, sclcollect = collective level of self-concept; AT cooperative = average teacher cooperative behaviour; AT opposition = average teacher opposition behaviour

Table 30 Regression of Achievement Goals on Family Environment and Self-Concept Levels in Study 1

Predictor	Performance goal				Mastery goal						Avoidance goal			
	Step 1		Step 2		Step 1		Step 2		Step 3		Step 1		Step 2	
	B	β	B	β	B	β	B	β	B	β	B	β	B	β
feco	.08	.08	.03	.03	.11	.14**	-.06	-.07	-.53	-.70**	.01	.01	.06	.08
father_PS	.07	.11	.06	.11	.05	.11	.05	.10	-.04	-.09	.01	.01	.01	.01
mother_PS	-.06	-.10	-.08	-.14*	.08	.17*	.05	.10	.42	.91*	-.01	-.02	-.01	-.01
sclindiv			.60	.56***			.07	.09*	.07	.08			.30	.24***
sclrelat			.06	.04			.31	.29***	.46	.42			-.11	-.07
sclcollect			.00	.00			.33	.35***	.19	.20			-.20	-.14*
feco × sclindiv									-.02	-.10				
feco × sclrelat									.03	.15				
feco × sclcollect									.14	.85*				
father_PS × sclindiv									-.01	-.07				
father_PS × sclrelat									.08	.70				

(Continued)

Predictor		Performance goal				Mastery goal					Avoidance goal			
		Step 1		Step 2		Step 1		Step 2		Step 3		Step 1		Step 2	
		B	β	B	β	B	β	B	β	B	β	B	β	B	β
father_PS sclcollect	×									-.04	-.42				
mother_PS sclindiv	×									.02	.19				
mother_PS sclrelat	×									-.12	-1.09				
mother_PS ×sclcollect										-.01	-.14				
Δ R^2			.01		.32***		.12***		.29***		.03*				.07***
R^2					.33				.41		.44				.07

Note. Because of missing data, N ranged from 398 to 405. *ρ<.05. **ρ<.01. ***ρ<.001. father_PS = father parenting style; mother_PS = mother parenting style; feco = family cohesion. sclindiv = individual level of self-concept, sclrelat = relational level of self-concept, sclcollect = collective level of self-concept.

Table 31 Regression of Social Competence on Peer Relations and Self-Concept Levels in Study 1

predictor	anxious solitary behaviour				prosocial behaviour					
	step 1		step 2		step 1		step 2		step 3	
	B	β	B	β	B	β	B	β	B	β
PGA	-.31	-.25***	-.29	-.23***	.13	.16**	.05	.07	-.46	-.57
BFQ	-.13	-.09	-.05	-.04	.37	.42***	.18	.21***	-.06	-.07
sclindiv			.19	.16**			-.02	-.03	.24	.32
sclrelat			-.04	-.02			.26	.27***	-.47	-.49*
sclcollect			-.15	-.12			.22	.26***	.02	.03
PGA × sclindiv									-.03	-.17
PGA × sclrelat									.16	.90*
PGA × sclcollect									.05	.29
BFQ × sclindiv									-.05	-.25
BFQ × sclrelat									.11	.63
BFQ × sclcollect									.04	.21
ΔR^2		.09***		.03**		.26***		.15***		.03**
R^2				.12				.41		.44

Note. Because of missing data, N ranged from 398 to 405. *ρ<.05. **ρ<.01. ***ρ<.001. PGA = peer group acceptance, BFQ = best friendship quality, sclindiv = individual level of self-concept, sclrelat = relational level of self-concept, sclcollect = collective level of self-concept

Table 32 Regression of social competence on FT interpersonal behaviour and self-concept levels in Study 1

predictor	Anxious solitary behaviour				prosocial behaviour					
	step 1		step 2		step 1		step 2		step 3	
	B	β	B	β	B	β	B	β	B	β
FT cooperative	-.01	-.03	.02	.04	.07	.26***	.01	.02	.07	.24
FT opposition	.07	.15**	.05	.11*	-.03	-.09	-.01	-.03	.20	.70*
FT strict	.20	.15**	.20	.15**	.13	.15**	.12	.14**	.30	.35
sclindiv			.12	.10*			-.04	-.05	.46	.62
sclrelat			-.01	-.01			.31	.32***	.34	.36
sclcollect			-.32	-.24***			.29	.34***	.46	.55
FT cooperative × sclindiv									-.04	-.88**
FT cooperative × sclrelat									.04	.84
FT cooperative × sclcollect									-.03	-.66
FT opposition × sclindiv									-.02	-.16
FT opposition × sclrelat									-.05	-.57
FT opposition × sclcollect									.00	-.02
FT strict × sclindiv									.05	.24
FT strict × sclrelat									-.17	-.81*
FT strict × sclcollect									.09	.43
ΔR^2	.06***		.06***		.11***		.28***		.04**	
R^2			.12				.39		.43	

Note. Due to missing data, N ranged from 398 to 405. *ρ<.05. **ρ<.01. ***ρ<.001. FT=favourite teacher; sclindiv=individual level of self-concept, sclrelat=relational level of self-concept, sclcollect=collective level of self-concept

Effects on Social Competence

Table 31 presented results of regression of social competence on peer relations and chronic self-concept levels. Firstly, in the regression model of anxious solitary behaviour on peer relations and self-concept levels, peer group acceptance acted as a significant predictor (ß = -.25, ρ < .001) in the 1st step (ΔR^2 = .09, ρ < .001); in the 2nd step (ΔR^2 = .03, ρ < .01), peer group acceptance kept to be a significant predictor (ß = -.23) and new predictor was individual level of chronic self-concept (ß = .16, ρ < .01); and in the 3rd step, no significant R^2 change was reached. Therefore, data reported included only the first two steps in Table 31 and the regression model with the first 2 steps was significant as well (F(5, 399) = 11.04, R^2 = .12, ρ < .001). Secondly, in the regression model of prosocial behaviour on peer relations and self-concept levels, peer group acceptance (ß = .16, ρ <.01) and best friendship quality (ß = .42, ρ <.001) were significant predictors in the first step (ΔR^2 = .26, ρ <.001); in the second step (ΔR^2 = .15, ρ <.001), best friendship quality kept to be significant predictor (ß = .21, ρ <.001) and new significant predictors were relational level (ß = .27, ρ <.001) and collective level (ß = .26, ρ <.001) of self-concept; relational level of self-concept (ß = -.49, ρ <.05) and the interaction between peer group acceptance and relational level of self-concept (ß = .90, ρ <.05) were significant predictors in the third step (ΔR^2 = .03, ρ <.01), and the overall regression model was significant as well (F(12, 388) = 25.66, R^2 = .44, ρ < .001).

Teacher interpersonal behaviour as a learning environment may exert influence on students' social competence as well. Next task is to test a sub-hypothesis of Hypothesis 5: Alone or together with students' chronic self-concept levels, favourite teacher interpersonal behaviour would also influence students' social competence and especially they would have more impact on students' prosocial behaviour. Table 32 showed the results of regression of social competence on favourite teacher interpersonal behaviour and self-concept levels. Firstly, in the regression model of anxious solitary behaviour on favourite teacher interpersonal behaviour and self-concept levels, favourite teacher opposition behaviour (ß = .15, ρ < .01) and favourite teacher strict behaviour (ß = .15, ρ < .01) acted as significant predictors in the 1st step (ΔR^2 = .06, ρ <.001); the 3rd step did not reach a significant R^2 change and results were not reported. The regression model only including the first two steps was significant as well (F (6, 398) = 8.40, R^2 = .12, ρ <.001). Secondly, in regression model of prosocial behaviour on favourite teacher interpersonal behaviour and self-concept levels, favourite teacher cooperative behaviour (ß = .26, ρ <.001) and favourite teacher strict behaviour (ß = .15, ρ <.01) were significant predictors in the first step (ΔR^2= .11, ρ <.001); in the second step (ΔR^2 = .28, ρ <.001), favourite teacher strict behaviour

(ß = .14, ρ <.01), relational level (ß = .32, ρ <.001) and collective level (ß = .34, ρ <.001) of self-concept acted as significant predictors; in the third step (ΔR^2 = .04, ρ <.01), significant predictors were favourite teacher opposition behaviour (ß = .70, ρ <.05), interaction between favourite teacher cooperative behaviour and individual level of self-concept (ß = -.88, ρ <.01), and interaction between favourite teacher strict behaviour and relational level of self-concept (ß = -.81, ρ <.05) and the overall regression model was significant as well (F(15, 385) = 19.48, R^2 = .43, ρ < .001).

In comparison with the effect of favourite teacher interpersonal behaviour and self-concept levels, the following table revealed the results about regression of social competence on average teacher interpersonal behaviour and self-concept levels (see Table 33). Firstly, in the regression model of anxious solitary behaviour on average teacher interpersonal behaviour and self-concept levels, average teacher cooperative behaviour (ß = -.12, ρ < .05) and average teacher opposition behaviour (ß = .14, ρ < .01) acted as significant predictors in the 1st step (ΔR^2 = .05, ρ <.001); in the 2nd step (ΔR^2 = .06, ρ < .001), significant predictors were average teacher opposition behaviour and individual level of chronic self-concept (ß = .13, ρ < .01); in the third step (ΔR^2 = .03, ρ <.05), significant predictors were average teacher cooperative behaviour (ß = .68, ρ < .05) and interaction between average teacher opposition behaviour and individual level of self-concept; and the overall regression model was significant as well (F (11, 393) = 5.60, R^2 = .14, ρ < .001). Secondly, in the regression model of prosocial behaviour on average teacher interpersonal behaviour and self-concept levels, average teacher cooperative behaviour (ß = .12, ρ <.05) and opposition behaviour (ß = .13, ρ <.05) were significant predictors in the first step (ΔR^2 = .02, ρ <.05); in the second step (ΔR^2 = .37, ρ <.001), significant predictors were average teacher opposition behaviour (ß = .13, ρ <.01), relational level (ß = .33, ρ <.001) and collective level (ß = .38, ρ <.001) of self-concept; in the third step (ΔR^2 = .05, ρ <.001), average teacher cooperative (ß = -.95, ρ <.01), opposition behaviour (ß = .87, ρ <.001), interaction between average teacher cooperative behaviour and relational level of self-concept (ß = 1.10, ρ <.01), and interaction between average teacher opposition behaviour and relational level of self-concept (ß = -.74, ρ <.05) were significant predictors; and the overall model was significant as well (F (11, 389) = 27.26, R^2 = .44, ρ < .001).

In Table 34, results were revealed about the regression of social competence on family environment (i.e., family cohesion, father and mother parenting styles) and self-concept levels. Since in all the regression models of social competence variables, third step did not reach a significant R^2 change, data were not reported in the Table 34. Firstly, in the regression model of anxious solitary behaviour on family environment and self-concept levels, family cohesion was a significant

predictor in the first step (ΔR^2 = .02, ρ <.05); in the second step (ΔR^2 = .06, ρ <.001), significant predictors were found to be collective level (ß = -.22, ρ < .001) and individual level of self-concept (ß = .14, ρ < .01); the third step did not reach a significant R^2 change (ρ >.05), but the regression model including the first two steps was significant as well (F(6, 398) = 5.82, R^2 = .08, ρ < .001). Secondly, in the regression model of prosocial behaviour on family environment and self-concept levels, family cohesion (ß = .11, ρ <.05) and mother parenting style (ß = .32, ρ <.001) were significant predictors in the first step (ΔR^2 = .21, ρ <.001); in the second step (ΔR^2 = .25, ρ <.001), family cohesion (ß = -.09, ρ <.05), mother parenting style (ß = .25, ρ <.001), relational level (ß = .30, ρ <.001) and collective level (ß = .33, ρ <.001) of self-concept acted as significant predictors; in the third step no significant R^2 change was reached, but the regression model including the first two steps was significant as well (F (6, 394) = 56.52, R^2 = .46, ρ < .001). Thirdly, in the regression model of helping behaviour on family environment and self-concept levels, family cohesion (ß = .13, ρ <.05), father parenting style (ß = .15, ρ <.05) and mother parenting style (ß=.24, ρ <.01) were significant predictors in the first step (ΔR^2=.18, ρ<.001); father parenting style (ß=.14, ρ <.05), mother parenting style (ß=.18, ρ <.01), relational level (ß=.26, ρ <.001) and collective level (ß=.25, ρ <.001) were significant predictors in the second step (ΔR^2=.17, ρ <.001); the third step did not reach a significant R^2 change, but the regression model including only the first two steps was significant as well (F (6, 395) = 35.46, R^2 = .35, ρ <.001). Fourthly, the regression model of sharing and cooperation behaviour on family environment and self-concept levels, family cohesion (ß = .11, ρ <.05) and mother parenting style (ß = .24, ρ <.01) were significant predictors in the first step (ΔR^2 = .14, ρ <.001); mother parenting style (ß = .18, ρ <.01), relational level (ß = .23, ρ <.001) and collective level (ß = .33, ρ <.001) were significant predictors in the second step (ΔR^2 = .20, ρ <.001); the third step did not reach a significant R^2 change, but the regression model including only the first two steps was significant as well (F (6, 397) = 33.47, R^2 = .34, ρ <.001). Finally, in the regression model of affective relationship on family environment and self-concept levels, mother parenting style (ß = .29, ρ <.001) was a significant predictor in the first step (ΔR^2 = .10, ρ <.001); family cohesion (ß = -.17, ρ <.001), mother parenting style (ß = .22, ρ <.01), relational level (ß = .36, ρ <.001) and collective level (ß = .18, ρ <.01) were significant predictors in the second step (ΔR^2 = .31, ρ <.001); the third step did not reach a significant R^2 change, but the regression model including only the first two steps was significant as well (F (6, 398) = 28.75, R^2 = .31, ρ <.001).

Table 33 Regression of social competence on AT interpersonal behaviour and self-concept levels in Study 1

predictor	Anxious solitary behaviour						Prosocial behaviour					
	step 1		step 2		step 3		step 1		step 2		step 3	
	B	β	B	β	B	β	B	β	B	β	B	β
AT cooperative	-.04	-.12*	-.03	-.09	.24	.68*	.03	.12*	.00	-.02	-.21	-.95**
AT opposition	.22	.14**	.18	.12*	.38	.24	.13	.13*	.13	.13**	.88	.87***
sclindiv			.15	.13**	.63	.53			-.04	-.05	.10	.13
sclrelat			-.04	-.03	-.14	-.09			.31	.33***	.16	.17
sclcollect			-.27	-.20	.32	.24			.32	.38***	.27	.33
AT cooperative × sclindiv					.00	-.03					-.01	-.18
AT cooperative × sclrelat					-.02	-.22					.06	1.10**
AT cooperative × sclcollect					-.06	-.79					.01	.19
AT opposition × sclindiv					-.25	-.58*					-.02	-.08
AT opposition × sclrelat					.14	.35					-.19	-.74*
AT opposition × sclcollect					-.04	-.10					-.02	-.06
ΔR^2	.05***		.06***		.03*		.02*		.37***		.05***	
R^2			.11		.14				.39		.44	

Note. Because of missing data, N ranged from 398 to 405. *ρ<.05. **ρ<.01. ***ρ<.001. AT = average teacher; sclindiv = individual level of self-concept, sclrelat = relational level of self-concept, sclcollect = collective level of self-concept

Table 34 Regression of social competence on family environment and self-concept levels in Study 1

Step		Anxious solitary behaviour				Prosocial behaviour			
	Predictor	B	β	B	β	B	β	B	β
1	feco	-.14	-.14*	-.07	-.07	.07	.11*	-.06	-.09*
	father_PS	-.04	-.06	-.03	-.05	.04	.11	.04	.10
	mother_PS	.02	.03	.03	.04	.13	.32***	.10	.25***
2	sclindiv			.17	.14**			-.03	-.05
	sclrelat			-.02	-.02			.28	.30***
	sclcollect			-.29	-.22***			.28	.33***
	ΔR^2		.02*		.06***		.21***		.25***
	R^2				.08				.46

Note. Because of missing data, N ranged from 398 to 405. *ρ<.05. **ρ<.01. ***ρ<.001. feco = family cohesion, father_PS = father parenting style, mother_PS = mother parenting style, sclindiv = individual level of self-concept, sclrelat = relational level of self-concept, sclcollect = collective level of self-concept

Table 35 Regression of self-esteem on peer relations and self-concept levels in Study 1

Predictor	Positive Self-Esteem				Negative Self-Esteem					
	step1		step 2		step 1		step 2		step 3	
	B	β	B	β	B	β	B	β	B	β
PGA	.23	.23***	.18	.18***	-.33	-.27***	-.35	-.29***	.13	.11
BFQ	.38	.34***	.24	.22***	-.09	-.07	-.02	-.02	1.06	.79*
sclindiv			.05	.05			.21	.19***	.25	.22
sclrelat			.23	.19**			-.15	-.10	.25	.17
sclcollect			.10	.09			-.02	-.02	.09	.07
PGA × BFQ									-.16	-.58
PGA × sclindiv									.06	.20
PGA × sclrelat									-.04	-.14
PGA × sclcollect									-.01	-.02
BFQ × sclindiv									-.07	-.24
BFQ × sclrelat									-.10	-.39
BFQ × sclcollect									-.06	-.22
Δ R^2	.23***		.05***		.09***		.04**		.04**	
R^2			.28				.13		.17	

Note. Because of missing data, N ranged from 398 to 405. *ρ<.05. **ρ<.01. ***ρ<.001. PGA = peer group acceptance, BFQ = best friendship quality, sclindiv = individual level of self-concept, sclrelat = relational level of self-concept, sclcollect = collective level of self-concept

Table 36 Regression of self-esteem on FT interpersonal behaviour and self-concept levels in Study 1

Predictor	Negative self-esteem				Positive self-esteem					
	step 1		step 2		step 1		step 2		step 3	
	B	β	B	β	B	β	B	β	B	β
FT cooperative	.02	.05	.05	.12	.10	.28***	.04	.11*	.04	.12
FT opposition	.10	.23***	.09	.20**	.00	.01	.01	.04	.29	.77*
FT strict	.04	.03	.03	.03	.13	.12*	.11	.11*	.59	.55
sclindiv			.14	.13*			.03	.03	.07	.08
sclrelat			-.12	-.08			.28	.24***	.43	.36
sclcollect			-.21	-.16**			.24	.22***	.66	.62
FT cooperative × sclindiv									-.01	-.07
FT cooperative × sclrelat									.06	.93
FT cooperative × sclcollect									-.06	-.98
FT opposition × sclindiv									.00	.02
FT opposition × sclrelat									-.07	-.59
FT opposition × sclcollect									-.02	-.16
FT strict × sclindiv									.01	.03
FT strict × sclrelat									-.28	-1.05*
FT strict × sclcollect									.14	.54
ΔR^2	.05***		.05***		.09***		.14***		.04*	
R^2			.10				.23		.27	

Note. Because of missing data, N ranged from 398 to 405. *ρ<.05. **ρ<.01. ***ρ<.001. FT = favourite teacher, sclindiv = individual level of self-concept, sclrelat = relational level of self-concept, sclcollect = collective level of self-concept

Table 37 Regression of self-esteem on AT interpersonal behaviour and self-concept levels in Study 1

Predictor	Positive self-esteem						Negative self-esteem			
	step 1		step 2		step 3		step 1		step 2	
	B	β	B	β	B	β	B	β	B	β
AT cooperative	.02	.08	-.01	-.04	-.17	-.59	-.01	-.04	.00	-.01
AT opposition	.19	.15**	.18	.14**	1.27	1.01***	.23	.15**	.18	.12*
sclindiv			.04	.04	.28	.30			.16	.14**
sclrelat			.30	.25***	.21	.17			-.14	-.09
sclcollect			.29	.28***	.44	.42			-.18	-.14*
AT cooperative × sclindiv					-.02	-.28				
AT cooperative × sclrelat					.06	.97*				
AT cooperative × sclcollect					-.01	-.09				
AT opposition × sclindiv					-.03	-.09				
AT opposition × sclrelat					-.25	-.77				
AT opposition × sclcollect					-.05	-.16				
ΔR^2	.02*		.22***		.04**		.03**		.05***	
R^2			.24		.28				.08	

Note. Because of missing data, N ranged from 398 to 405. *ρ<.05. **ρ<.01. ***ρ<.001. AT = average teacher, sclindiv = individual level of self-concept, sclrelat = relational level of self-concept, sclcollect = collective level of self-concept

In sum, in terms of the direct effects of each of the three learning environments, although all of them have direct effect on anxious solitary behaviour (ΔR^2 ranging between .02 and .09), peer relations and teacher interpersonal behaviour had larger effect than family effect; while on prosocial behaviours, peer relations were largest contributor (ΔR^2ranging between .13 and .26), the second contributor was family environment (ΔR^2 ranging between .10 and .21), the third was favourite teacher interpersonal behaviour (ΔR^2 ranging between .06 and .11) and average teacher interpersonal behaviour was least contributor (ΔR^2 ranging between .00 and .05). Chronic self-concept levels contributed not much directly to anxious solitary behaviour (ΔR^2 ranging between .03 and .06), but contributed much directly to prosocial behaviours (ΔR^2 ranging between .10 and .37). Finally, interaction effects between chronic self-concept levels and learning environments such as teacher interpersonal behaviours and peer relations existed on prosocial behaviours, but on anxious solitary behaviour, only interaction effect between average teacher interpersonal behaviour and chronic self-concept levels existed.

Effects on Self-Esteem

Table 35 showed the results about regression of self-esteem on peer relations and self-concept levels. Firstly, in the regression model of positive self-esteem on peer relations and self-concept levels, peer group acceptance (ß = .23, ρ < .001) and best friendship quality (ß = .34, ρ < .001) acted as significant predictors in the 1st step (ΔR^2 = .23, ρ < .001); in the 2nd step (ΔR^2 = .05, ρ < .001), peer group acceptance (ß = .18, ρ < .001) and best friendship quality (ß = .22, ρ < .001) kept to be significant predictors and one new significant predictor was found to be relational level of chronic self-concept (ß = .19, ρ < .01); in the 3rd step, no significant R^2 change was reached. Therefore, data reported included only the first two steps in Table 35 and the regression model with these 2 steps was significant as well (F(5, 399) = 31.55, R^2 = .28, ρ < .001). Secondly, in the regression model of negative self-esteem on peer relations and self-concept levels, peer group acceptance (ß = -.27, ρ <.001) was significant predictor in the first step (ΔR^2 = .09, ρ <.001); in the second step (ΔR^2 = .04, ρ <.01), peer group acceptance (ß = -.29, ρ <.001) kept to be significant predictor and one new significant predictor was individual level (ß = .19, ρ<.001); in the third step (ΔR^2 = .04, ρ <.01), best friendship quality (ß = .79, ρ <.05) kept to be significant predictor; and the overall regression model was also significant (F(12, 392) = 6.56, R^2 = .17, ρ < .001).

Table 36 showed the results about regression of self-esteem on favourite teacher interpersonal behaviour and self-concept levels. Firstly, in the regression

model of negative self-esteem on favourite teacher interpersonal behaviour and self-concept levels, favourite teacher opposition behaviour acted as a significant predictor (ß = .23, ρ < .001) in the 1st step (ΔR^2 = .05, ρ <.001); in the 2nd step (ΔR^2 = .05, ρ <.001), favourite teacher opposition behaviour (ß = .20, ρ < .01) kept to be one of the significant predictors and new significant predictors were individual level (ß = .13, ρ < .05) and collective level (ß = -.16, ρ < .01) of chronic self-concept; due to no significant interaction effects on negative self-esteem in the analysis in the third step, data in the third step were not reported in Table 37; and the regression model with the first 2 steps was significant as well (F(6, 398) = 7.16, R^2 = .10, ρ < .001). Secondly, in the regression model of positive self-esteem on favourite teacher interpersonal behaviour and self-concept levels, favourite teacher cooperative behaviour (ß = .28, ρ <.001) and favourite strict behaviour (ß = .12, ρ <.05) were significant predictors in the first step (ΔR^2 = .09, ρ <.001); in the second step (ΔR^2 = .14, ρ <.001), favourite teacher cooperative behaviour (ß = .11, ρ <.05) and favourite strict behaviour (ß = .11, ρ <.05) kept to be significant predictors and new predictors were relational level (ß = .24, ρ <.001) and collective level (ß = .22, ρ <.001) of self-concept; in the third step (ΔR^2 = .04, ρ <.05), favourite teacher opposition behaviour (ß = .77, ρ <.05) and the interaction between favourite teacher strict behaviour and relational level of self-concept (ß = -1.05, ρ <.05) were significant predictors; and the overall regression model was significant as well (F(15, 389) = 9.56, R^2= .27, ρ < .001).

In comparison with the effect of favourite teacher interpersonal behaviour and self-concept levels, Table 37 revealed the results about regression of self-esteem on average teacher interpersonal behaviour and self-concept levels. Firstly, in the regression model of positive self-esteem on average teacher interpersonal behaviour and self-concept levels, average teacher opposition behaviour (ß = .15, ρ < .01) acted as significant predictor in the 1st step (ΔR^2 = .02, ρ <.05); in the 2nd step (ΔR^2 = .22, ρ <.001), average teacher opposition behaviour (ß = .14, ρ < .01), relational level (ß = .25, ρ < .001) and collective level (ß = .28, ρ < .001) of chronic self-concept were significant predictors; in the third step (ΔR^2 = .04, ρ <.01), significant predictors were average teacher opposition behaviour (ß = 1.01, ρ < .001), and interaction between average teacher cooperative behaviour and relational level of self-concept (ß = .97, ρ < .05); and the overall regression model was significant as well (F(11, 393) = 13.62, R^2 = .28, ρ < .001). Secondly, in the regression model of negative self-esteem on average teacher interpersonal behaviour and self-concept levels, average teacher opposition behaviour (ß = .15, ρ <.01) was a significant predictor in the first step (ΔR^2= .03, ρ <.01); in the second step (ΔR^2 = .05, ρ <.001), average teacher opposition behaviour (ß = .12, ρ < .05), individual level (ß = .14, ρ <.01) and collective level (ß = -.14, ρ <.05) of self-concept acted as significant predictors; in the third step, no significant R^2 change

was reached and data were not reported in Table 37; and the regression model including the first 2 steps was significant as well ($F (5, 399) = 7.02$, $R^2 = .08$, $\rho < .001$).

In Table 38, results were revealed about the regression of self-esteem on family environment (i.e., family cohesion, father and mother parenting styles) and self-concept levels. Firstly, in the regression model of positive self-esteem on family environment and self-concept levels, in the first step ($\Delta R^2 = .15$, $\rho <.001$), father parenting style was significant predictor ($ß = .32$, $\rho <.001$); in the second step ($\Delta R^2 = .14$, $\rho <.001$), significant predictors were found to be father parenting style ($ß = .31$, $\rho < .001$), relational level ($ß = .23$, $\rho < .001$)and collective level of self-concept ($ß = .22$, $\rho < .001$); in the third step ($\Delta R^2 = .04$, $\rho <.01$), significant predictors were family cohesion ($ß = -.63$, $\rho < .05$), interaction between father parenting style and individual level of self-concept ($ß = -.78$, $\rho < .05$), interaction between mother parenting style and relational level of self-concept ($ß = -1.99$, $\rho < .01$), and interaction between mother parenting style and individual level of self-concept ($ß = .85$, $\rho < .05$); and the overall regression model was significant as well ($F(15, 389) = 12.75$, $R^2 = .33$, $\rho < .001$). Secondly, in the regression model of negative self-esteem on family environment and self-concept levels, in the first step ($\Delta R^2 = .04$, $\rho <.01$); in the second step ($\Delta R^2 = .05$, $\rho <.001$), individual level ($ß = .17$, $\rho <.01$) and collective level ($ß = -.13$, $\rho <.05$) of self-concept acted as significant predictors; in the third step ($\Delta R^2 = .05$, $\rho <.05$), the significant predictor was the interaction between father parenting style and individual level of self-concept ($ß = .78$, $\rho <.05$); and the overall regression model was significant as well ($F (15, 389) = 3.92$, $R^2 = .14$, $\rho < .001$).

In short, in terms of significant direct effects of the learning environments, peer relations ($\Delta R^2 = .23$), family environment ($\Delta R^2 = .15$) and favourite teacher interpersonal behaviour ($\Delta R^2 = .09$) had greatest impacts on positive self-esteem while average teacher ($\Delta R^2 = .02$) interpersonal behaviour had least impacts on positive self-esteem; on negative self-esteem, peer relations, favourite teacher interpersonal behaviour, family environment and average teacher interpersonal behaviour contributed no much (ΔR^2 ranging between .03 and .09); chronic self-concept levels contributed more greatly on positive self-esteem than on negative self-esteem. Interaction effects between chronic self-concept levels and the three learning environments existed on positive self-esteem while on negative self-esteem, only interaction between chronic self-concept levels and peer relations and family environment existed.

Table 38 Regression of self-esteem on family environment and self-concept levels in Study 1

	Positive self-esteem						Negative self-esteem					
	step 1		step 2		step 3		step 1		step 2		step 3	
Predictor	B	β	B	β	B	β	B	β	B	β	B	β
feco	.08	.09	-.05	-.06	-.53	-.63*	-.10	-.09	-.04	-.04	.33	.32
father_PS	.16	.32***	.16	.31***	.30	.58	-.06	-.10	-.06	-.09	.43	.69
mother_PS	.02	.04	-.01	-.02	.21	.41	-.03	-.05	-.02	-.04	-.17	-.27
Sclindiv			.04	.05	.17	.18			.19	.17**	-.07	-.06
sclrelat			.28	.23***	.45	.37			-.11	-.07	-.02	-.01
sclcollect			.23	.22***	.05	.05			-.17	-.13*	.69	.54
feco×sclindiv					-.06	-.24					-.03	-.09
feco ×sclrelat					.12	.65					-.05	-.22
feco×sclcollect					.07	.36					-.05	-.22
father_PS × sclindiv					-.11	-.78*					.13	.78*
father_PS × sclrelat					.13	1.08					-.13	-.87
father_PS × sclcollect					-.11	-.92					-.10	-.74
mother_PS × sclindiv					.12	.85*					-.07	-.40
mother_PS × sclrelat					-.24	-1.99**					.13	.94
mother_PS × sclcollect					.10	.86					-.05	-.35
ΔR^2	.15***		.14***		.04**		.04**		.05***		.05*	
R^2			.29		.33				.09		.14	

Note: N ranged from 398 to 405. *ρ<.05. **ρ<.01. ***ρ<.001. feco = family cohesion, father_PS = father parenting style, mother_PS = mother parenting style, sclindiv = individual level of self-concept, sclrelat = relational level of self-concept, sclcollect = collective level of self-concept

Table 39 Regression of academic achievement goals on peer relations and self-concept levels in Study 2

Predictor	Performance goal						Mastery goal					
	step 1		step 2		step3		step 1		step 2		step3	
	B	β	B	β	B	β	B	β	B	β	B	β
PGA	.00	.00	-.03	-.02	.00	.00	.23	.21***	.13	.11***	.67	.60***
BFQ	.10	.09***	.06	.05*	.11	.10	.35	.34***	.06	.06**	-.29	-.28**
sclindiv			.63	.63***	.25	.25**			.05	.06**	.20	.23*
sclrelat			-.02	-.02	.21	.18*			.28	.27***	.47	.46***
sclcollect			-.01	-.01	.07	.06			.32	.33***	.14	.14*
PGA×sclindiv					-.02	-.05					-.04	-.13
PGA×sclrelat					.16	.57**					-.02	-.07
PGA×sclcollect					-.16	-.61***					-.13	-.58***
BFQ×sclindiv					.14	.51***					-.02	-.09
BFQ×sclrelat					-.22	-.96***					-.06	-.28
BFQ×sclcollect					.12	.51***					.18	.91***
ΔR^2	.01***		.39***		.02***		.20***		.21***		.02***	
R^2			.40		.42				.41		.43	

(Continued)

Predictor	Avoidance goal					
	step 1		step 2		step3	
	B	β	B	β	B	β
PGA	-.23	-.16***	-.21	-.15***	-.04	-.03
BFQ	.05	.04	.11	.08**	.58	.45***
sclindiv			.30	.28***	.40	.37**
sclrelat			-.08	-.06*	.23	.18
sclcollect			-.09	-.08**	.08	.06
PGA×sclindiv					.05	.15
PGA×sclrelat					.00	.01
PGA×sclcollect					-.10	-.33
BFQ×sclindiv					-.08	-.27*
BFQ×sclrelat					-.12	-.47*
BFQ×sclcollect					.02	.09
ΔR^2	.02***		.07***		.02***	
R^2			.09		.11	

Note. Because of missing data, N ranged from 2094 and 2105. ***.ρ<.001, **.ρ<.01, *. ρ<.05. PGA = peer group acceptance, BFQ = best friendship quality, sclindiv = individual level of self-concept, sclrelat = relational level of self-concept, sclcollect = collective level of self-concept

Study 2

In study 2 for investigating the 1990s Chinese only children, a series of similar multiple hierarchical regression analyses as conducted in Study 1, were conducted respectively with academic achievement goals, social competence and self-esteem as dependent variables and with the following 3 blocks of variables as independent variables: corresponding learning environment variables (1st block), individual level, relational level and collective level of self-concept (2nd block), and interaction terms between each learning environment variable and self-concept levels (3rd block). Results about these multiple hierarchical regression analyses are presented in corresponding tables.

Effects on Academic Achievement Goals

Table 39 showed the results about regression of academic achievement goals on peer relations and self-concept levels. Firstly, in comparison with the corresponding analysis in Study 1, in this regression model of performance goal on peer relations and self-concept levels, instead of peer group acceptance, best friendship quality acted as a significant predictor (ß = .09, ρ < .001) in the 1st step (ΔR^2= .01, ρ < .001); in the 2nd step, best friendship (ß = .05, ρ < .05) and individual level of chronic self-concept (ß = .63, ρ < .001; ΔR^2 = .39, ρ < .001) was significant predictors; and in the 3rd step, significant predictors were individual level of chronic self-concept (ß = .25, ρ < .01), relational level of chronic self-concept (ß = .18, ρ < .05) and interaction between peer group acceptance and relational level of chronic self-concept (ß = .57, ρ < .01), interaction between peer group acceptance and collective level of chronic self-concept (ß = -.61, ρ < .001), interaction between best friendship quality and individual level of chronic self-concept (ß = .51, ρ < .001), interaction between best friendship quality and relational level of chronic self-concept (ß = -.96, ρ < .001), interaction between best friendship quality and collective level of chronic self-concept (ß = .51, ρ < .001, ΔR^2= .02, ρ <.001); and the overall regression model was significant as well (F (11, 2093) = 133.13, R^2 = .42, ρ < .001).

Secondly, in the regression model of mastery goal on peer relations and self-concept levels, peer group acceptance (ß = .21, ρ <.001) and best friendship quality (ß = .34, ρ <.001) were significant predictors in the first step (ΔR^2 = .20, ρ <.001); in the second step (ΔR^2 = .21, ρ <.001), significant predictors were peer group acceptance (ß = .11, ρ <.001), best friendship quality (ß = .06, ρ <.01), individual level (ß = .06, ρ <.01), relational level (ß = .27, ρ <.001) and collective

level (ß = .33, ρ <.001) of self-concept; in the third step, significant predictors were peer group acceptance (ß = .60, ρ <.001)， best friendship quality (ß = -.28, ρ <.01) individual level (ß = .23, ρ <.05), relational level (ß = .46, ρ <.001) and collective level (ß = .14, ρ <.05) of self-concept, the interaction between peer group acceptance and collective level of self-concept (ß = -.58, ρ <.001), and the interaction between best friendship quality and collective level of self-concept (ß = .91, ρ <.001, Δ R^2 = .02, ρ <.001), and the overall regression model was significant as well (F(11, 2104) = 144.18, R^2 = .43, ρ < .001).

Finally, in the regression model of avoidance goal on peer relations and self-concept levels, peer group acceptance (ß = -.16, ρ <.001) was significant predictor in the first step (ΔR^2 = .02, ρ <.001); in the second step (ΔR^2 = .07, ρ <.001), significant predictors were peer group acceptance (ß = -.15, ρ <.001)， best friendship quality (ß = .08, ρ <.01)，individual level (ß = .28, ρ <.001), relational level (ß = -.06, ρ <.05) and collective level (ß = -.08, ρ <.01) of self-concept; and in the third step, significant predictors were best friendship quality (ß = .45, ρ <.001), individual level (ß = .37, ρ <.01), the interaction between best friendship quality and individual level of self-concept (ß = -.27, ρ <.05), and the interaction between best friendship quality and relational level of self-concept (ß = -.47, ρ <.05, ΔR^2 = .02, ρ <.001), and the overall regression model was significant as well (F(11, 2104) = 23.79, R^2 = .11, ρ < .001).

A conclusion could be reached that greater impact was exerted by chronic self-concept levels in comparison with the impact of peer relations as a learning environment on academic achievement orientation. Only on mastery goal, peer relations had greater impact, but on performance goal and avoidance goal, much less, but significant effects were found. Significant, but very small interaction effects between peer relations and chronic self-concept levels were found on all academic achievement goals.

Table 40 showed the results about regression of academic achievement goals on favourite teacher interpersonal behaviour and self-concept levels. Firstly, in the regression model of performance goal on favourite teacher interpersonal behaviour and self-concept levels, favourite teacher cooperative behaviour (ß = .22, ρ < .001) and opposition behaviour (ß = .15, ρ < .001) acted as significant predictors in the 1st step (ΔR^2 = .04, ρ <.001); in the 2nd step, significant predictors were favourite teacher cooperative behaviour (ß = .06, ρ < .01) and individual level of chronic self-concept (ß = .62, ρ < .001; Δ R^2 = .35, ρ < .001) and the regression model with these 2 steps was significant as well (F(5, 2093) = 275.10, R^2 = .39, ρ < .001); and the third step indicated no significant results. Secondly, in the regression model of mastery goal on favourite teacher interpersonal behaviour and self-concept levels, favourite teacher cooperative

behaviour (ß = .42, ρ <.001) and favourite teacher opposition behaviour (ß = -.05, ρ <.05) were significant predictors in the first step (ΔR^2 = .20, ρ <.001); in the second step (ΔR^2 = .22, ρ <.001), favourite teacher cooperative behaviour (ß = .15, ρ <.001), individual level (ß = .04, ρ <.05), relational level (ß = .25, ρ <.001) and collective level (ß = .34, ρ <.001) of self-concept acted as significant predictors; in the third step (ΔR^2 = .01, ρ <.001), significant predictors were favourite teacher cooperative behaviour (ß = .32, ρ <.001), favourite teacher opposition behaviour (ß = -.40, ρ <.001), individual level of self concept (ß = .51, ρ <.01), the interaction between favourite teacher cooperative behaviour and individual level of self concept (ß = -.54, ρ <.001), the interaction between favourite teacher opposition behaviour and relational level of self concept (ß = .14, ρ <.05); and the regression model including these three steps of favourite teacher interpersonal behaviour and self-concept levels was significant as well (F (11, 2104) = 144.18, R^2 = .40, ρ < .001). Finally, in the regression model of avoidance goal on favourite teacher interpersonal behaviour and self-concept levels, favourite teacher cooperative behaviour (ß = .07, ρ <.01) and opposition behaviour (ß = .25, ρ <.001) were significant predictors in the first step (ΔR^2 = .05, ρ <.001); in the second step (ΔR^2 = .05, ρ <.001), favourite teacher opposition behaviour (ß = .20, ρ <.001), individual level of self-concept (ß = .23, ρ <.001) and collective level of self-concept (ß = -.10, ρ <.01) were significant predictors; in the third step (ΔR^2 = .01, ρ <.01), significant predictors were the interaction between favourite teacher opposition behaviour and relational level of self-concept (ß = .42, ρ <.01) and the interaction between favourite teacher opposition behaviour and collective level of self-concept (ß = -.38, ρ <.05) and the model including these three steps was significant (F(11, 2104) = 24.35, R^2 = .11, ρ < .001). Therefore, both favourite teacher cooperative and opposition interpersonal behaviour and chronic self-concept levels exert direct impacts on academic achievement goal orientation; chronic self-concept levels contribute more than or at least equally with favourite teacher interpersonal behavior in academic achievement goals; interaction effects between favourite teacher interpersonal behaviour and chronic self-concept levels were found on mastery and avoidance goals, but not on performance goal.

In comparison with the effect of favourite teacher interpersonal behaviour and self-concept levels, Table 41 revealed the results about regression of academic achievement goals on average teacher interpersonal behaviour and self-concept levels. Firstly, in the regression model of performance goal on average teacher interpersonal behaviour and self-concept levels, average teacher cooperative behaviour (ß = .08, ρ < .001) and average teacher opposition behaviour (ß = .16, ρ < .001) acted as significant predictors in the 1st step (ΔR^2 = .03, ρ <.001); in the 2nd step, average teacher cooperative behaviour (ß = .05, ρ < .01) and individual level of chronic self-concept (ß = .63, ρ < .001; ΔR^2= .37, ρ < .001); in the third

Table 40 Regression of academic achievement goals on FT interpersonal behaviour and self-concept in study 2

predictor	Performance goal				Mastery goal					
	step 1		step 2		step 1		step 2		step 3	
	B	β	B	β	B	β	B	β	B	β
FT coop	.34	.22***	.10	.06**	.55	.42***	.19	.15***	.42	.32***
FT opp	.20	.15***	.02	.01	-.06	-.05*	.00	.00	-.47	-.40***
sclindiv			.62	.62***			.04	.04*	.43	.51**
sclrelat			-.02	-.02			.25	.25***	.31	.31
sclcollect			-.02	-.01			.33	.34***	.07	.07
FTcoop×sclindiv									-.12	-.54***
FTcoop×sclrelat									-.04	-.21
FTcoop×sclcollect									.05	.23
FTopp×sclindiv									.01	.03
FTopp×sclrelat									.06	.14*
FTopp×sclcollect									.09	.23
Δ R^2	.04***		.35***		.20***		.22***		.01***	
R^2			.39				.42		.43	

(Continued)

predictor	Avoidance goal					
	step 1		step 2		step 3	
	B	β	B	β	B	β
FT coop	.11	.07**	.07	.04	.20	.12
FT opp	.37	.25***	.29	.20***	.23	.15
sclindiv			.25	.23***	-.03	-.03
sclrelat			.02	.01	-.28	-.22
sclcollect			-.12	-.10***	.46	.38
FTcoop×sclindiv					.09	.30
FTcoop×sclrelat					.01	.03
FTcoop×sclcollect					-.11	-.41
FTopp×sclindiv					-.01	-.02
FTopp×sclrelat					.21	.42**
FTopp×sclcollect					-.18	-.38**
ΔR^2	.05***		.05***		.01**	
R^2			.10		.11	

Note. Because of missing data, N ranged from 2094 to 2105. *ρ<.05. **ρ<.01. ***ρ<.001. FTcoop = favourite teacher cooperative behaviour; FTopp = favourite teacher opposition behaviour; sclindiv = individual level of self-concept; sclrelat = relational level of self-concept; sclcollect = collective level of self-concept.

Table 41 Regression of academic achievement goals on AT interpersonal behaviour and self-concept in study 2

	Performance goal						Mastery goal					
	step 1		step 2		step 3		step 1		step 2		step 3	
predictor	B	β	B	β	B	β	B	β	B	β	B	β
ATcoop	.12	.08***	.07	.05**	.72	.53***	.33	.29***	.17	.15***	.53	.46***
ATopp	.23	.16***	.02	.02	-.13	-.09	.04	.03	.02	.01	-.18	-.15*
sclindiv			.62	.63***	.55	.56***			.05	.06**	.48	.56***
sclrelat			.00	.00	.32	.27*			.30	.30***	.02	.02
sclcollect			-.01	-.01	.10	.09			.33	.35***	.48	.50***
ATcoop×sclindiv					.01	.02					-.14	-.48***
ATcoop×sclrelat					-.12	-.42**					.04	.16
ATcoop×sclcollect					-.08	-.28*					-.06	-.25
ATopp×sclindiv					.03	.09					-.05	-.16*
ATopp×sclrelat					-.02	-.06					.10	.31**
ATopp×sclcollect					.04	.11					-.01	-.02
Δ R^2	.03***		.37***		.01***		.08***		.34***		.02***	
R^2			.40		.41				.42		.44	

(Continued)

	Avoidance goal					
	step 1		step 2		step 3	
predictor	B	β	B	β	B	β
ATcoop	.01	.00	.03	.02	.65	.44***
ATopp	.40	.26***	.32	.21***	.11	.07
sclindiv			.24	.22***	.78	.73***
sclrelat			-.02	-.01	.09	.07
sclcollect			-.12	-.10***	-.27	-.22
ATcoop×sclindiv					-.19	-.53***
ATcoop×sclrelat					-.14	-.44**
ATcoop×sclcollect					.08	.26
ATopp×sclindiv					-.04	-.10
ATopp×sclrelat					.14	.33*
ATopp×sclcollect					-.05	-.11
ΔR^2	.07***		.05***		.02***	
R^2			.12		.14	

Note. Because of missing data, N ranged from 2094 to 2105. *ρ<.05. **ρ<.01. ***ρ<.001. AT = average teacher; ATcoop = average teacher cooperative behaviour; ATopp = average teacher opposition behaviour; sclindiv = individual level of self-concept; sclrelat = relational level of self-concept; sclcollect = collective level of self-concept.

third step (ΔR^2 = .01, ρ <.001), significant predictors were average teacher cooperative behaviour (ß = .53, ρ < .001), individual level of chronic self-concept (ß = .56, ρ < .001), relational level of chronic self-concept (ß = .27, ρ < .05), the interaction between average teacher cooperative behaviour and relational level of chronic self-concept (ß = -.42, ρ < .01), and the interaction between average teacher cooperative behaviour and collective level of chronic self-concept (ß = -.28, ρ < .05); and the overall regression model with the three steps was significant as well (F (11, 2093) = 131.00, R^2 = .41, ρ < .001).

Secondly, in the regression model of mastery goal on average teacher interpersonal behaviour and self-concept levels, average teacher cooperative behaviour (ß = .29, ρ <.001) was a significant predictor in the first step (ΔR^2 = .08, ρ <.001); in the second step (ΔR^2 = .34, ρ <.001), average teacher cooperative behaviour (ß = .15, ρ <.001), individual level (ß = .06, ρ <.01), relational level (ß = .30, ρ <.001) and collective level (ß = .35, ρ <.001) of self-concept acted as significant predictors; in the third step (ΔR^2 = .02, ρ <.001); and the overall model was significant as well (F (11, 2104) = 143.78, R^2 = .44, ρ < .001).

Finally, in the regression model of avoidance goal on average teacher interpersonal behaviour and self-concept levels, average teacher opposition behaviour (ß = .26, ρ <.001) was a significant predictor in the first step (ΔR^2 = .07, ρ <.001); in the second step (ΔR^2 = .05, ρ <.001), significant predictors were average teacher opposition behaviour (ß = .21, ρ <.001), individual level of self-concept (ß = .22, ρ <.001), and collective level (ß = -.10, ρ <.001) of self-concept; in the third step (ΔR^2 = .02, ρ <.001), significant predictors were average teacher cooperative behaviour (ß = .44, ρ <.001), individual level of self-concept (ß = .73, ρ <.001), the interaction between average teacher cooperative behaviour and individual level of self-concept (ß = -.53, ρ <.001), the interaction between average teacher cooperative behaviour and relational level of self-concept (ß = -.44, ρ <.01), and the interaction between average teacher opposition behaviour and relational level of self-concept (ß = .33, ρ <.05); and the overall model was significant as well (F(11, 2104) = 30.84, R^2=.14, ρ<.001).

Hence a conclusion could be reached that the direct and joint effects of average teacher interpersonal behaviour and chronic self-concept levels all exerted impacts on student academic achievement goal orientation. Specifically, on performance goal and mastery goal, the contributors followed this order from largest to the least significant contributors: chronic self-concept levels (ΔR^2 ranging from .34 to .37), average teacher interpersonal behaviour (ΔR^2 ranging from .03 to .08), and the interaction between them (ΔR^2 ranging from .02 to .03), while, on avoidance goal, both the direct and joint effects were not great and the order of contributors followed such an order: the average teacher interpersonal behaviour was the largest contributor (ΔR^2=.07), chronic self-concept levels were

the second largest contributor (ΔR^2=.05), and the interaction effects between them were the least (ΔR^2=.02). Furthermore, average teacher interpersonal behaviour seemed to have more interactions with student chronic self-concept levels than favourite teacher interpersonal behaviour.

In Table 42, results were revealed about the regression of academic achievement goals on family environment (i.e., family cohesion, father and mother parenting styles) and self-concept levels. Firstly, it was the regression model of performance goal on family environment and self-concept levels. In the first step (ΔR^2 = .14, ρ < .001), significant predictors were father permissive-authoritative parenting style (ß = .26, ρ <.001), mother permissive-authoritative parenting style (ß = -.16, ρ <.001), father authoritarian parenting style (ß = .18, ρ <.001), mother authoritarian parenting style (ß = .18, ρ <.001), and family cohesion (ß = .06, ρ <.01); in the second step (ΔR^2 = .28, ρ <.001), significant predictors were found to be father permissive-authoritative parenting style (ß = .15, ρ <.001), mother permissive-authoritative parenting style (ß = -.10, ρ <.001), mother authoritarian parenting style (ß = .11, ρ <.001) and individual level of self-concept (ß = .57, ρ < .001)； and the third step reached a significant R^2 change as well (ΔR^2 R^2 = .02, ρ <.001), significant predictors were father permissive-authoritative parenting style (ß = .41, ρ <.01), individual level of self-concept (ß = .65, ρ < .001), collective level of self-concept (ß = .26, ρ < .05), the interaction between father authoritarian parenting style and relational level of self-concept (ß = .69, ρ < .001), the interaction between father authoritarian parenting style and collective level of self-concept (ß = -.57, ρ < .01), the interaction between mother permissive-authoritative parenting style and individual level of self-concept (ß = .40, ρ <.01), the interaction between mother permissive-authoritative parenting style and collective level of self-concept (ß = -.47, ρ <.05), the interaction between mother authoritarian parenting style and individual level of self-concept (ß = -.25, ρ <.05), the interaction between mother authoritarian parenting style and relational level of self-concept (ß = -.53, ρ <.01), and the interaction between mother authoritarian parenting style and collective level of self-concept (ß = .74, ρ <.001); and the overall regression model including these three steps was significant as well (F(23, 2091) = 69.85, R^2 = .44, ρ < .001).

Secondly, in the regression model of mastery goal on family environment and self-concept levels, the first step reached a significant R square change (ΔR^2 = .14, ρ < .001), and the significant predictors were father permissive-authoritative parenting style (ß = .08, ρ <.05), father authoritarian parenting style (ß = .06, ρ <.05), and family cohesion (ß = .31, ρ <.001); in the second step (ΔR^2 = .26, ρ <.001), significant predictors were found to be father permissive-authoritative parenting style (ß = .05, ρ <.05), and family cohesion (ß = .06, ρ <.01), relational level of self-concept (ß = .29, ρ < .001), and collective level of self-concept (ß =

.35, ρ < .001)； and the third step reached a significant R^2change as well (ΔR^2 = .04, ρ <.001), significant predictors were mother authoritarian parenting style (ß = .66, ρ <.001), family cohesion (ß = .44, ρ <.001), relational level of self-concept (ß = .50, ρ < .001), collective level of self-concept (ß = .64, ρ < .001), the interaction between father permissive-authoritative parenting style and relational level of self-concept (ß = -.46, ρ < .05), the interaction between mother authoritarian parenting style and collective level of self-concept (ß = -.51, ρ < .01), the interaction between family cohesion and relational level of self-concept (ß = -1.11, ρ <.001), and the interaction between family cohesion and collective level of self-concept (ß = .64, ρ <.001); and the overall regression model including these three steps was significant as well (F(23, 2102) = 72.18, R^2 = .44, ρ < .001).

Finally, in the regression model of avoidance goal on family environment and self-concept levels, the first step reached a significant R square change (ΔR^2= .07, ρ < .001), and the significant predictors were father permissive-authoritative parenting style (ß = .07, ρ <.05), mother authoritarian parenting style (ß = .20, ρ <.001), and family cohesion (ß = -.08, ρ <.001); in the second step (ΔR^2 = .04, ρ <.001), significant predictors were found to be mother permissive-authoritative parenting style (ß = .09, ρ <.01), mother authoritarian parenting style (ß = .17, ρ <.001), family cohesion (ß = -.06, ρ <.05), individual level of self-concept (ß = .22, ρ < .001), and collective level of self-concept (ß = -.10, ρ < .01)； and the third step reached a significant R^2 change as well (ΔR^2 = .05, ρ <.001), significant predictors were father permissive-authoritative parenting style (ß = .31, ρ <.05), mother authoritarian parenting style (ß = .37, ρ <.05), individual level of self-concept (ß = .38, ρ < .01), the interaction between father permissive-authoritative parenting style and individual level of self-concept (ß = .42, ρ < .01), the interaction between father authoritarian parenting style and individual level of self-concept (ß = .42, ρ < .01), the interaction between father authoritarian parenting style and relational level of self-concept (ß = .80, ρ < .001), the interaction between father authoritarian parenting style and collective level of self-concept (ß = -1.08, ρ < .001), the interaction between mother permissive-authoritative parenting style and individual level of self-concept (ß = -.60, ρ < .001), the interaction between mother authoritarian parenting style and individual level of self-concept (ß = -.45, ρ < .01), the interaction between mother authoritarian parenting style and collective level of self-concept (ß = .46, ρ < .05), the interaction between family cohesion and relational level of self-concept (ß = -.82, ρ <.001), and the interaction between family cohesion and collective level of self-concept (ß = .72, ρ <.001); and the overall regression model including these three steps was significant as well (F(23, 2102) = 16.59, R^2 = .16, ρ < .001).

Table 42 Regression of academic achievement goals on family environment and self-concept levels in study 2

	Performance goal						Mastery goal					
	step 1		step2		step 3		step 1		step2		step 3	
Predictor	B	β	B	β	B	β	B	β	B	β	B	β
Fpermauthv	.38	.26***	.21	.15***	.59	.41**	.10	.08	.07	.05	-.18	-.14
Mpermauthv	-.23	-.16***	-.14	-.10***	.00	.00	.07	.06	.04	.03	.19	.15
Fauthoritan	.22	.18***	.03	.02	-.13	-.11	.07	.06	.04	.04	-.19	-.18
Mauthoritan	.22	.18***	.13	.11***	.15	.12	.01	.01	.00	.00	.71	.66***
cohesion	.06	.06**	-.01	-.01	-.06	-.07	.24	.31	.04	.06	.33	.44***
sclindiv			.57	.57***	.65	.65***			.03	.03	.03	.03
sclrelat			.01	.01	-.11	-.10			.29	.29	.51	.50***
sclcollect			.00	.00	.29	.26*			.33	.35	.61	.64***
Fpermauthv×sclindiv					-.08	-.23					-.01	-.03
Fpermauthv×sclrelat					.03	.09					.19	.72**
Fpermauthv×sclcollect					-.10	-.34					-.12	-.46*
Fauthoritarian×sclindiv					-.01	-.03					.00	-.01
Fauthoritarian×sclrelat					.21	.69***					.06	.25
Fauthoritarian×sclcollect					-.17	-.57**					.02	.06

(Continued)

	Performance goal						Mastery goal					
	step 1		step2		step 3		step 1		step2		step 3	
Predictor	B	β	B	β	B	β	B	β	B	β	B	β
Mpermauthv×sclindiv					.13	.40**					.07	.24
Mpermauthv×sclrelat					.02	.05					-.06	-.21
Mpermauthv×sclcollect					-.15	-.47*					-.03	-.11
Mauthoritarian×sclindiv					-.08	-.25*					-.05	-.18
Mauthoritarian×sclrelat					-.17	-.53**					-.06	-.21
Mauthoritarian×sclcollect					.23	.74***					-.14	-.51**
cohesion×sclindiv					-.01	-.05					-.01	-.05
cohesion×sclrelat					-.02	-.08					-.19	- 1.11***
cohesion×sclcollect					.05	.23					.11	.64***
ΔR^2	.14***		.28***		.02***		.14***		.26***		.04***	
R^2			.42		.44				.40		44.00	

(Continued)

Predictor	Avoidance goal step 1		step2		step 3	
	B	β	B	β	B	β
Fpermauthv	.11	.07*	.04	.03	.49	.31*
Mpermauthv	.10	.06	.15	.09**	.43	.27
Fauthoritan	.04	.03	-.04	-.03	-.18	-.13
Mauthoritan	.27	.20***	.24	.17***	.51	.37*
cohesion	-.08	-.08***	-.06	-.06*	.03	.03
sclindiv			.23	.22***	.41	.38**
sclrelat			-.02	-.02	.03	.02
sclcollect			-.12	-.10**	.34	.28
Fpermauthv×sclindiv					.15	.42**
Fpermauthv×sclrelat					-.13	-.39
Fpermauthv×sclcollect					-.12	-.37
Fauthoritarian×sclindiv					.14	.42**
Fauthoritarian×sclrelat					.26	.80***
Fauthoritarian×sclcollect					-.36	-1.08***

(Continued)

Predictor	Avoidance goal step 1		step2		step 3	
	B	β	B	β	B	β
Mpermauthv×sclindiv					-.22	-.60***
Mpermauthv×sclrelat					.18	.52
Mpermauthv×sclcollect					-.10	-.30
Mauthoritarian×sclindiv					-.16	-.45**
Mauthoritarian×sclrelat					-.10	-.29
Mauthoritarian×sclcollect					.16	.46*
cohesion×sclindiv					.01	.02
cohesion×sclrelat					-.18	-.82***
cohesion×sclcollect					.15	.72***
ΔR^2	.07***		.04***		.05***	
R^2			.11		.16	

Note. Because of missing data, N ranged from 2094 to 2105. *ρ<.05. **ρ<.01. ***ρ<.001. Fpermauthv = father permissive-authoritative parenting style; Mpermauthv = mother permissive-authoritative parenting style; Fauthoritan = father authoritarian parenting style; Mauthoritan = mother authoritarian parenting style; cohesion = family cohesion. sclindiv = individual level of self-concept, sclrelat = relational level of self-concept, sclcollect = collective level of self-concept

Therefore, in terms of direct effects of family environment and chronic self-concept levels both had statistically significant effects on academic achievement orientation. However, on performance goal and mastery goal, chronic self-concept levels (ΔR^2 ranging from .26 to .28) contributed as twice or almost twice as family environment (ΔR^2 =.14), while on avoidance goal, the case was the other way around for the contributions of family environment (ΔR^2 =.07) and chronic self-concept levels (ΔR^2 =.04). Within the family environment, more attention should be given to family cohesion because it had very significant effect of increasing mastery goal orientation, while within chronic self-concept levels, in order to increase mastery goal orientation, it was important to cultivate Chinese only children's relational and collective level of chronic self-concept and to reduce individual level of chronic self-concept. Furthermore, in terms of joint effects of family environment and chronic self-concept, if children held high relational and collective levels of chronic self-concept, father permissive-authoritative parenting style and family cohesion could increase the orientation of mastery goal.

Effects on Social Competence

Table 43 presented results of regression of social competence on peer relations and chronic self-concept levels. Firstly, in the regression model of anxious solitary behaviour on peer relations and self-concept levels, peer group acceptance (ß = -.17, ρ < .001) and best friendship quality (ß = -.08, ρ < .001) acted as significant predictors in the 1st step (ΔR^2 = .04, ρ < .001); in the 2nd step (ΔR^2 = .03, ρ < .001), peer group acceptance (ß = -.16, ρ < .001) and best friendship quality (ß = -.07, ρ < .05) kept to be significant predictors and new predictors were individual level of chronic self-concept (ß = .16, ρ < .001) and collective level of chronic self-concept (ß = -.11, ρ < .001); and in the 3rd step (ΔR^2 = .03, ρ < .001), significant predictors were found to be best friendship quality (ß = .25, ρ < .05), individual level of chronic self-concept (ß = .85, ρ < .001), the interaction between peer group acceptance and individual level of chronic self-concept (ß = -.56, ρ < .001), the interaction between peer group acceptance and relational level of chronic self-concept (ß = .48, ρ < .05), the interaction between peer group acceptance and collective level of chronic self-concept (ß = -.51, ρ < .01), and the interaction between best friendship quality and individual level of chronic self-concept (ß =-.29, ρ < .01); and the overall model including these 3 steps was significant as well ($F(11, 2104) = 21.83$, R^2 = .10, ρ < .001).

Table 43 Regression of social competence on peer relations and self-concept levels in study 2

predictor	anxious solitary behaviour						prosocial behaviour					
	step 1		step 2		step 3		step 1		step 2		step 3	
	B	β	B	β	B	β	B	β	B	β	B	β
PGA	-.23	-.17***	-.22	-.16***	.14	.10	.17	.19***	.10	.11***	.33	.37***
BFQ	-.10	-.08***	-.09	-.07*	.33	.25*	.35	.43***	.17	.20***	-.03	-.04
sclindiv			.17	.16***	.91	.85***			.00	.01	.12	.17
sclrelat			.06	.05	-.04	-.03			.15	.19***	.18	.22*
sclcollect			-.13	-.11***	.16	.14			.23	.30***	.14	.18*
PGA × sclindiv					-.19	-.56***					-.01	-.04
PGA × sclrelat					.14	.48*					-.04	-.21
PGA × sclcollect					-.15	-.51**					.05	.03
BFQ × sclindiv					-.09	-.29**					-.03	-.16
BFQ × sclrelat					-.10	-.38					.03	.17
BFQ × sclcollect					.02	.07					.06	.35*
Δ R^2	.04***		.03***		.03***		.27***		.13***		.01**	
R^2			.07		.10				.40		.41	

Note. Because of missing data, N ranged from 2094 to 2105. *ρ<.05. **ρ<.01. ***ρ<.001. PGA = peer group acceptance, BFQ = best friendship quality, sclindiv = individual level of self-concept, sclrelat = relational level of self-concept, sclcollect = collective level of self-concept

Table 44 Regression of social competence on FT interpersonal behaviour and self-concept levels in study 2

predictor	anxious solitary behaviour						prosocial behaviour					
	step 1		step 2		step 3		step 1		step 2		step 3	
	B	β	B	β	B	β	B	β	B	β	B	β
FT coop	.05	.03	.07	.04	.54	.33**	.40	.38***	.12	.11***	.14	.13
FT opp	.34	.23***	.30	.20***	-.15	-.10	.00	.00	.06	.07**	.22	.24*
sclindiv			.13	.12***	1.36	1.28***			-.02	-.03	.41	.61***
sclrelat			.09	.07*	.09	.07			.21	.26***	-.11	-.14
sclcollect			-.21	-.17***	-.77	-.64**			.28	.37***	.39	.51**
FTcoop×sclindiv					-.30	-1.07***					-.12	-.64***
FTcoop×sclrelat					-.07	-.24					.10	.60**
FTcoop×sclcollect					.12	.44					-.03	-.17
FTopp×sclindiv					-.19	-.39***					-.04	-.15*
FTopp×sclrelat					.14	.28*					-.01	-.02
FTopp×sclcollect					.14	.30*					-.02	-.06
ΔR^2	.05***		.03***		.03***		.14***		.22***		.01***	
R^2					.11						.37	

Note. Because of missing data, N ranged from 2094 to 2105. *ρ<.05. **ρ<.01. ***ρ<.001. FTcoop = favourite teacher cooperative behaviour; FTopp = favourite teacher opposition behaviour; sclindiv = individual level of self-concept; sclrelat = relational level of self-concept; sclcollect = collective level of self-concept.

Secondly, in the regression model of prosocial behaviour on peer relations and self-concept levels, peer group acceptance (ß = .19, ρ <.001) and best friendship quality (ß = .43, ρ <.001) were significant predictors in the first step (ΔR^2 = .27, ρ <.001); in the second step (ΔR^2 = .13, ρ <.001), peer group acceptance (ß = .11, ρ <.001) and best friendship quality (ß = .20, ρ <.001) kept to significant predictors and new significant predictors were relational level (ß = .19, ρ <.001) and collective level (ß = .30, ρ <.001) of self-concept; in the third step (ΔR^2 = .01, ρ <.01), significant predictors were peer group acceptance (ß = .37, ρ <.001), relational level of self-concept (ß = .22, ρ <.05), collective level of self-concept (ß = .18, ρ <.05) and the interaction between best friendship quality and collective level of self-concept (ß = .35, ρ <.05); and the overall regression model was significant as well ($F(11, 2104) = 131.87$, $R^2 = .41$, ρ < .001).

Teacher interpersonal behaviour as a learning environment may exert influence on students' social competence as well. Next task is to test a sub-hypothesis of Hypothesis 5: Alone or together with students' chronic self-concept levels, favourite teacher interpersonal behaviour would also influence students' social competence and especially they would have more impact on students' prosocial behaviour.

It could be concluded that peer relations could decrease Chinese only children's anxious solitary behaviour and increase their prosocial behaviour. Among chronic self-concept levels, individual level could significantly increase anxious solitary behaviour, and relational and collective levels of self-concept could decrease anxious solitary behaviour, but increase prosocial behaviour. However, if the chronic self-concept levels could not be altered within a time, by changing the peer relations, that is, by increasing peer group acceptance and best friendship quality, the goal of decreasing anxious solitary behaviour or increasing prosocial behaviour could be reached as well.

Table 44 showed the results of regression of social competence on favourite teacher interpersonal behaviour and self-concept levels. Firstly, in the regression model of anxious solitary behaviour on favourite teacher interpersonal behaviour and self-concept levels, favourite teacher opposition behaviour (ß = .23, ρ < .001) acted as a significant predictor in the 1st step (ΔR^2 = .05, ρ <.001); in the second step (ΔR^2 = .03, ρ <.001), significant predictors were favourite teacher opposition behaviour (ß = .20, ρ < .001), individual level (ß =.12, ρ < .001), relational level (ß = .07, ρ <.05) and collective level (ß = -.17, ρ <.001) of self-concept; in the third step (ΔR^2 = .03, ρ <.001), significant predictors were favourite teacher cooperative behaviour (ß = .33, ρ < .01), individual level of chronic self-concept (ß =1.28, ρ < .001), collective level of chronic self-concept (ß =-.64, ρ < .01), the interaction between favourite teacher cooperative behaviour and individual level of chronic self-concept (ß =-1.07, ρ < .001), the interaction between favourite teacher

opposition behaviour and individual level (ß =-.39, ρ < .001), the interaction between favourite teacher opposition behaviour and relational level of self-concept (ß =.28, ρ < .05), and the interaction between favourite teacher opposition behaviour and collective level of self-concept (ß =.30, ρ < .05); and the overall model including these three steps was significant as well (F (11, 2104) = 22.74, R^2 = .11, ρ <.001).

Secondly, in regression model of prosocial behaviour on favourite teacher interpersonal behaviour and self-concept levels, favourite teacher cooperative behaviour (ß = .38, ρ <.001) was a significant predictor in the first step (ΔR^2 = .14, ρ <.001); in the second step (ΔR^2 = .22, ρ <.001), significant predictors were favourite teacher cooperative behaviour (ß =.11, ρ < .001)，favourite teacher opposition behaviour (ß =.07, ρ < .01)， relational level of chronic self-concept (ß =.26, ρ < .001), and collective level of self-concept (ß =.37, ρ < .001); in the third step (ΔR^2 = .01, ρ <.001), significant predictors were favourite teacher opposition behaviour (ß = .24, ρ <.05), individual level of chronic self-concept (ß =.61, ρ < .001), and collective level of self-concept (ß =.51, ρ < .01), interaction between favourite teacher cooperative behaviour and individual level of self-concept (ß = -.64, ρ <.001), and interaction between favourite teacher cooperative behaviour and relational level of self-concept (ß = .60, ρ <.01), and interaction between favourite teacher opposition behaviour and individual level of self-concept (ß = -.15, ρ <.05); and the overall regression model including these three steps was significant as well (F(11, 2104) = 115.22, R^2 = .37, ρ < .001).

In comparison with the effect of favourite teacher interpersonal behaviour and self-concept levels, the following table revealed the results about regression of social competence on average teacher interpersonal behaviour and self-concept levels (Table 45). Firstly, in the regression model of anxious solitary behaviour on average teacher interpersonal behaviour and self-concept levels, average teacher opposition behaviour (ß=.20, ρ<.001) acted as a significant predictor in the first step (ΔR^2=.04, ρ<.001); in the second step (ΔR^2 =.03, ρ<.001), significant predictors were average teacher cooperative behaviour (ß =.05, ρ<.05), average teacher opposition behaviour (ß=.17, ρ<.001), individual level (ß =.12, ρ< .001), and collective level of chronic self-concept (ß =-.18, ρ<.001); in the third step (ΔR^2 =.02, ρ<.001), significant predictors were average teacher cooperative behaviour (ß=.51, ρ<.001), average teacher opposition behaviour (ß =.28, ρ<.01), individual level of chronic self-concept (ß=.55, ρ<.001), the interaction between average teacher opposition behaviour and individual level of self-concept (ß =-.46, ρ<.001), and the interaction between average teacher opposition behaviour and relational level of self-concept (ß =.30, ρ<.05); the overall regression model was significant as well (F(11, 2104)=19.84, R^2=.09, ρ<.001).

Secondly, in the regression model of prosocial behaviour on average teacher interpersonal behaviour and self-concept levels, average teacher cooperative behaviour (ß = .24, ρ <.001) and average teacher opposition behaviour (ß = .15, ρ <.001) were significant predictors in the first step (ΔR^2 = .06, ρ <.001); in the second step (ΔR^2 = .32, ρ <.001), significant predictors were average teacher cooperative behaviour (ß = .10, ρ <.001), average teacher opposition behaviour (ß = .15, ρ <.001), individual level (ß = -.04, ρ <.05), relational level (ß = .29, ρ <.001) and collective level (ß = .37, ρ <.001) of self-concept; in the third step (ΔR^2 = .01, ρ <.001), average teacher opposition behaviour (ß = .38, ρ <.001), average teacher opposition behaviour (ß = .87, ρ <.001), individual level (ß = .35, ρ <.001) and collective level (ß = .55, ρ <.001) of self-concept, interaction between average teacher cooperative behaviour and individual level of self-concept (ß = -.18, ρ <.05), and interaction between average teacher opposition behaviour and individual level of self-concept (ß = -.38, ρ <.001) were significant predictors; and the overall model was significant as well (F (11, 2104) = 122.85, R^2 = .39, ρ < .001).

In combination of the regression results of anxious solitary behaviour on favourite teacher interpersonal behaviour and self-concept levels and on average teacher interpersonal behaviour and self-concept levels, it seemed that average teacher and favourite teacher interpersonal behaviour and chronic self-concept levels contribute directly not much, although statistically significant, to anxious solitary behaviour (ΔR2 ranging from .03 to .05). And the joint effects of favourite teacher and chronic self-concept levels, or of average teacher and chronic self-concept levels were not much, although significant, as well (ΔR2 ranging from .02 to .03). However, in comparison with the regression results of prosocial behaviour on favourite teacher interpersonal behaviour and self-concept levels and on average teacher interpersonal behaviour and self-concept levels, favourite teacher interpersonal behaviour (ΔR^2 = .14) contributed more than average teacher interpersonal behaviour (ΔR^2 = .06) directly to prosocial behaviour; chronic self-concept levels contribute directly much more to prosocial behaviour (ΔR^2 ranging from .22 to .32); and the joint effects of favourite teacher and chronic self-concept levels, or of average teacher and chronic self-concept levels were not much, although significant, as well (ΔR^2 =.01).

In Table 46, results were revealed about the regression of social competence on family environment (i.e., family cohesion, father and mother parenting styles) and self-concept levels. Firstly, in the regression model of anxious solitary behaviour on family environment and self-concept levels, mother authoritarian parenting style (ß = .24, ρ < .001) and family cohesion (ß = -.18, ρ < .001) were significant predictors in the first step (ΔR^2 = .09, ρ <.001); in the second step (ΔR^2

Table 45 Regression of social competence on AT interpersonal behaviour and self-concept levels in study 2

	Anxious solitary behaviour						Prosocial behaviour					
	step 1		step 2		step 3		step 1		step 2		step 3	
predictor	B	β	B	β	B	β	B	β	B	β	B	β
ATcoop	.02	.01	.07	.05*	.74	.51***	.22	.24***	.09	.10***	.10	.11
ATopp	.30	.20***	.26	.17***	.42	.28**	.14	.15***	.15	.15***	.37	.38***
sclindiv			.13	.12***	.58	.55***			-.03	-.04*	.24	.35***
sclrelat			.04	.03	.07	.05			.23	.29***	.05	.06
sclcollect			-.22	-.18***	.02	.02			.29	.37***	.42	.55***
ATcoop×sclindiv					-.05	-.15					-.04	-.18*
ATcoop×sclrelat					-.11	-.34					.05	.27
ATcoop×sclcollect					-.07	-.23					-.03	-.17
ATopp×sclindiv					-.19	-.46***					-.10	-.38***
ATopp×sclrelat					.13	.30*					.03	.12
ATopp×sclcollect					-.06	-.14					-.04	-.13
Δ R^2	.04***		.03***		.02***		.06***		.32***		.01***	
R^2			.07		.09				.38		.39	

Note. Because of missing data, N ranged from 2094 to 2105. *ρ<.05. **ρ<.01. ***ρ<.001. AT = average teacher; ATcoop = average teacher cooperative behaviour; ATopp = average teacher opposition behaviour; sclindiv = individual level of self-concept; sclrelat = relational level of self-concept; sclcollect = collective level of self-concept.

Table 46 Regression of social competence on family environment and self-concept levels in study 2

	Anxious solitary behaviour						Prosocial behaviour					
	step 1		step 2		step 3		step 1		step 2		step 3	
Predictor	B	β	B	β	B	β	B	β	B	β	B	β
Fpermauthv	.02	.01	-.01	-.01	-.49	-.31*	.14	.14***	.13	.13***	.34	.34**
Mpermauthv	.09	.06	.12	.08*	.99	.63***	.14	.14***	.11	.11***	.12	.12
Fauthoritan	-.01	-.01	-.05	-.04	.64	.49**	.05	.06*	.05	.05*	.31	.37**
Mauthoritan	.32	.24***	.31	.23***	.22	.16	-.07	-.08**	-.07	-.08**	-.30	-.35**
cohesion	-.17	-.18***	-.15	-.15***	.06	.06	.15	.24***	.00	.00	-.06	-.11
sclindiv			.11	.10***	.55	.52***			-.02	-.02	.19	.29**
sclrelat			.07	.06*	-.28	-.23			.21	.26***	.40	.49***
sclcollect			-.16	-.14***	.72	.60***			.27	.35***	.06	.08
Fpermauthv×sclindiv					.08	.21					-.13	-.57***
Fpermauthv×sclrelat					.14	.41					.04	.16
Fpermauthv×sclcollect					-.03	-.09					-.03	-.15
Fauthoritarian×sclindiv					-.22	-.64***					-.01	-.03
Fauthoritarian×sclrelat					.06	.19					-.10	-.50**

(Continued)

	Anxious solitary behaviour						Prosocial behaviour					
	step 1		step 2		step 3		step 1		step 2		step 3	
Predictor	B	β	B	β	B	β	B	β	B	β	B	β
Fauthoritarian×sclcollect					-.13	-.39					.03	.13
Mpermauthv×sclindiv					-.23	-.64***					.15	.63***
Mpermauthv×sclrelat					-.14	-.42					-.11	-.49*
Mpermauthv×sclcollect					.02	.07					.02	.09
Mauthoritarian×sclindiv					.22	.64***					-.08	-.35**
Mauthoritarian×sclrelat					.06	.19					.12	.56**
Mauthoritarian×sclcollect					-.19	-.58**					.00	-.02
cohesion×sclindiv					-.03	-.12					-.03	-.15
cohesion×sclrelat					.02	.12					-.02	-.18
cohesion×sclcollect					-.08	-.36*					.07	.48***
Δ R^2		.09***		.02***		.05***		.17***		.23***		.03***
R^2				.11		.16				.40		.43

Note. Because of missing data, N ranged from 2094 to 2105. *ρ<.05. **ρ<.01. ***ρ<.001. Fpermauthv = father permissive-authoritative parenting style; Mpermauthv = mother permissive-authoritative parenting style; Fauthoritan = father authoritarian parenting style; Mauthoritan = mother authoritarian parenting style; cohesion = family cohesion. sclindiv = individual level of self-concept, sclrelat = relational level of self-concept, sclcollect = collective level of self-concept.

= .02, ρ <.001), significant predictors were found to be mother permissive-authoritative parenting style (ß = .08, ρ < .05), mother authoritarian parenting style (ß = .23, ρ < .001), family cohesion (ß = -.15, ρ < .001), individual level (ß = .10, ρ < .001), relational level (ß = .06, ρ < .05), and collective level of self-concept (ß = -.14, ρ < .001); in the third step(ΔR^2 = .05, ρ <.001), significant predictors were father permissive-authoritative parenting style (ß = -.31, ρ < .05), mother permissive-authoritative parenting style (ß = .63, ρ < .001), father authoritarian parenting style (ß = .49, ρ < .01), individual level (ß = .52, ρ < .001), collective level of self-concept (ß = .60, ρ < .001), the interaction between father authoritarian parenting style and individual level of self-concept (ß = -.64, ρ < .001), the interaction between mother permissive-authoritative parenting style and individual level of self-concept (ß = -.64, ρ < .001), the interaction between mother authoritarian parenting style and individual level of self-concept (ß = .64, ρ < .001), the interaction between mother authoritarian parenting style and collective level of self-concept (ß =-.58, ρ < .01), and the interaction between family cohesion and collective level of self-concept (ß = -.36, ρ < .05); and the overall model of including these three steps was significant as well (F(23, 2102) = 17.06, R^2 = .16, ρ < .001).

Secondly, in the regression model of prosocial behaviour on family environment and self-concept levels, significant predictors were father permissive-authoritative parenting style (ß = .14, ρ <.001), mother permissive-authoritative parenting style (ß = .14, ρ <.001), father authoritarian parenting style (ß = .06, ρ <.05), mother authoritarian parenting style (ß = -.08, ρ <.01), and family cohesion (ß = .24, ρ <.001) in the first step (ΔR^2 = .17, ρ <.001); in the second step (ΔR^2 = .23, ρ <.001), father permissive-authoritative parenting style (ß = .13, ρ <.001), mother permissive-authoritative parenting style (ß = .11, ρ <.001), father authoritarian parenting style (ß = .05, ρ <.05), mother authoritarian parenting style (ß = -.08, ρ <.01), relational level (ß = .26, ρ <.001) and collective level (ß = .35, ρ <.001) of self-concept acted as significant predictors; in the third step (ΔR^2 = .03, ρ <.001), father permissive-authoritative parenting style (ß = .34, ρ <.01), father authoritarian parenting style (ß = .37, ρ <.01), mother authoritarian parenting style (ß = -.35, ρ <.01), individual level (ß = .29, ρ <.01), relational level (ß = .49, ρ <.001) of self-concept, the interaction between father permissive-authoritative parenting style and individual level of self-concept (ß = -.57, ρ <.001), the interaction between father authoritarian parenting style and relational level of self-concept (ß = -.50, ρ <.01), the interaction between mother permissive-authoritative parenting style and individual level of self-concept (ß = .63, ρ <.001), the interaction between mother permissive-authoritative parenting style and relational level of self-concept (ß = -.49, ρ <.05), the interaction between mother authoritarian parenting style and individual level of self-concept (ß = -.35, ρ <.01),

the interaction between mother authoritarian parenting style and relational level of self-concept (ß = -.56, ρ <.01), the interaction between family cohesion and collective level of self-concept (ß = .48, ρ <.001) acted as significant predictors; and the regression model including these three steps was significant as well (F (23, 2102) = 69.76, R^2 = .43, ρ < .001).

In sum, in terms of the three learning environments, all of them have direct effect on anxious solitary behaviour (ΔR^2 ranging between .04 and .09), and peer relations， favourite and average teacher interpersonal behaviour had similar size of effect (ΔR^2 around .04 or .05), but family environment had larger effect (ΔR^2 =.09); while on prosocial behaviours, the contributors from the greatest to the least followed this order: peer relations (ΔR^2 =.27), family environment (ΔR^2 =.17), favourite teacher interpersonal behaviour (ΔR^2 =.14), and average teacher interpersonal behaviour(ΔR^2 =.06). The direct effect of chronic self-concept levels contributed not much directly to anxious solitary behaviour (ΔR^2 around .02 or .03) and contributed much more directly to prosocial behaviours (ΔR^2 ranging between .13 and .32). Finally, interaction effects between chronic self-concept levels and each of the three learning environments such as peer relations, teacher interpersonal behaviours and family environment existed on both anxious solitary behaviour and prosocial behaviour, but the effect sizes were small (ΔR^2 ranging between .01and .03), although statistically significant.

Effects on Self-Esteem

Table 47 showed the results about regression of self-esteem on peer relations and self-concept levels. Firstly, in the regression model of positive self-esteem on peer relations and self-concept levels, peer group acceptance (ß = .19, ρ < .001) and best friendship quality (ß = .30, ρ < .001) acted as significant predictors in the 1st step (ΔR^2 = .16, ρ < .001); in the 2nd step (ΔR^2 = .09, ρ < .001), peer group acceptance (ß = .14, ρ < .001) and best friendship quality (ß = .17, ρ < .001) kept to be significant predictors and new significant predictors were found to be individual level (ß = .18, ρ < .001), relational level (ß = .06, ρ < .05), and collective level of chronic self-concept (ß = .20, ρ < .001); in the 3rd step (ΔR^2 = .03, ρ < .001), significant predictors were best friendship quality (ß = -.23, ρ < .05), individual level (ß = .73, ρ < .001), relational level of chronic self-concept (ß = -.40, ρ < .001), the interaction between peer group acceptance and collective level of self-concept (ß = .50, ρ < .01), the interaction between best friendship quality and individual level of self-concept (ß = -.53, ρ < .001), and the interaction between best friendship quality and relational level of self-concept (ß = 1.25, ρ <

.001); and the regression model with these three steps was significant as well ($F(11, 2104) = 72.88$, $R^2 = .28$, $\rho < .001$).

Secondly, in the regression model of negative self-esteem on peer relations and self-concept levels, peer group acceptance (ß = -.22, ρ <.001) and best friendship quality (ß = -.11, ρ < .001) were significant predictor in the first step ($\Delta R^2 = .08$, ρ <.001); in the second step ($\Delta R^2 = .03$, ρ <.001), peer group acceptance (ß = -.21, ρ <.001) kept to be significant predictor and new significant predictors were individual level (ß = .15, ρ<.001) and relational level of self-concept (ß = -.13, ρ < .001); in the third step ($\Delta R^2 = .04$, ρ <.01), significant predictors were best friendship quality (ß = .73, ρ <.001), individual level (ß = .66, ρ < .001), collective level of chronic self-concept (ß = .30, ρ < .01), the interaction between peer group acceptance and individual level of self-concept (ß = -.27, ρ < .01), the interaction between best friendship quality and individual level of self-concept (ß = -.36, ρ < .01), and the interaction between best friendship quality and relational level of self-concept (ß = -.69, ρ < .001); and the overall regression model including these three steps was significant as well ($F(11, 2104) = 32.73$, $R^2 = .15$, $\rho < .001$).

Table 48 showed the results about regression of self-esteem on favourite teacher interpersonal behaviour and self-concept levels. Firstly, in the regression model of positive self-esteem on favourite teacher interpersonal behaviour and self-concept levels, favourite teacher cooperative behaviour (ß =.37, ρ < .001) and favourite teacher opposition behaviour (ß = .15, ρ< .001) acted as significant predictors in the 1st step (R^2=.11, ρ <.001); in the 2nd step (ΔR^2= .12, ρ <.001), significant predictors were favourite teacher cooperative behaviour (ß = .16, ρ < .001), favourite teacher opposition behaviour (ß = .15, ρ < .001), individual level (ß = .13, ρ < .001), relational level (ß = .13, ρ<.001), and collective level of chronic self-concept (ß = .25, ρ < .001); in the third step ($\Delta R^2 = .05$, ρ<.001), significant predictors were favourite teacher opposition behaviour (ß=.98, ρ<.001), collective level of chronic self-concept (ß =.40, ρ<.05) and the interaction between favourite teacher opposition behaviour and relational level of chronic self-concept (ß=-.68, ρ<.001); and the regression model with these three steps was significant as well ($F(11, 2104) = 72.64$, R^2= .28, ρ<.001).

Secondly, in the regression model of negative self-esteem on favourite teacher interpersonal behaviour and self-concept levels, favourite teacher cooperative behaviour (ß = -.08, ρ <.01) and favourite teacher opposition behaviour (ß = .25, ρ <.001) were significant predictors in the first step ($\Delta R^2 = .09$, ρ <.001); in the second step ($\Delta R^2 = .02$, ρ <.001), favourite teacher opposition behaviour (ß = .21, ρ <.001) kept to be significant predictors and new predictors were individual level (ß = .11, ρ <.001), relational level (ß = -.07, ρ <.05) and collective level (ß = -.09, ρ <.01) of self-concept; in the third step ($\Delta R^2 = .01$, ρ<

Table 47 Regression of self-esteem on peer relations and self-concept levels in study 2

	Positive Self-Esteem						Negative Self-Esteem					
	step 1		step 2		step 3		step 1		step 2		step 3	
Predictor	B	β	B	β	B	β	B	β	B	β	B	β
PGA	.22	.19***	.16	.14***	.16	.14	-.29	-.22***	-.28	-.21***	-.17	-.13
BFQ	.32	.30***	.18	.17***	-.25	-.23*	-.14	-.11***	-.05	-.04	.90	.73***
sclindiv			.16	.18***	.64	.73***			.15	.15***	.67	.66***
sclrelat			.06	.06*	-.42	-.40***			-.15	-.13***	.05	.04
sclcollect			.19	.20***	.00	.00			-.04	-.04	.35	.30**
PGA × sclindiv					-.04	-.13					-.09	-.27**
PGA × sclrelat					-.09	-.36					.09	.32
PGA × sclcollect					.12	.50**					-.01	.05
BFQ × sclindiv					-.13	-.53***					-.10	-.36**
BFQ × sclrelat					.26	1.25***					-.16	-.69***
BFQ × sclcollect					-.04	-.18					-.06	.04
Δ R^2	.16***		.09***		.03***		.08***		.03***		.04**	
R^2			.25		.28				.11		.15	

Note. Because of missing data, N ranged from 2094 to 2105. *ρ<.05. **ρ<.01. ***ρ<.001. PGA = peer group acceptance, BFQ = best friendship quality, sclindiv = individual level of self-concept, sclrelat = relational level of self-concept, sclcollect = collective level of self-concept

Table 48 Regression of self-esteem on FT interpersonal behaviour and self-concept levels in study 2

predictor	Positive self-esteem						Negative self-esteem					
	step 1		step 2		step 3		step 1		step 2		step 3	
	B	β	B	β	B	β	B	β	B	β	B	β
FTcoop	.50	.37***	.22	.16***	.15	.11	-.12	-.08**	-.07	-.04	.55	.35***
FTopp	.18	.15***	.19	.15***	1.19	.98***	.36	.25***	.30	.21***	.45	.32**
sclindiv			.11	.13***	.25	.29			.12	.11***	-.02	-.02
sclrelat			.14	.13***	.23	.22			-.09	-.07*	.12	.10
sclcollect			.25	.25***	.40	.40*			-.10	-.09**	.50	.43*
FTcoop×sclindiv					-.06	-.24					.06	.23
FTcoop×sclrelat					.09	.39					-.10	-.40
FTcoop×sclcollect					-.02	-.08					-.15	-.59*
FTopp×sclindiv					.03	.08					-.05	-.11
FTopp×sclrelat					-.28	-.68***					.09	.18
FTopp×sclcollect					-.08	-.20					-.10	-.21
Δ R^2	.11***		.12***		.05***		.09***		.02***		.01***	
R^2			.23		.28				.11		.12	

Note. Because of missing data, N ranged from 2094 to 2105. *ρ<.05. **ρ<.01. ***ρ<.001. FT=favourite teacher; FTcoop = favourite teacher cooperative behaviour; FTopp = favourite teacher opposition behaviour; sclindiv = individual level of self-concept; sclrelat = relational level of self-concept; sclcollect = collective level of self-concept.

.001), favourite teacher cooperative behaviour (ß = .35, ρ <.001), favourite teacher opposition behaviour (ß = .32, ρ <.01), collective level of self-concept (ß = .43, ρ <.05), and the interaction between favourite teacher cooperative behaviour and collective level of self-concept (ß = -.59, ρ <.05) were significant predictors; and the overall regression model including these three steps was significant as well (F(11, 2104) = 25.63, R^2 = .12, ρ < .001).

In comparison with the effect of favourite teacher interpersonal behaviour and self-concept levels, Table 49 revealed the results about regression of self-esteem on average teacher interpersonal behaviour and self-concept levels. Firstly, in the regression model of positive self-esteem on average teacher interpersonal behaviour and self-concept levels, average teacher cooperative behaviour (ß = .20, ρ <.001) and average teacher opposition behaviour (ß = .24, ρ <.001) were significant predictors in the first step (ΔR^2 = .07, ρ <.001); in the second step (ΔR^2 = .17, ρ <.001), average teacher cooperative behaviour (ß = .10, ρ <.001) and average teacher opposition behaviour (ß = .20, ρ <.001) kept to be significant predictors and new predictors were individual level (ß = .12, ρ <.001), relational level (ß = .15, ρ <.001) and collective level (ß = .26, ρ <.001) of self-concept; in the third step (ΔR^2 = .04, ρ <.001), average teacher opposition behaviour (ß = .94, ρ <.001), relational level (ß = .33, ρ <.01) and collective level of self-concept (ß = .48, ρ <.001), the interaction between average teacher opposition behaviour and relational level of self-concept (ß = -.55, ρ <.001), and the interaction between average teacher opposition behaviour and collective level of self-concept (ß = -.37, ρ <.01) were significant predictors; and the overall regression model including these three steps was significant as well (F(11, 2104) = 72.64, R^2 = .28, ρ < .001).

Secondly, in the regression model of negative self-esteem on average teacher interpersonal behaviour and self-concept levels, average teacher opposition behaviour (ß = .23, ρ <.001) was a significant predictor in the first step (ΔR^2 = .05, ρ <.001); in the second step (ΔR^2 = .04, ρ <.001), average teacher opposition behaviour (ß = .20, ρ < .001), individual level (ß = .10, ρ <.001)， relational level (ß = -.13, ρ <.001) and collective level (ß = -.11, ρ <.001) of self-concept acted as significant predictors; in the third step (ΔR^2 = .04, ρ <.001), significant predictors were average teacher cooperative behaviour (ß = .75, ρ <.001) and average teacher opposition behaviour (ß = .20, ρ <.05), individual level (ß = .34, ρ <.01) and relational level (ß = .32, ρ <.05) of self-concept, the interaction between average teacher cooperative behaviour and relational level of self-concept (ß = -1.09, ρ <.001), the interaction between average teacher opposition behaviour and individual level of self-concept (ß = -.19, ρ <.05), the interaction between average teacher opposition behaviour and relational level of self-concept (ß = .35, ρ <.01); and the regression model including these three steps was significant as well (F (11, 2104) = 30.16, R^2 = .13, ρ < .001).

Table 49 Regression of self-esteem on AT interpersonal behviour and self-concept levels in study 2

	Positive self-esteem						Negative self-esteem					
	step 1		step 2		step 3		step 1		step 2		step 3	
predictor	B	β	B	β	B	β	B	β	B	β	B	β
ATcoop	.24	.20***	.12	.10***	-.09	-.08	-.03	-.02	.03	.02	1.05	.75***
ATopp	.29	.24***	.25	.20***	1.17	.94***	.33	.23***	.29	.20***	.29	.20*
sclindiv			.11	.12***	.13	.15			.11	.10***	.35	.34**
sclrelat			.16	.15***	.34	.33**			-.16	-.13***	.39	.32*
sclcollect			.26	.26***	.47	.48***			-.13	-.11***	-.12	-.10
ATcoop×sclindiv					-.02	-.07					-.05	-.14
ATcoop×sclrelat					.06	.24					-.33	-1.09***
ATcoop×sclcollect					.00	.02					.05	.17
ATopp×sclindiv					.02	.05					-.08	-.19*
ATopp×sclrelat					-.19	-.55***					.14	.35**
ATopp×sclcollect					-.13	-.37**					-.10	-.25
Δ R^2	.07***		.17***		.04***		.05***		.04***		.04***	
R^2			.24		.28				.09		.13	

Note. Because of missing data, N ranged from 2094 to 2105. *ρ<.05. **ρ<.01. ***ρ<.001. AT = average teacher; ATcoop = average teacher cooperative behaviour; ATopp = average teacher opposition behaviour; sclindiv = individual level of self-concept; sclrelat = relational level of self-concept; sclcollect = collective level of self-concept

Table 50 Regression of self-esteem on family environment and self-concept levels in study 2

	Positive self-esteem						Negative self-esteem					
	step 1		step 2		step 3		step 1		step 2		step 3	
Predictor	B	β	B	β	B	β	B	β	B	β	B	β
Fpermauthv	.32	.25***	.28	.22***	.63	.49***	-.04	-.03	-.05	-.04	.54	.36*
Mpermauthv	-.02	-.01	-.02	-.01	.60	.46**	.06	.04	.08	.06	.35	.23
Fauthoritan	.20	.19***	.16	.14***	.77	.72***	.17	.14***	.16	.12***	.17	.13
Mauthoritan	-.10	-.09**	-.12	-.11***	-.30	-.27	.18	.14***	.17	.13***	.27	.20
cohesion	.18	.23***	.06	.07**	-.44	-.57***	-.16	-.17***	-.10	-.11***	.17	.19
sclindiv			.11	.13***	.25	.28*			.07	.07**	.07	.07
sclrelat			.12	.11***	.27	.26*			-.15	-.12***	-.18	-.15
sclcollect			.23	.23***	.48	.49***			-.08	-.07*	.81	.70***
Fpermauthv×sclindiv					-.13	-.44**					.01	.03
Fpermauthv×sclrelat					.05	.17					.30	.93**
Fpermauthv×sclcollect					-.08	-.31					-.52	-1.63***
Fauthoritarian×sclindiv					-.13	-.46***					-.05	-.16
Fauthoritarian×sclrelat					.11	.43*					.21	.67**

(Continued)

	Positive self-esteem						Negative self-esteem					
	step 1		step 2		step 3		step 1		step 2		step 3	
Predictor	B	β	B	β	B	β	B	β	B	β	B	β
Fauthoritarian×sclcollect					-.23	-.84***					-.20	-.65**
Mpermauthv×sclindiv					.22	.73***					.04	.10
Mpermauthv×sclrelat					-.36	-1.28***					-.17	-.53
Mpermauthv×sclcollect					.02	.07					.10	.30
Mauthoritarian×sclindiv					.07	.25*					.02	.06
Mauthoritarian×sclrelat					-.07	-.24					-.15	-.46*
Mauthoritarian×sclcollect					.08	.28					.13	.39
cohesion×sclindiv					-.08	-.36***					-.02	-.07
cohesion×sclrelat					.15	.85***					-.13	-.64***
cohesion×sclcollect					.07	.39**					.06	.30
ΔR^2	.16***		.10***		.07***		.10***		.02***		.04***	
R^2			.26		.33				.12		.16	

Note. Because of missing data, N ranged from 2094 to 2105. *ρ<.05. **ρ<.01. ***ρ<.001. Fpermauthv = father permissive-authoritative parenting style; Mpermauthv = mother permissive-authoritative parenting style; Fauthoritan = father authoritarian parenting style; Mauthoritan = mother authoritarian parenting style; cohesion = family cohesion. sclindiv = individual level of self-concept, sclrelat = relational level of self-concept, sclcollect = collective level of self-concept.

In Table 50, results were revealed about the regression of self-esteem on family environment (i.e., family cohesion, father and mother parenting styles) and self-concept levels.

Firstly, in the regression model of positive self-esteem on family environment and self-concept levels, in the first step (ΔR^2 = .16, ρ <.001), father permissive-authoritative parenting style (ß = .25, ρ <.001), father authoritarian parenting style (ß = .19, ρ <.001), mother authoritarian parenting style (ß = -.09, ρ <.01), and family cohesion (ß = .23, ρ <.001); in the second step (ΔR^2 = .10, ρ <.001), significant predictors were found to be father permissive-authoritative parenting style (ß = .22, ρ <.001), father authoritarian parenting style (ß = .14, ρ <.001), mother authoritarian parenting style (ß = -.11, ρ <.001), family cohesion (ß = .07, ρ <.01), individual level (ß = .13, ρ <.001), relational level (ß = .11, ρ <.001) and collective level (ß = .23, ρ <.001) of self-concept acted as significant predictors; in the third step (ΔR^2 = .07, ρ <.001), significant predictors were father permissive-authoritative parenting style (ß = .49, ρ <.001), mother permissive-authoritative parenting style (ß = .46, ρ <.01), father authoritarian parenting style (ß = .72, ρ <.001), family cohesion (ß = -.57, ρ <.001), individual level (ß = .28, ρ <.05), relational level (ß = .26, ρ <.05) and collective level of self-concept (ß = .49, ρ <.001), the interaction between father permissive-authoritative parenting style and individual level of self-concept (ß = -.44, ρ <.01), the interaction between father authoritarian parenting style and individual level of self-concept (ß = -.46, ρ <.001), the interaction between father authoritarian parenting style and relational level of self-concept (ß = .43, ρ <.05), the interaction between father authoritarian parenting style and collective level of self-concept (ß = -.84, ρ <.001), the interaction between mother permissive-authoritative parenting style and individual level of self-concept (ß = .73, ρ <.001), the interaction between mother permissive-authoritative parenting style and relational level of self-concept (ß = -1.28, ρ <.001), the interaction between mother authoritarian parenting style and individual level of self-concept (ß = .25, ρ <.05), the interaction between family cohesion and individual level of self-concept (ß = -.36, ρ <.001), the interaction between family cohesion and relational level of self-concept (ß = .85, ρ <.001), the interaction between family cohesion and collective level of self-concept (ß = .39, ρ <.01). And the overall regression model was significant as well (F (23, 2102) = 43.88, R^2 = .33, ρ < .001).

Secondly, in the regression model of negative self-esteem on family environment and self-concept levels, in the first step (ΔR^2 = .10, ρ <.001), significant predictors were father authoritarian parenting style (ß = .14, ρ <.001), mother authoritarian parenting style (ß = .14, ρ <.001), family cohesion (ß = -.17, ρ <.001); in the second step (ΔR^2 = .02, ρ <.001), significant predictors were father authoritarian parenting style (ß = .12, ρ <.001), mother authoritarian parenting

style (ß = .13, ρ <.001), family cohesion (ß = -.11, ρ <.001), individual level (ß = .07, ρ <.01), relational level (ß = -.12, ρ <.001), and collective level (ß = -.07, ρ <.05) of self-concept; in the third step (ΔR^2 = .04, ρ <.001), the significant predictors were father permissive-authoritative parenting style (ß = .36, ρ <.05), collective level of self-concept(ß = .70, ρ <.001), the interaction between father permissive-authoritative parenting style and relational level of self-concept (ß = .93, ρ <.01), the interaction between father permissive-authoritative parenting style and collective level of self-concept (ß = -1.63, ρ <.001), the interaction between father authoritarian parenting style and relational level of self-concept (ß = .67, ρ <.01), the interaction between father authoritarian parenting style and collective level of self-concept (ß = -.65, ρ <.01), the interaction between mother authoritarian parenting style and relational level of self-concept (ß =-.46, ρ <.05), the interaction between family cohesion and relational level of self-concept (ß =-.64, ρ <.001); and the overall regression model was significant as well (F (23, 2102) =17.71, R^2 =.16, ρ < .001).

In sum, on positive self-esteem, in terms of significant direct effects, the learning environments, such as peer relations (ΔR^2 = .16), family environment (ΔR^2 = .16) and favourite teacher interpersonal behaviour (ΔR^2 = .11) had greater impacts on positive self-esteem while average teacher interpersonal behaviour (ΔR^2 = .07) had least impact; on negative self-esteem, the learning environments, such as family environment (ΔR^2 = .10), favourite teacher interpersonal behaviour (ΔR^2 = .09), peer relations (ΔR^2 = .08) average teacher interpersonal behaviour (ΔR^2 = .05) contributed no much; chronic self-concept levels contributed more greatly on positive self-esteem (ΔR^2 ranging from .09 to .17) than on negative self-esteem (ΔR^2 ranging from .02 to .04). Interaction effects between chronic self-concept levels and each of the three learning environments existed on both positive self-esteem and negative self-esteem. Although these interaction effect size were not large, but in comparison with these interaction effects on positive self-esteem, more attention should be given to the interaction between family environment and chronic self-concept levels, the interaction between favourite and average teacher interpersonal behaviour and chronic self-concept and the interaction between peer relations and chronic self-concept (ΔR^2 ranging from .03 and .07), because combination of these interaction effects meant to explain about 20% of the variances in positive self-esteem. Considering the interaction effects of these learning environments and chronic self-concept levels on negative self-esteem, warnings should be given to the relative larger effect size (ΔR^2 = .04) of the interaction between peer relations and chronic self-concept levels, the interaction between average teacher interpersonal behaviour (instead of favourite teacher interpersonal behaviour) and chronic self-concept levels, and the interaction between family environment and chronic self-concept levels.

9.3.6 Testing of Three Learning Environments Direct and Interaction Effects on Student Outcomes (Hypothesis 6)

Study 1

Hypothesis 6 posited that These 3 learning environments would not only have direct, but also joint effects on student outcomes, such as academic achievement goals, social competence and self-esteem as outcome variables. Hierarchical multiple regression analyses were conducted with respectively academic achievement goals, social competence, and self-esteem as dependent variables, and with two steps variables entered as independent variables: in the first step, 3 learning environments variables including peer group acceptance, best friendship quality, favourite teacher cooperative behaviour, favourite teacher opposition behaviour, favourite teacher strict behaviour, average teacher cooperative behaviour, average teacher opposition behaviour, family cohesion, father permissive-authoritative parenting style and mother permissive-authoritative parenting style entered into the first block; and in the second step, two way interactions variables between these three learning environments entered into the second block. Please note that only two-way interactions are considered here!
Table 51 showed the results about regression of academic achievement goals on three learning environments. Firstly, in the regression model of performance goal, peer group acceptance (ß = .11, ρ < .05), average teacher cooperative behaviour (ß = .14, ρ < .05) and average teacher opposition behaviour (ß = .16, ρ < .05) acted as significant predictors in the 1st step (ΔR^2 = .06, ρ < .01); in the 2nd step (ΔR^2 = .18, ρ < .001), significant predictors were family cohesion (ß = 1.86, ρ < .01), average teacher cooperative behaviour (ß = 1.02, ρ < .01), the interaction between average teacher cooperative behaviour and family cohesion (ß = -.99, ρ < .05), the interaction between average teacher opposition behaviour and father permissive-authoritative parenting style (ß = -1.35, ρ < .05), the interaction between average teacher opposition behaviour and family cohesion (ß = -.72, ρ < .05), the interaction between best friendship quality and father permissive-authoritative parenting style (ß = 1.35, ρ < .05), the interaction between best friendship quality and favourite teacher strict behaviour (ß = -.91, ρ < .05), the interaction between father permissive-authoritative parenting style and favourite teacher strict behaviour (ß = 1.50, ρ < .01), the interaction between family cohesion and favourite teacher opposition behaviour (ß = -.74, ρ < .01), the interaction between family cohesion and favourite teacher strict behaviour (ß = -.67, ρ < .05), the interaction between favourite teacher opposition behaviour and mother permissive-authoritative parenting style (ß = .95, ρ < .05); and the overall regression model was significant as well (F(40, 364) = 2.85, R^2 = .24, ρ < .001).

Table 51 Regression of academic achievement goals on three learning environments in study 1

	Performance goal				Mastery goal				Avoidance goal			
	step 1		step 2		step 1		step 2		step 1		step 2	
Predictor	B	β	B	β	B	β	B	β	B	β	B	β
PGA	.13	.11*	.53	.46	.08	.09	-.33	-.36	-.14	-.10	.27	.20
BFQ	.02	.01	.51	.41	.20	.20***	.67	.67	-.03	-.02	-1.87	-1.27*
cohesion	.04	.04	1.77	1.86**	-.01	-.01	.94	1.24*	.11	.10	.63	.56
father_PS	.03	.06	-.46	-.80	.03	.06	-.37	-.80	.00	.00	-.35	-.51
mother_PS	-.06	-.10	-.15	-.26	.08	.17**	.29	.62	-.05	-.07	1.57	2.29*
FTcooperative	.03	.06	-.04	-.10	.05	.17**	.12	.38	.01	.03	-.06	-.13
FTopposition	.01	.02	-.08	-.20	-.04	-.13*	.00	-.01	.07	.14*	.15	.29
FTstrict	-.03	-.02	.44	.36	.05	.05	-.67	-.69*	.09	.06	.34	.23
ATcooperative	.04	.14*	.33	1.02**	.02	.06	.28	1.11**	.00	-.01	.11	.30
ATopposition	.23	.16*	.51	.36	.06	.06	.84	.75*	.24	.15*	-.72	-.43
ATcooperative × BFQ			.01	.09			-.06	-.94*			.05	.50
ATcooperative × father_PS			.02	.43			-.02	-.57			-.04	-.70
ATcooperative × cohesion			-.06	-.99*			-.06	-1.10**			.02	.28
ATcooperative × mother_PS			-.04	-.93			.03	.81			-.02	-.44
ATcooperative × PGA			.01	.08			.02	.36			-.01	-.14

(Continued)

	Performance goal				Mastery goal				Avoidance goal			
	step 1		step 2		step 1		step 2		step 1		step 2	
Predictor	B	β	B	β	B	β	B	β	B	β	B	β
ATopposition × BFQ			-.15	-.39			-.16	-.51			.44	.97*
ATopposition × father_PS			-.27	-1.35*			-.08	-.47			-.12	-.52
ATopposition × cohesion			.26	.72*			.03	.10			.05	.12
Atopposition × mother_PS			.14	.71			-.02	-.15			.10	.41
Atopposition × PGA			.02	.06			.05	.13			-.16	-.31
BFQ × father_PS			.19	1.35*			.05	.50			-.07	-.46
BFQ × Ftopposition			.08	.58			-.03	-.27			.09	.54
BFQ × Ftcooperative			.01	.07			.02	.35			.08	.94
BFQ × Ftstrict			-.30	-.91*			.08	.32			.06	.15
BFQ× mother_PS			-.15	-1.10			-.06	-.57			-.08	-.50
father_PS × Ftopposition			-.02	-.33			-.01	-.08			.04	.47
father_PS × Ftcooperative			-.01	-.18			.00	.13			.08	1.82*
father_PS × Ftstrict			.24	1.50**			.13	.99*			.09	.46
father_PS × PGA			-.05	-.35			.08	.70			-.09	-.53

(Continued)

	Performance goal				Mastery goal				Avoidance goal			
	step 1		step 2		step 1		step 2		step 1		step 2	
Predictor	B	β	B	β	B	β	B	β	B	β	B	β
cohesion × FTopposition			-.10	-.74**			.03	.24			-.06	-.41
cohesion × FTcooperativ			-.05	-.93			-.05	-1.01*			-.03	-.48
cohesion × FTstrict			-.18	-.67*			-.04	-.20			-.16	-.53
cohesion × PGA			-.11	-.46			.07	.40			.08	.28
FTopposition × mother_PS			.07	.95*			.00	-.02			-.08	-.93*
FTopposition × PGA			-.04	-.29			.00	-.04			.03	.16
FTcooperativ × mother_PS			.03	.84			.01	.26			-.09	-2.12*
FTcooperativ × PGA			.03	.44			-.02	-.36			.01	.15
FTstrict × mother_PS			.01	.09			-.06	-.48			.01	.04
mother_PS × PGA			.01	.05			-.08	-.67			.04	.25
FTstrict× PGA			-.10	-.30			.09	.36			-.12	-.33
Δ R^2	.06**			.18***	.28***			.11**	.08***			.13**
R^2				.24				.39				.21

Note: Because of missing data, N ranged from 398 to 405. *ρ<.05. **ρ<.01. ***ρ<.001. PGA = peer group acceptance, BFQ = best friendship quality, FT = favourite teacher, AT = average teacher, feco = family cohesion, mother_PS = mother parenting style, father_PS = father parenting style.

Secondly, in the regression model of mastery goal, significant predictors were best friendship quality (ß = .20, ρ <.001), mother permissive-authoritative parenting style (ß = .17, ρ <.01), favourite teacher cooperative behaviour (ß = .17, ρ <.01) and favourite teacher opposition behaviour (ß = -.13, ρ <.05) in the first step (ΔR^2 = .28, ρ <.001); in the second step (ΔR^2 = .11, ρ <.01), significant predictors were family cohesion (ß = 1.24, ρ <.05), favourite teacher strict behaviour (ß = -.69, ρ <.05), average teacher cooperative behaviour (ß = 1.11, ρ <.01), average teacher opposition behaviour (ß = .75, ρ <.05), and the interaction between average teacher cooperative behaviour and best friendship quality (ß = -.94, ρ <.05), the interaction between average teacher cooperative behaviour and family cohesion (ß = -1.10, ρ <.01), the interaction between father permissive-authoritative parenting style and favourite teacher strict behaviour (ß = .99, ρ <.05) the interaction between family cohesion and favourite teacher cooperative behaviour (ß = -1.01, ρ <.05); and overall regression model was significant as well (F (40, 364) = 5, 66, R^2 = .39, ρ < .001).

Finally, in the regression model of avoidance goal, significant predictors were favourite teacher opposition behaviour (ß = .14, ρ <.05) and average teacher opposition behaviour (ß = .15, ρ <.05) in the first step (ΔR^2 = .08, ρ <.001); in the second step (ΔR^2 = .13, ρ <.001), significant predictors were best friendship quality (ß = -1.27, ρ <.05), mother permissive-authoritative parenting style (ß = 2.29, ρ <.05), the interaction between average teacher opposition behaviour and best friendship quality (ß = .97, ρ <.05), the interaction between father permissive-authoritative parenting style and favourite teacher cooperative behaviour (ß = 1.82, ρ <.05), the interaction between favourite teacher opposition behaviour and mother permissive-authoritative parenting style (ß = -.93, ρ <.05), and the interaction between favourite teacher cooperative behaviour and mother permissive-authoritative parenting style (ß = -2.12, ρ <.05); and overall regression model was significant as well (F(40, 364) = 2.51, R^2 = .21, ρ < .001).

Table 52 showed the results about regression of social competence on three learning environments. Firstly, in the regression model of anxious solitary behaviour, peer group acceptance (ß = -.23, ρ < .001), favourite teacher opposition behaviour (ß = .12, ρ < .05) and favourite teacher strict behaviour (ß = .17, ρ < .01) acted as significant predictors in the 1st step (ΔR^2 = .15, ρ < .001); in the 2nd step (ΔR^2 = .06, ρ > .05), there were no significant interaction effects. And the regression model was significant (F (40, 364) = 3.59, R^2 = .15, ρ < .001). Anxious solitary behaviour as a negative student outcome might be resulted in by no interactions or no exchange of information among the learning environments, such as between parents and teachers, between peer relations and parents and between peer relations and teachers, etc.

Secondly, in the regression model of prosocial behaviour, significant predictors were peer group acceptance (ß = .17, ρ < .001), best friendship quality (ß = .30, ρ < .001), mother permissive-authoritative parenting style (ß = .30, ρ < .001), and favourite teacher opposition behaviour (ß = -.12, ρ < .05) in the first step (ΔR^2 = .39, ρ < .001); in the second step (ΔR^2 = .11, ρ < .001), significant predictors were found to be best friendship quality (ß = 1.02, ρ < .05), the interaction between average teacher cooperative behaviour and family cohesion (ß = -.79, ρ < .05), the interaction between average teacher cooperative behaviour and mother permissive-authoritative parenting style (ß = 1.13, ρ < .01) and the interaction between favourite teacher strict behaviour and peer group acceptance (ß = .79, ρ < .01); and the overall regression model was significant as well (F(40, 360) = 9.16, R^2 = .50, ρ < .001).

Results about regression of self-esteem on the three learning environments were reported in Table 53. Firstly, in the regression model of positive self-esteem, significant predictors were peer group acceptance (ß = .24, ρ < .001), best friendship quality (ß = .25, ρ < .001), father permissive-authoritative parenting style (ß .21, ρ < .01) and favourite teacher cooperative behaviour (ß = .10, ρ < .05) in the 1st step (ΔR^2 = .33, ρ <.001); in the 2nd step (ΔR^2 = .11, ρ <.001), significant predictors were father permissive-authoritative parenting style (ß = 1.68, ρ < .05), average teacher opposition behaviour (ß = .86, ρ < .01), the interaction between average teacher opposition behaviour and mother permissive-authoritative parenting style (ß = -.91, ρ < .05), the interaction between favourite teacher opposition behaviour and mother permissive-authoritative parenting style (ß = .98, ρ < .01) and the interaction between favourite teacher cooperative behaviour and mother permissive-authoritative parenting style (ß = 1.89, ρ < .05); and the regression model was significant as well (F (40, 364) = 7.04, R^2 = .44, ρ < .001).

Secondly, in the regression model of negative self-esteem, peer group acceptance (ß = -.26, ρ <.001), favourite teacher cooperative behaviour (ß = .12, ρ < .05) and favourite teacher opposition behaviour (ß = .21, ρ <.01) were significant predictors in the first step (ΔR^2 = .16, ρ <.001); in the second step no significant R^2 was reached (ΔR^2 = .06, ρ >.05). There were no interaction effects on negative self-esteem, which reflected that without interactions between the learning environments, there might problems in self-esteem.

In sum, if we consider the direct and joint effects of the three learning environments, more fruitful results were accomplished in terms of the variance explained in the outcome variables. Specifically, as was seen, direct effects of the three learning environments existed on every outcome variable (ΔR^2 ranging between .06 and .39), but if the interaction effects between these three learning environments were considered, except on anxious solitary behaviour and negative self-esteem, the interaction effects existed on performance goal (ΔR^2 = .18),

Table 52 Regression of social competence on three learning environments in study 1

	Anxious solitary behaviour		Prosocial behaviour			
	Step 1		Step 1		Step 2	
Predictor	B	β	B	β	B	β
PGA	-.28	-.23***	.13	.17***	-.34	-.42
BFQ	-.06	-.04	.26	.30***	.89	1.02*
cohesion	-.02	-.02	-.02	-.04	.41	.61
father_PS	-.02	-.04	.01	.03	.10	.23
mother_PS	-.03	-.04	.12	.30***	-.26	-.64
FTcooperative	.02	.05	.02	.07	.09	.32
FTopposition	.05	.12*	-.04	-.12*	.03	.12
FTstrict	.23	.17**	.07	.08	-.04	-.04
ATcooperative	-.03	-.08	-.01	-.03	.07	.31
ATopposition	.06	.04	.07	.07	.39	.38
ATcooperative × BFQ					-.02	-.42
ATcooperative × father_PS					-.01	-.19
ATcooperative × cohesion					-.04	-.79*
ATcooperative × mother_PS					.03	1.13**
ATcooperative × PGA					-.01	-.20

(Continued)

	Anxious solitary behaviour		Prosocial behaviour			
	Step 1		Step 1		Step 2	
Predictor	B	β	B	β	B	β
ATopposition × BFQ					-.01	-.03
ATopposition × father_PS					-.06	-.40
ATopposition × cohesion					.07	.27
ATopposition × mother_PS					-.01	-.08
ATopposition × PGA					-.07	-.22
BFQ × father_PS					-.03	-.31
BFQ × FTopposition					-.04	-.43
BFQ × FTcooperative					-.01	-.25
BFQ × FTstrict					-.11	-.47
BFQ × mother_PS					.05	.49
father_PS × FTopposition					.01	.11
father_PS× FTcooperative					.00	.04
father_PS × FTstrict					-.03	-.30
father_PS × PGA					.07	.66
cohesion × FTopposition					.02	.20
cohesion × FTcooperativ					-.03	-.62

(Continued)

	Anxious solitary behaviour		Prosocial behaviour			
	Step 1		Step 1		Step 2	
Predictor	B	β	B	β	B	β
cohesion × FTstrict					.02	.13
cohesion × PGA					.01	.05
FTopposition×mother_PS					-.01	-.16
FTopposition × PGA					.00	.02
FTcooperativ×mother_PS					.00	.11
FTcooperativ × PGA					.01	.19
FTstrict × mother_PS					.00	.04
mother_PS × PGA					-.03	-.31
FTstrict × PGA					.18	.79**
Δ R^2	.15***		.39***		.11***	
R^2	.15				.50	

Note: Because of missing data, N ranged from 398 to 405. *ρ<.05. **ρ<.01. ***ρ<.001. PGA = peer group acceptance, BFQ = best friendship quality, FT = favourite teacher, AT = average teacher, feco = family cohesion, mother_PS = mother parenting style, father_PS = father parenting style.

Table 53 Regression of self-esteem on three learning environments in Study 1

Step		Positive Self-Esteem						Negative Self-Esteem		
	Predictor	B	SE B	β	B	SE B	β	B	SE B	β
1	PGA	.24	.05	.24***	.16	.44	.16	-.32	.07	-.26***
	BFQ	.28	.06	.25***	.66	.49	.60	-.02	.08	-.02
	cohesion	-.03	.04	-.03	.38	.43	.45	.01	.05	.01
	father_PS	.11	.04	.21**	.86	.37	1.68*	-.05	.05	-.08
	mother_PS	.02	.04	.03	-.73	.39	-1.42	-.07	.05	-.11
	FTcooperative	.04	.02	.10*	-.01	.10	-.03	.05	.03	.12*
	FTopposition	-.01	.02	-.04	-.02	.12	-.06	.09	.03	.21**
	FTstrict	.07	.05	.07	-.25	.30	-.23	.09	.07	.07
	ATcooperative	-.02	.01	-.08	.14	.09	.50	.00	.02	.01
	ATopposition	.11	.07	.09	1.08	.39	.86**	.09	.09	.06
2	ATcooperative × BFQ				-.04	.03	-.53			
	ATcooperative × father_PS				.00	.02	-.04			
	ATcooperative × cohesion				[illegible]	[illegible]	-.63			
	ATcooperative × mother_PS				.01	.02	.29			
	ATcooperative × PGA				.01	.02	.18			
	ATopposition × BFQ				-.19	.12	-.55			
	ATopposition × father_PS				.00	.08	.00			
	ATopposition × cohesion				.17	.09	.55			

(Continued)

Step		Positive Self-Esteem						Negative Self-Esteem		
	Predictor	B	SE B	β	B	SE B	β	B	SE B	β
	ATopposition × mother_PS				-.16	.08	-.91*			
	ATopposition × PGA				-.02	.11	-.04			
	BFQ × father_PS				-.10	.07	-.80			
	BFQ × FTopposition				.02	.04	.14			
	BFQ × FTcooperative				.04	.03	.59			
	BFQ × FTstrict				.11	.09	.38			
	BFQ × mother_PS				-.01	.07	-.12			
	father_PS × FTopposition				-.04	.02	-.69			
	father_PS × FTcooperative				-.04	.02	-1.11			
	father_PS × FTstrict				.04	.06	.29			
	father_PS × PGA				.02	.06	.17			
	cohesion × FTopposition				-.02	.03	-.17			
	cohesion × FTcooperativ				-.04	.02	-.73			
	cohesion × FTstrict				.06	.07	.26			
	cohesion × PGA				.02	.06	.10			

(Continued)

Step		Positive Self-Esteem			Negative Self-Esteem		
	Predictor	B	SE B	β	B	SE B	β
	FTopposition × mother_PS				.07	.03	.98**
	FTopposition × PGA				-.04	.03	-.32
	FTcooperativ × mother_PS				.06	.03	1.89*
	FTcooperativ × PGA				-.03	.03	-.53
	FTstrict × mother_PS				-.11	.06	-.76
	mother_PS × PGA				.08	.06	.58
	FTstrict × PGA				.03	.08	.10
	ΔR^2	.33***			.11***		
	R^2				.44		
					.16		

Note. Because of missing data, N ranged from 398 to 405. *ρ<.05. **ρ<.01. ***ρ<.001. PGA = peer group acceptance, BFQ = best friendship quality, FT = favourite teacher, AT = average teacher, feco = family cohesion, mother_PS = mother parenting style, father_PS = father parenting style

mastery goal ($\Delta R^2 = .11$), avoidance goal ($\Delta R^2 = .13$), prosocial behaviours (ΔR^2 ranging between .08 and .12) and positive self-esteem ($\Delta R^2 = .11$).

Study 2

Hypothesis 6 posited that the 3 learning environments would not only have direct, but also joint effects on student outcomes, such as academic achievement goals, social competence and self-esteem as outcome variables. Hierarchical multiple regression analyses were conducted with respectively academic achievement goals, social competence, and self-esteem as dependent variables, and with two steps variables entered as independent variables: in the first step, 3 learning environments variables including peer group acceptance, best friendship quality, father permissive-authoritative parenting style, mother permissive-authoritative parenting style, father authoritarian parenting style, mother authoritarian parenting style, family cohesion, favourite teacher cooperative behaviour, favourite teacher opposition behaviour, average teacher cooperative behaviour, average teacher opposition behaviour, were entered into the first block; and in the second step, two way interaction variables between these learning environment variables entered into the second block. Please note that only two-way interactions are considered here! Namely the following interaction terms were entered into the second block: the interaction between peer group acceptance and father permissive-authoritative parenting style, the interaction between peer group acceptance and mother permissive-authoritative parenting style, the interaction between peer group acceptance and father authoritarian parenting style, the interaction between peer group acceptance and mother authoritarian parenting style, the interaction between peer group acceptance and family cohesion, the interaction between peer group acceptance and favourite teacher cooperative behaviour, the interaction between peer group acceptance and favourite teacher opposition behaviour, the interaction between peer group acceptance and average teacher cooperative behaviour, the interaction between peer group acceptance and average teacher opposition behaviour, the interaction between best friendship quality and father permissive-authoritative parenting style, the interaction between best friendship quality and mother permissive-authoritative parenting style, the interaction between best friendship quality and father authoritarian parenting style, the interaction between best friendship quality and mother authoritarian parenting style, the interaction between best friendship quality and family cohesion, the interaction between best friendship quality and favourite teacher cooperative behaviour, the interaction between best friendship quality and favourite teacher opposition behaviour, the interaction between best friendship quality and average teacher cooperative

behaviour, the interaction between best friendship quality and average teacher opposition behaviour, the interaction between father permissive-authoritative parenting style and favourite teacher cooperative behaviour, the interaction between father permissive-authoritative parenting style and favourite teacher opposition behaviour, the interaction between father permissive-authoritative parenting style and average teacher cooperative behaviour, the interaction between father permissive-authoritative parenting style and average teacher opposition behaviour, the interaction between mother permissive-authoritative parenting style and favourite teacher cooperative behaviour, the interaction between mother permissive-authoritative parenting style and favourite teacher opposition behaviour, the interaction between mother permissive-authoritative parenting style and average teacher cooperative behaviour, the interaction between mother permissive-authoritative parenting style and average teacher opposition behaviour, the interaction between father authoritarian parenting style and favourite teacher cooperative behaviour, the interaction between father authoritarian parenting style and favourite teacher opposition behaviour, the interaction between father authoritarian parenting style and average teacher cooperative behaviour, the interaction between father authoritarian parenting style and at opposition behaviour, the interaction between mother authoritarian parenting style and favourite teacher cooperative behaviour, the interaction between mother authoritarian parenting style and favourite teacher opposition behaviour, the interaction between mother authoritarian parenting style and at cooperative behaviour, the interaction between mother authoritarian parenting style and average teacher opposition behaviour, the interaction between family cohesion and favourite teacher cooperative behaviour, the interaction between family cohesion and favourite teacher opposition behaviour, the interaction between family cohesion and average teacher cooperative behaviour, the interaction between family cohesion and average teacher opposition behaviour.

Table 54 showed the results about regression of academic achievement goals on three learning environments. Firstly, in the regression model of performance goal, father permissive-authoritative parenting style (ß = .27, ρ < .001), mother permissive-authoritative parenting style (ß = -.16, ρ < .001), father authoritarian parenting style (ß = .18, ρ < .001), mother authoritarian parenting style (ß = .16, ρ < .001), and favourite teacher cooperative behaviour (ß = .11, ρ < .001) acted as significant predictors in the 1st step (ΔR^2 = .15, ρ < .001); in the 2nd step (ΔR^2 = .09, ρ < .001), significant predictors were best friendship quality (ß = -.54, ρ < .01), father permissive-authoritative parenting style (ß = -.88, ρ < .01), favourite teacher opposition behaviour (ß = -.45, ρ < .05), average teacher cooperative behaviour (ß = .82, ρ < .001), average teacher opposition behaviour (ß = .36, ρ < .05), the interaction between peer group acceptance and father permissive-

authoritative parenting style (ß = -.55, ρ < .01), the interaction between peer group acceptance and mother authoritarian parenting style (ß = .52, ρ < .01), the interaction between peer group acceptance and favourite teacher cooperative behaviour (ß = .59, ρ < .01), the interaction between peer group acceptance and average teacher cooperative behaviour (ß = -.69, ρ < .001), the interaction between best friendship quality and father permissive-authoritative parenting style (ß = 1.11, ρ < .001), the interaction between best friendship quality and mother permissive-authoritative parenting style (ß = -.51, ρ < .05), the interaction between best friendship quality and favourite teacher opposition behaviour (ß = .31, ρ < .05), the interaction between best friendship quality and average teacher cooperative behaviour (ß = -.49, ρ < .01), the interaction between father permissive-authoritative parenting style and favourite teacher cooperative behaviour (ß = .67, ρ < .05), the interaction between father permissive-authoritative parenting style and favourite teacher opposition behaviour (ß = .80, ρ < .01), the interaction between father permissive-authoritative parenting style and average teacher cooperative behaviour (ß = .66, ρ < .01), the interaction between father permissive-authoritative parenting style and average teacher opposition behaviour (ß = -1.07, ρ < .001), the interaction between mother permissive-authoritative parenting style and average teacher cooperative behaviour (ß = -.81, ρ < .001), the interaction between mother permissive-authoritative parenting style and average teacher opposition behaviour (ß = .71, ρ < .01), the interaction between father authoritarian parenting style and favourite teacher cooperative behaviour (ß = .68, ρ < .01), the interaction between father authoritarian parenting style and favourite teacher opposition behaviour (ß = .70, ρ < .001), the interaction between father authoritarian parenting style and average teacher cooperative behaviour (ß = -.56, ρ < .01), the interaction between father authoritarian parenting style and average teacher opposition behaviour (ß = -1.01, ρ < .001), the interaction between mother authoritarian parenting style and favourite teacher cooperative behaviour (ß = -.69, ρ < .01), the interaction between mother authoritarian parenting style and favourite teacher opposition behaviour (ß = -.36, ρ < .05), the interaction between mother authoritarian parenting style and average teacher opposition behaviour (ß = .52, ρ < .05), the interaction between family cohesion and favourite teacher opposition behaviour (ß = -.59, ρ < .001), the interaction between family cohesion and average teacher cooperative behaviour (ß = .45, ρ < .01), and the interaction between family cohesion and average teacher opposition behaviour (ß = .38, ρ < .01); and the overall regression model including these two steps was significant as well ($F(49, 2091) = 13.73$, $R^2 = .24$, ρ < .001).

Table 54 Regression of academic achievement goals on three learning environments in study 2

Predictor	Performance goal				Mastery goal				Avoidance goal			
	step 1		step 2		step 1		step 2		step 1		step 2	
	B	β	B	β	B	β	B	β	B	β	B	β
PGA	-.05	-.04	.05	.04	.15	.13***	.10	.09	-.18	-.13***	-2.14	-1.53***
BFQ	.03	.02	-.65	-.54**	.17	.17***	-.42	-.41*	.09	.07**	.12	.09
Fpermauthv	.39	.27***	-1.29	-.88**	.04	.03	-.94	-.76**	.09	.06	-.58	-.37
Mpermauthv	-.24	-.16***	.72	.49	.08	.06*	1.12	.89***	.03	.02	1.87	1.18***
Fauthoritan	.22	.18***	.72	.59	.08	.08**	.02	.02	-.02	-.02	-.54	-.41
Mauthoritan	.21	.16***	-.18	-.14	-.04	-.04	.88	.81**	.24	.17***	-.28	-.20
cohesion	.04	.04	-.04	-.05	.09	.11***	.41	.55**	-.03	-.03	.68	.71**
FTcoop	.17	.11***	-.43	-.27	.32	.25***	.47	.36**	.01	.01	-.91	-.55***
FTopp	-.02	-.01	-.63	-.45*	-.10	-.08**	-.87	-.74***	.15	.10**	.21	.14
ATcoop	-.02	-.01	1.12	.82***	.14	.12***	-.08	-.07	-.05	-.03	1.25	.85***
ATopp	.02	.02	.51	.36*	.06	.05	.51	.43**	.17	.11***	.41	.27
PGA×Fpermauthv			-.20	-.55**			.03	.09			.14	.35
PGA×Mpermauthv			.14	.37			-.14	-.43*			.06	.13
PGA×Fauthoritan			-.08	-.21			.16	.49**			.23	.57**
PGA×Mauthoritan			.20	.52**			-.24	-.73***			.14	.34
PGA×cohesion			.01	.02			-.08	-.39**			.05	.21
PGA×FTcoop			.18	.59**			.01	.05			.28	.83***

(Continued)

Predictor	Performance goal				Mastery goal				Avoidance goal			
	step 1		step 2		step 1		step 2		step 1		step 2	
	B	β	B	β	B	β	B	β	B	β	B	β
PGA×FTopp			-.08		-.15		.10		.24		.22	.39**
PGA×ATcoop			-.23		-.69***		.18		.64***		-.16	-.45**
PGA×ATopp			-.10		-.21		.06		.16		-.15	-.29*
BFQ×Fpermauthv			.37		1.11***		.27		.97***		-.35	-1.00***
BFQ×Mpermauthv			-.17		-.51*		-.22		-.78***		.18	.50*
BFQ×Fauthoritan			-.05		-.14		.16		.57***		.02	.07
BFQ×Mauthoritan			.07		.21		-.16		-.56***		-.09	-.24
BFQ×cohesion			.03		.14		.10		.56***		-.09	-.38*
BFQ×FTcoop			.05		.19		.15		.66***		.11	.38
BFQ×FTopp			.15		.31*		-.10		-.25		.23	.45**
BFQ×ATcoop			-.15		-.49**		-.08		-.30*		.01	.03
BFQ×ATopp			.06		.14		.03		.07		.03	.08
Fpermauthv×FTcoop			.24		.67*		.23		.76**		.72	1.91***
Fpermauthv×FTopp			.36		.80**		.36		.93***		.14	.28
Fpermauthv×ATcoop			.25		.66**		-.24		-.75***		-.23	-.55*
Fpermauthv×ATopp			-.47		-1.07***		-.30		-.80***		-.46	-.96***
Mpermauthv×FTcoop			-.16		-.45		-.27		-.90**		-.63	-1.65***

(Continued)

Mpermauthv×FTopp		-.02	-.05		-.22	-.57**	-.27	-.54*
Mpermauthv×ATcoop		-.31	-.81***		.38	1.16***	-.10	-.25
Mpermauthv×ATopp		.32	.71**		.18	.46*	.14	.29
Fauthoritan×FTcoop		.22	.68**		-.08	-.31	.20	.57*
Fauthoritan×FTopp		.32	.70***		.06	.15	.30	.62**
Fauthoritan×ATcoop		-.22	-.56**		-.24	-.73***	-.37	-.88***
Fauthoritan×ATopp		-.42	-1.01***		-.01	-.04	-.20	-.45*
Mauthoritan×FTcoop		-.23	-.69**		-.03	-.09	-.03	-.08
Mauthoritan×FTopp		-.17	-.36*		-.10	-.25	-.18	-.37*
Mauthoritan×ATcoop		.08	.22		.22	.65***	.19	.46**
Mauthoritan×ATopp		.22	.52*		-.10	-.29	.21	.46*
cohesion×FTcoop		-.06	-.26		-.11	-.59**	-.22	-.93***
cohesion×FTopp		-.23	-.59***		.19	.58***	-.38	-.88***
cohesion×ATcoop		.11	.45**		-.09	-.42**	.09	.32
cohesion×ATopp		.13	.38**		-.06	-.21	.27	.71***
ΔR^2	.15***	.09***		.33***	.10***		.12***	.13***	
R^2		.24			.43			.25	

Note: Because of missing data, N ranged from 398 to 405. *ρ<.05. **ρ<.01. ***ρ<.001. PGA = peer group acceptance, BFQ = best friendship quality, FT = favourite teacher, FTcoop = favourite teacher cooperative behaviour; FTopp = favourite teacher opposition behaviour; ATcoop = average teacher cooperative behaviour; ATopp = average teacher opposition behaviour; Fpermauthv = father permissive-authoritative parenting style; Mpermauthv = mother permissive-authoritative parenting style; Fauthoritan = father authoritarian parenting style; Mauthoritan = mother authoritarian parenting style; cohesion = family cohesion.

Table 55 Regression of social competence on three learning environments in study 2

Step		Anxious solitary behaviour				Prosocial behaviour			
	Predictor	B	β	B	β	B	β	B	β
1	PGA	-.20	-.14***	-.59	-.43*	.15	.17***	.29	.33*
	BFQ	-.03	-.03	.06	.04	.25	.30***	.20	.25
	Fpermauthv	.01	.00	-1.21	-.77**	.07	.07**	.14	.14
	Mpermauthv	.03	.02	.22	.14	.14	.14***	.34	.34
	Fauthoritan	-.05	-.04	.24	.18	.04	.05*	.37	.44
	Mauthoritan	.30	.22***	1.20	.88**	-.12	-.14***	-.47	-.54*
	cohesion	-.10	-.10***	.18	.19	.02	.03	-.01	-.02
	FTcoop	.07	.04	-.61	-.37*	.15	.15***	.01	.01
	FTopp	.18	.12***	-1.11	-.75***	-.11	-.12***	-.18	-.19
	ATcoop	.03	.02	1.00	.69***	.07	.07**	-.12	-.13
	ATopp	.05	.03	.41	.27	.21	.22***	.91	.95***
2	PGA×Fpermauthv			.10	.26			-.01	-.05
	PGA×Mpermauthv			-.02	-.06			-.20	-.76***
	PGA×Fauthoritan			.31	.78***			-.02	-.07
	PGA×Mauthoritan			-.18	-.44*			.06	.21
	PGA×cohesion			.03	.10			-.01	-.03
	PGA×FTcoop			-.04	-.11			.08	.39*
	PGA×FTopp			.07	.12			.04	.11
	PGA×ATcoop			.02	.05			.02	.08
	PGA×ATopp			-.11	-.21			-.06	-.18

(Continued)

Step		Anxious solitary behaviour				Prosocial behaviour			
	Predictor	B	β	B	β	B	β	B	β
	BFQ×Fpermauthv			.01	.02			.08	.36
	BFQ×Mpermauthv			-.20	-.56*			-.01	-.04
	BFQ×Fauthoritan			-.21	-.58**			.03	.15
	BFQ×Mauthoritan			.11	.31			-.07	-.29
	BFQ×cohesion			-.03	-.11			.07	.46**
	BFQ×FTcoop			.07	.23			-.01	-.05
	BFQ×FTopp			.43	.84***			-.18	-.54***
	BFQ×ATcoop			-.06	-.18			-.06	-.27
	BFQ×ATopp			-.04	-.08			.09	.33*
	Fpermauthv×FTcoop			.14	.37			-.05	-.20
	Fpermauthv×FTopp			.29	.60*			-.06	-.21
	Fpermauthv×ATcoop			.06	.14			-.04	-.16
	Fpermauthv×ATopp			-.02	-.03			.03	.11
	Mpermauthv×FTcoop			.26	.69*			.06	.25
	Mpermauthv×FTopp			-.13	-.27			-.06	-.20
	Mpermauthv×ATcoop			-.07	-.18			.19	.74***
	Mpermauthv×ATopp			.00	-.01			-.14	-.45*
	Fauthoritan×FTcoop			-.03	-.09			-.11	-.51*
	Fauthoritan×FTopp			-.11	-.22			.11	.37*
	Fauthoritan×ATcoop			-.21	-.51**			.01	.05

(Continued)

Step		Anxious solitary behaviour				Prosocial behaviour			
	Predictor	B	β	B	β	B	β	B	β
	Fauthoritan×ATopp			.13	.30			-.11	-.38*
	Mauthoritan×FTcoop			-.03	-.07			.15	.67**
	Mauthoritan×FTopp			.01	.01			.00	-.01
	Mauthoritan×ATcoop			-.11	-.27			.00	.01
	Mauthoritan×ATopp			-.22	-.48*			-.06	-.20
	cohesion×FTcoop			-.06	-.27			-.06	-.39*
	cohesion×FTopp			-.09	-.21			.19	.69***
	cohesion×ATcoop			-.05	-.17			-.02	-.10
	cohesion×ATopp			.09	.24			-.09	-.39**
	ΔR^2	.13***		.08***		.39***		.09***	
	R^2			.21				.48	

Note: Because of missing data, N ranged from 398 to 405. *ρ<.05. **ρ<.01. ***ρ<.001. PGA = peer group acceptance, BFQ = best friendship quality, FT = favourite teacher, FTcoop = favourite teacher cooperative behaviour; FTopp = favourite teacher opposition behaviour; ATcoop = average teacher cooperative behaviour; ATopp = average teacher opposition behaviour; Fpermauthv = father permissive-authoritative parenting style; Mpermauthv = mother permissive-authoritative parenting style; Fauthoritan = father authoritarian parenting style; Mauthoritan = mother authoritarian parenting style; cohesion = family cohesion.

Secondly, in the regression model of mastery goal, the first step (ΔR^2 = .33, ρ <.001) indicated that significant predictors were peer group acceptance (ß = .13, ρ <.001), best friendship quality (ß = .17, ρ <.001), mother permissive-authoritative parenting style (ß = .06, ρ <.05), father authoritarian parenting style (ß = .08, ρ <.01), family cohesion (ß = .11, ρ <.001), favourite teacher cooperative behaviour (ß = .25, ρ <.001), favourite teacher opposition behaviour (ß = -.08, ρ <.01), average teacher cooperative behaviour (ß = .12, ρ <.001); in the second step (ΔR^2 = .10, ρ <.001), significant predictors were best friendship quality (ß = -.41, ρ <.05), father permissive-authoritative parenting style (ß = -.76, ρ <.01), mother permissive-authoritative parenting style (ß = .89, ρ <.001), mother authoritarian parenting style (ß = .81, ρ <.01), family cohesion (ß = .55, ρ <.01), favourite teacher cooperative behaviour (ß = .36, ρ <.01), favourite teacher opposition behaviour (ß = -.74, ρ <.001), average teacher opposition behaviour (ß = .43, ρ <.01), the interaction between peer group acceptance and mother permissive-authoritative parenting style (ß = -.43, ρ <.05), the interaction between peer group acceptance and father authoritarian parenting style (ß = .49, ρ <.01), the interaction between peer group acceptance and mother authoritarian parenting style (ß = -.73, ρ <.001), the interaction between peer group acceptance and family cohesion (ß = -.39, ρ <.01), the interaction between peer group acceptance and average teacher cooperative behaviour (ß = .64, ρ <.001), the interaction between best friendship quality and father permissive-authoritative parenting style (ß = .97, ρ <.001), the interaction between best friendship quality and mother permissive-authoritative parenting style (ß = -.78, ρ <.001), the interaction between best friendship quality and father authoritarian parenting style (ß = .57, ρ <.001), the interaction between best friendship quality and mother authoritarian parenting style (ß = -.56, ρ <.001), the interaction between best friendship quality and family cohesion (ß = .56, ρ <.001), the interaction between best friendship quality and favourite teacher cooperative behaviour (ß = .66, ρ <.001), the interaction between best friendship quality and average teacher cooperative behaviour (ß = -.30, ρ <.05), the interaction between father permissive-authoritative parenting style and favourite teacher cooperative behaviour (ß = .76, ρ <.01), the interaction between father permissive-authoritative parenting style and favourite teacher opposition behaviour (ß = .93, ρ <.001), the interaction between father permissive-authoritative parenting style and average teacher cooperative behaviour (ß = -.75, ρ <.001), the interaction between father permissive-authoritative parenting style and average teacher opposition behaviour (ß = -.80, ρ <.001), the interaction between mother permissive-authoritative parenting style and favourite teacher cooperative behaviour (ß = -.90, ρ <.01), the interaction between mother permissive-authoritative parenting style and favourite teacher opposition behaviour (ß = -.57, ρ <.01), the interaction between mother permissive-

authoritative parenting style and average teacher cooperative behaviour (ß = 1.16, ρ <.001), the interaction between mother permissive-authoritative parenting style and average teacher opposition behaviour (ß = .46, ρ <.05), the interaction between father authoritarian parenting style and average teacher cooperative behaviour (ß = -.73, ρ <.001), the interaction between mother authoritarian parenting style and average teacher cooperative behaviour (ß = .65, ρ <.001), the interaction between family cohesion and favourite teacher cooperative behaviour (ß = -.59, ρ <.01), the interaction between family cohesion and favourite teacher opposition behaviour (ß = .58, ρ <.001), the interaction between family cohesion and average teacher cooperative behaviour (ß = -.42, ρ <.01); and overall regression model was significant as well (F (49, 2102) = 32.12, R^2 = .43, ρ < .001).

Finally, in the regression model of avoidance goal, in the first step (ΔR^2 = .12, ρ <.001), significant predictors were peer group acceptance (ß = -.13, ρ <.001), best friendship quality (ß = .07, ρ <.01), mother authoritarian parenting style (ß = .17, ρ <.001), favourite teacher opposition behaviour (ß = .10, ρ <.01), average teacher opposition behaviour (ß = .11, ρ <.001); in the second step (ΔR^2 = .13, ρ <.001), significant predictors were peer group acceptance (ß = -1.53, ρ <.001), mother permissive-authoritative parenting style (ß = 1.18, ρ <.001), family cohesion (ß = .71, ρ <.01), favourite teacher cooperative behaviour (ß = -.55, ρ <.001), average teacher cooperative behaviour (ß = .85, ρ <.001), the interaction between peer group acceptance and father authoritarian parenting style (ß = .57, ρ <.01), the interaction between peer group acceptance and favourite teacher cooperative behaviour (ß = .83, ρ <.001), the interaction between peer group acceptance and favourite teacher opposition behaviour (ß = .39, ρ <.01), the interaction between peer group acceptance and average teacher cooperative behaviour (ß = -.45, ρ <.01), the interaction between peer group acceptance and average teacher opposition behaviour (ß = -.29, ρ <.05), the interaction between best friendship quality and father permissive-authoritative parenting style (ß = -1.00, ρ <.001), the interaction between best friendship quality and mother permissive-authoritative parenting style (ß = .50, ρ <.05), the interaction between best friendship quality and family cohesion (ß = -.38, ρ <.05), the interaction between best friendship quality and favourite teacher opposition behaviour (ß = .45, ρ <.01), the interaction between father permissive-authoritative parenting style and favourite teacher cooperative behaviour (ß = 1.91, ρ <.001), the interaction between father permissive-authoritative parenting style and average teacher cooperative behaviour (ß = -.55, ρ <.05), the interaction between father permissive-authoritative parenting style and average teacher opposition behaviour (ß = -.96, ρ <.001), the interaction between mother permissive-authoritative parenting style and favourite teacher cooperative behaviour (ß = -1.65, ρ <.001), the interaction between mother permissive-authoritative parenting style and

favourite teacher opposition behaviour (ß = -.54, ρ <.05), the interaction between father authoritarian parenting style and favourite teacher cooperative behaviour (ß = .57, ρ <.05), the interaction between father authoritarian parenting style and favourite teacher opposition behaviour (ß = .62, ρ <.01), the interaction between father authoritarian parenting style and average teacher cooperative behaviour (ß = -.88, ρ <.001), the interaction between father authoritarian parenting style and average teacher opposition behaviour (ß = -.45, ρ <.05), the interaction between mother authoritarian parenting style and favourite teacher opposition behaviour (ß = -.37, ρ <.05), the interaction between mother authoritarian parenting style and average teacher cooperative behaviour (ß = .46, ρ <.01), the interaction between mother authoritarian parenting style and average teacher opposition behaviour (ß = .46, ρ <.05), the interaction between family cohesion and favourite teacher cooperative behaviour (ß = -.93, ρ <.001), the interaction between family cohesion and favourite teacher opposition behaviour (ß = -.88, ρ <.001), the interaction between family cohesion and average teacher opposition behaviour (ß = .71, ρ <.001); and overall regression model was significant as well (F(49, 2102) = 13.83, R^2 = .25, ρ < .001).

Table 55 showed the results about regression of social competence on three learning environments. Firstly, in the regression model of anxious solitary behaviour, in the 1st step (ΔR^2 = .13, ρ < .001), significant predictors were peer group acceptance (ß = -.14, ρ <.001), mother authoritarian parenting style (ß = .22, ρ <.001), family cohesion (ß = -.10, ρ <.001), favourite teacher opposition behaviour (ß = .12, ρ <.001); in the 2nd step (ΔR^2 = .08, ρ < .001), significant predictors were found to be peer group acceptance (ß = -.43, ρ <.05), father permissive-authoritative parenting style (ß = -.77, ρ <.01), mother authoritarian parenting style (ß = .88, ρ <.01), favourite teacher cooperative behaviour (ß = -.37, ρ <.05), favourite teacher opposition behaviour (ß = -.75, ρ <.001), average teacher cooperative behaviour (ß = .69, ρ <.001), the interaction between peer group acceptance and father authoritarian parenting style (ß = .78, ρ <.001), the interaction between peer group acceptance and mother authoritarian parenting style (ß = -.44, ρ <.05), the interaction between best friendship quality and mother permissive-authoritative parenting style (ß = -.56, ρ <.05), the interaction between best friendship quality and father authoritarian parenting style (ß = -.58, ρ <.01), the interaction between best friendship quality and favourite teacher opposition behaviour (ß = .84, ρ <.001), the interaction between father permissive-authoritative parenting style and favourite teacher opposition behaviour (ß = .60, ρ <.05), the interaction between mother permissive-authoritative parenting style and favourite teacher cooperative behaviour (ß = .69, ρ <.05), the interaction between father authoritarian parenting style and average teacher cooperative behaviour (ß = -.51, ρ <.01), the interaction between mother authoritarian

parenting style and average teacher opposition behaviour (ß = -.48, ρ <.05); and the regression model including these two steps was significant as well (F (49, 2102) = 11.13, R^2 = .21, ρ < .001).

Secondly, in the regression model of prosocial behaviour, in the first step (ΔR^2 = .39, ρ < .001), significant predictors were peer group acceptance (ß = .17, ρ <.001), best friendship quality (ß = .30, ρ <.001), father permissive-authoritative parenting style (ß = .07, ρ <.01), mother permissive-authoritative parenting style (ß = .14, ρ <.001), father authoritarian parenting style (ß = .05, ρ <.05), mother authoritarian parenting style (ß = -.14, ρ <.001), favourite teacher cooperative behaviour (ß = .15, ρ <.001), favourite teacher opposition behaviour (ß = -.12, ρ <.001), average teacher cooperative behaviour (ß = .07, ρ <.01), average teacher opposition behaviour (ß = .22, ρ <.001); in the second step (ΔR^2 = .11, ρ < .001), significant predictors were found to be peer group acceptance (ß = .33, ρ <.05), mother authoritarian parenting style (ß = -.54, ρ <.05), average teacher opposition behaviour (ß = .95, ρ <.001), the interaction between peer group acceptance and mother permissive-authoritative parenting style (ß = -.76, ρ <.001), the interaction between peer group acceptance and favourite teacher cooperative behaviour (ß = .39, ρ <.05), the interaction between best friendship quality and family cohesion (ß = .46, ρ <.01), the interaction between best friendship quality and favourite teacher opposition behaviour (ß = -.54, ρ <.001), the interaction between best friendship quality and average teacher opposition behaviour (ß = .33, ρ <.05), the interaction between mother permissive-authoritative parenting style and average teacher cooperative behaviour (ß = .74, ρ <.001), the interaction between mother permissive-authoritative parenting style and average teacher opposition behaviour (ß = -.45, ρ <.05), the interaction between father authoritarian parenting style and favourite teacher cooperative behaviour (ß = -.51, ρ <.05), the interaction between father authoritarian parenting style and favourite teacher opposition behaviour (ß = .37, ρ <.05), the interaction between father authoritarian parenting style and average teacher opposition behaviour (ß = -.38, ρ <.05), the interaction between mother authoritarian parenting style and favourite teacher cooperative behaviour (ß = .67, ρ <.01), the interaction between family cohesion and favourite teacher cooperative behaviour (ß = -.39, ρ <.05), the interaction between family cohesion and favourite teacher opposition behaviour (ß = .69, ρ <.001), the interaction between family cohesion and average teacher opposition behaviour (ß = -.39, ρ <.01); and the overall regression model including these two steps was significant as well (F(49, 2102) = 38.24, R^2 = .48, ρ < .001).

Results about regression of self-esteem on the three learning environments were reported in Table 56. Firstly, in the regression model of positive self-esteem, in the first step (ΔR^2 = .29, ρ < .001), significant predictors were peer group acceptance (ß = .17, ρ <.001), best friendship quality (ß = .20, ρ <.001), father permissive-

authoritative parenting style (ß = .16, ρ <.001), father authoritarian parenting style (ß = .14, ρ <.001), mother authoritarian parenting style (ß = -.15, ρ <.001), family cohesion (ß = .10, ρ <.001), favourite teacher cooperative behaviour (ß = .16, ρ <.001), average teacher opposition behaviour (ß = .21, ρ <.001); in the 2nd step (ΔR^2 = .10, ρ <.001), significant predictors were mother permissive-authoritative parenting style (ß = .54, ρ <.05), father authoritarian parenting style (ß = .86, ρ <.01), mother authoritarian parenting style (ß = -.95, ρ <.001), family cohesion (ß = -.60, ρ <.01), average teacher opposition behaviour (ß = 1.25, ρ <.001), the interaction between peer group acceptance and father permissive-authoritative parenting style (ß = -.41, ρ <.05), the interaction between peer group acceptance and father authoritarian parenting style (ß = -.35, ρ <.05), the interaction between peer group acceptance and mother authoritarian parenting style (ß = .46, ρ <.01), the interaction between peer group acceptance and family cohesion (ß = .60, ρ <.001), the interaction between best friendship quality and father authoritarian parenting style (ß = -.33, ρ <.05), the interaction between best friendship quality and mother authoritarian parenting style (ß = .32, ρ <.05), the interaction between best friendship quality and favourite teacher cooperative behaviour (ß = 1.08, ρ <.001), the interaction between best friendship quality and average teacher cooperative behaviour (ß = -.37, ρ <.05), the interaction between best friendship quality and average teacher opposition behaviour (ß = -.59, ρ <.001), the interaction between father permissive-authoritative parenting style and average teacher opposition behaviour (ß = .57, ρ <.01), the interaction between mother permissive-authoritative parenting style and average teacher opposition behaviour (ß = -1.19, ρ <.001), the interaction between father authoritarian parenting style and average teacher opposition behaviour (ß = -.46, ρ <.05), the interaction between mother authoritarian parenting style and favourite teacher opposition behaviour (ß =.51, ρ <.01), the interaction between family cohesion and average teacher cooperative behaviour (ß=.36, ρ<.05), the interaction between family cohesion and average teacher opposition behaviour (ß = .31, ρ <.05); and the regression model including these two steps was significant as well (F(49, 2102) = 27.17, R^2 = .39, ρ < .001).

Secondly, in the regression model of negative self-esteem, in the first step (ΔR^2 = .18, ρ <.001), significant predictors were peer group acceptance (ß = -.18, ρ <.001), father authoritarian parenting style (ß = .10, ρ <.001), mother authoritarian parenting style (ß = .13, ρ <.001), family cohesion (ß = -.06, ρ <.05), favourite teacher cooperative behaviour (ß = -.09, ρ <.01), favourite teacher opposition behaviour (ß = .12, ρ <.001), average teacher opposition behaviour (ß = .06, ρ <.05); in the second step (ΔR^2 = .08, ρ <.001), peer group acceptance (ß = -.44, ρ <.05), best friendship quality (ß = 1.12, ρ <.001), average teacher cooperative behaviour (ß = .40, ρ <.05), the interaction between peer group

Table 56 Regression of self-esteem on three learning environments in study 2

	Positive self-esteem				Negative self-esteem			
	step 1		step 2		step 1		step 2	
Predictor	B	β	B	β	B	β	B	β
PGA	.19	.17***	.18	.16	-.25	-.18	-.60	-.44
BFQ	.21	.20***	.16	.15	-.03	-.02	1.39	1.12
Fpermauthv	.21	.16***	.42	.32	-.03	-.02	.59	.39
Mpermauthv	-.02	-.01	.70	.54*	-.02	-.02	-.50	-.33
Fauthoritan	.15	.14***	.92	.86**	.13	.10	-.12	-.09
Mauthoritan	-.16	-.15***	-1.07	-.95***	.17	.13	.67	.51
cohesion	.08	.10***	-.47	-.60**	-.05	-.06	.26	.28
FTcoop	.22	.16***	-.15	-.11	-.14	-.09	-.05	-.03
FTopp	.01	.01	-.39	-.32	.17	.12	.39	.28
ATcoop	.03	.03	-.19	-.15	.04	.03	.57	.40
ATopp	.26	.21***	1.55	1.25***	.09	.06	-.11	-.08
PGA×Fpermauthv			-.13	-.41*			-.07	-.17
PGA×Mpermauthv			.00	-.01			.09	.23
PGA×Fauthoritan			-.11	-.35*			.30	.79
PGA×Mauthoritan			.16	.46**			-.37	-.94
PGA×cohesion			.13	.60***			-.03	-.13
PGA×FTcoop			-.04	-.14			-.07	-.21
PGA×FTopp			-.09	-.20			.11	.21
PGA×ATcoop			.05	.15			.17	.49

(Continued)

	Positive self-esteem				Negative self-esteem			
	step 1		step 2		step 1		step 2	
Predictor	B	β	B	β	B	β	B	β
PGA×ATopp			-.03	-.08			.09	.19
BFQ×Fpermauthv			-.05	-.18			-.04	-.13
BFQ×Mpermauthv			-.03	-.11			-.01	-.02
BFQ×Fauthoritan			-.09	-.33*			-.07	-.21
BFQ×Mauthoritan			.10	.32*			-.04	-.12
BFQ×cohesion			.01	.03			-.01	-.06
BFQ×FTcoop			.26	1.08***			-.15	-.54
BFQ×FTopp			.02	.06			-.16	-.33
BFQ×ATcoop			-.10	-.37*			-.21	-.64
BFQ×ATopp			-.22	-.59***			.11	.25
Fpermauthv×FTcoop			.01	.04			.09	.25
Fpermauthv×FTopp			.04	.11			.04	.08
Fpermauthv×ATcoop			-.06	-.18			-.13	-.32
Fpermauthv×ATopp			.22	.57**			-.25	-.55
Mpermauthv×FTcoop			-.07	-.23			-.02	-.06
Mpermauthv×FTopp			.13	.33			.22	.45
Mpermauthv×ATcoop			.07	.21			.04	.09
Mpermauthv×ATopp			-.47	-1.19***			.05	.11
Fauthoritan×FTcoop			-.04	-.14			.13	.39

(Continued)

	Positive self-esteem				Negative self-esteem			
	step 1		step 2		step 1		step 2	
Predictor	B	β	B	β	B	β	B	β
Fauthoritan×FTopp			-.05	-.12			.14	.30
Fauthoritan×ATcoop			.10	.29			-.28	-.70
Fauthoritan×ATopp			-.17	-.46*			-.18	-.41
Mauthoritan×FTcoop			.02	.06			.10	.30
Mauthoritan×FTopp			.21	.51**			-.16	-.34
Mauthoritan×ATcoop			-.05	-.13			.16	.39
Mauthoritan×ATopp			.01	.03			.06	.13
cohesion×FTcoop			-.02	-.10			-.07	-.31
cohesion×FTopp			-.08	-.23			-.20	-.49
cohesion×ATcoop			.08	.36*			.03	.13
cohesion×ATopp			.10	.31*			.11	.31
ΔR^2		.29***		.10***		.18***		.08***
R^2				.39				.26

Note: Because of missing data, N ranged from 398 to 405. *ρ<.05. **ρ<.01. ***ρ<.001. PGA = peer group acceptance, BFQ = best friend-ship quality, FT = favourite teacher, FTcoop = favourite teacher cooperative behaviour; FTopp = favourite teacher opposition behaviour; ATcoop = average teacher cooperative behaviour; ATopp = average teacher opposition behaviour; Fpermauthv = father permissive-authoritative parenting style; Mpermauthv = mother permissive-authoritative parenting style; Fauthoritan = father authoritarian parenting style; Mauthoritan = mother authoritarian parenting style ; cohesion = family cohesion.

acceptance and father authoritarian parenting style (ß = .79, ρ <.001), the interaction between peer group acceptance and mother authoritarian parenting style (ß = -.94, ρ <.001), the interaction between peer group acceptance and average teacher cooperative behaviour (ß = .49, ρ <.01), the interaction between best friendship quality and favourite teacher cooperative behaviour (ß = -.54, ρ <.05), the interaction between best friendship quality and favourite teacher opposition behaviour (ß = -.33, ρ <.05), the interaction between best friendship quality and average teacher cooperative behaviour (ß = -.64, ρ <.001), the interaction between father permissive-authoritative parenting style and average teacher opposition behaviour (ß = -.55, ρ <.05), the interaction between father authoritarian parenting style and average teacher cooperative behaviour (ß = -.70, ρ <.001), the interaction between mother authoritarian parenting style and average teacher cooperative behaviour (ß = .39, ρ <.05), the interaction between family cohesion and favourite teacher opposition behaviour (ß = -.49, ρ <.001), the interaction between family cohesion and average teacher opposition behaviour (ß = .31, ρ <.05); and the regression model was significant as well ($F(49, 2102) = 14.89$, $R^2 = .26$, ρ < .001).

In sum, if we consider the direct and joint effects of the three learning environments, more fruitful results were accomplished in terms of the variance explained in the outcome variables. Specifically, direct effects of the three learning environments existed on each of these outcome variable (ΔR^2 ranging between .12 and .39), and these direct effects following the order from the largest to the least were on prosocial behaviour ($\Delta R^2 = .39$), mastery goal ($\Delta R^2 = .33$), positive self-esteem ($\Delta R^2 = .29$), negative self-esteem ($\Delta R^2 = .18$), performance goal ($\Delta R^2 = .15$), anxious solitary behaviour ($\Delta R^2 = .13$), and avoidance goal ($\Delta R^2 = .12$); the interaction effects between these three learning environments existed on each of these outcome variable as well (ΔR^2 ranging between .08 and .13), and these interaction effects following the order from the largest to the least were on avoidance goal ($\Delta R^2 = .13$), mastery goal and positive self-esteem(on each of these two variables: $\Delta R^2 = .10$), performance goal and prosocial behaviour (on each of these two variables: $\Delta R^2 = .09$), anxious solitary behaviour and negative self-esteem (on each of these two variables: $\Delta R^2 = .08$).

10 Conclusion and Discussion

10.1 Conclusion

10.1.1 Gender Differences Existing: Females More Socially Oriented

Gender differences existed on some learning outcomes of both 1980s and 1990s Chinese only children. In study 1, for the 1980s generation only children, gender differences existed in all chronic self-concept levels: male students have higher individual level of self-concept, but lower relational and collective level of self-concept than female students; male students had lower levels of prosocial behaviour than female students; male students had also lower positive self-esteem than female students; and in career orientation, male students had higher investigative, but lower social career orientations than female students.

And for the 1990s only children in study 2, gender differences existed only in individual and relational chronic self-concept levels: male students had higher individual level of self-concept, but lower relational level than female students; male students had lower levels of prosocial behaviour than female students; but in positive self-esteem, no gender difference existed between male students and female students; and in career orientation, male students had higher investigative, but lower social career orientations than female students.

Therefore, although there were some gender differences in some aspects when comparing the results of the 1980s generation only children in study 1 and the 1990s generation only children in study 2, generally, it could be concluded that it seemed that Chinese female only-children were more socially oriented than Chinese male only-children because, in comparison with the latter, the former had higher relational level of self-concept and lower individual level of self-concept, and higher prosocial orientation and socially oriented career orientations. Seemingly, this was reflected in society that many more females were employed in the much more social working field.

W. Liu, *How Are Chinese Only Children Growing*,
DOI 10.1007/978-3-658-02226-6_10

10.1.2 Conclusions regarding Questionnaire on Teacher Interpersonal Behaviour

From the exploratory factor analyses, a series of conclusion could be reached. Firstly, the Questionnaire on Teacher Interpersonal Behaviour, which was developed in Western world, was differently understood by Chinese only-children because, for the 1980s Chinese only children, 3 factors (i.e., cooperative behaviour, opposition behaviour and strict behaviour) were reached for favourite teacher interpersonal behaviour and 2 factors (i.e., cooperative behaviour and opposition behaviour) for average teacher interpersonal behaviour, and for the 1990s Chinese only children, 2 factors (i.e., cooperative behaviour and opposition behaviour) were reached respectively for favourite teacher interpersonal behaviour and for average teacher interpersonal behaviour. However, the original theoretical model, on which this questionnaire was developed, had two dimensions: control and proximity. But for Chinese only-children, it seems only one dimension, proximity, existed strongly while the other dimension, control, was expressed very weakly in only one of the four exploratory factor analyses. Therefore, it seemed that, in their understanding of both favourite and average teacher interpersonal behaviour, only the dimension of proximity was strongly felt by Chinese only children, while the dimension of control, only in the 1980s Chinese only children's understanding of favourite teacher interpersonal behaviour, was weakly expressed, that is, strict behaviour had weakly a trait of being distinct. Moreover, Chinese only children's understanding of the strict behaviour subscale showed typical deviation from the original meaning in that strict behaviour was perceived by them as a very positive aspect of teacher interpersonal behaviour, especially of favourite teacher interpersonal behaviour in terms of the impact on student outcomes.

10.1.3 Conclusions regarding Parenting Authority Questionnaire

Secondly, concerning the factor analyses of Parenting Authority Questionnaire, in study 1 for investigation of the 1980s Chinese only children, only one factor was produced with items of permissive and authoritative parenting style loading respectively on father and mother permissive-authoritative parenting styles. However, in study 2 for investigation of the 1990s Chinese only children, two factor were produced with items of permissive and authoritative parenting style loading respectively on father and mother permissive-authoritative parenting styles and with items of authoritarian parenting style on the other component, which was named continuously as father or mother authoritarian parenting style.

The difference between the results of factor analyses in study 1 and study 2 was worthy of attention because in study 1, one component permissive-authoritative parenting style was reached while, in study 2, two components of parenting style were reached: permissive-authoritative parenting style and authoritarian parenting style. Why there was such a difference? It might be due to the age group difference in the subjects: in study 1, only older adolescents and younger adults were investigated, but in study 2, besides older adolescents and younger adults, younger adolescents were included as well in the investigation. Because parents might execute different parenting styles due to age difference of their children. For younger children, authoritarian parenting style might be exerted. Moreover, this result was totally different from the previous research results about Chinese students because it proved that the parenting styles held by Chinese only-children's parents were not authoritarian parenting style, but a mixture of authoritative and permissive parenting style. It could be inferred that probably due to the effects of China's One-Child Family Planning Policy, Chinese parents' parenting style in Mainland China have been altered from the traditional authoritarian parenting style into a parenting style of authoritative parenting style but with more freedom given to their children.

If we turn to the three theoretical dimensions (i.e., demanding, responsive and psychological control) on which the typology of permissive, authoritative and authoritarian parenting styles were named, it was obvious that the permissive-authoritative parenting style of these Chinese only children's parents were exerting a parenting style of high responsiveness, low psychological control and a level of demandingness, which is lower to some degree than the demandingness of the usual authoritative parenting style. In other words, compared with authoritative parenting style, this permissive-authoritative parenting style is an authoritative parenting style with less behavioural control or more freedom given, which might be an impact of the One-Child Policy.

10.1.4 Conclusions regarding Factor Analyses of Chronic Self-Concept Level and Career Orientation Instruments

Finally, the factor analyses of chronic self-concept levels and career orientation scales revealed that, although China's One-Child Policy as a public policy has been implementing for more than 30 years, the chronic self-concept levels of these Chinese only-children still bear a deep print of Chinese cultural impact; that their career orientations reflected the impacts from not only Chinese culture, but also China's One-Child Policy in that Chinese only-children had not only individual-level-like, but relational and collective-level-like career orientations.

10.1.5 Impacts of Family Environment and Self-Concept Levels on Career Orientations

Similar as what was found in previous literature, the present study found the impact of family environment on career orientation. But one new result is worthy of note. On career orientations of Chinese only-children, their chronic self-concept levels played import roles as well. Specifically, for the 1980s Chinese only children, they have two very typical career orientation, one of which is more individual like, and the other of which is more social, that is, more relational and collective like. Regression analyses proved that family cohesion, individual level of chronic-self-concept, and the interaction between family cohesion and relational level of chronic self-concept were important in predicting individual-level-like career orientation, and that father parenting style, and collective level of chronic-self-concept were capable to predict relational and collective-level-like career orientation. However, the 1990s Chinese only children have two career orientations as well, but their career orientation is not so typical as the above mentioned more individual like or relational and collective like, but a mixture of individual like and relational and collective like. That is, the 1990s Chinese only children had two career orientations as well, but their career orientation is not as typical as the career orientations of the 1980s Chinese only children, either individual like or relational and collective like, but a mixture of individual and relational and collective like. From the predictor results, some family environment variables and all chronic self-concept levels all made contributions to the relevant career orientations. Specifically, in predicting ACER (artistic, conventional, enterprising and realistic) career orientation, father authoritarian parenting style, mother permissive-authoritative parenting style, collective level of chronic self-concept had direct effects, and chronic self-concept exerted their effects through interaction effects between relational family cohesion, father permissive-authoritative, father authoritarian, mother permissive-authoritative and relational and/or collective level of self-concept. On social investigative career orientation, family environment variables, such as family cohesion and father permissive-authoritative parenting style, and all chronic self-concept levels, such as individual level, relational level, collective level of chronic self-concept had direct effects; and the indirect effects were exerted by the interactions between family environment variables, such as family cohesion, father authoritarian and mother authoritarian parenting styles, and chronic self-concept levels.

10.1.6 School Level Differences in Prosocial Behaviour

Concerning school group differences, it could be concluded that not only peer relations influenced students' social competence, but also being a student of junior high group, senior high group or college group would make great difference in predicting the social competence such as prosocial behaviour. For example, in study 1, among the 1980s Chinese only children, senior high students have higher tendency than college students to behave prosocially. In study 2, among 1990s Chinese only children, peer relations had great impacts on prosocial behaviour, and both college group and senior high group Chinese only children were more prosocial than junior high group, and senior high group were more prosocial than college group. Moreover, in terms of interaction effects between peer relations and school groups, best friendship quality interacted greater than peer group acceptance with college group and senior group than junior high group. Explanation might be found from time length of being classmates and/or the developmental stage.

10.1.7 Cross-Sex Parenting Effects

In terms of cross-sex parenting effects, firstly, for the 1980s Chinese only children, different from previous literature, cross-sex parenting effect existed not on positive self-esteem, but only on prosocial behaviour. Specifically, father authoritative parenting style had significantly greater impact on male students than on female students' prosocial behaviour (male student group as reference group). However, for the sample of 1990s Chinese only children, same as previous literature, cross-sex parenting effect existed both on prosocial behaviour and positive self-esteem. Specifically, father permissive parenting style had significantly greater impact on female students than on male students in prosocial behaviour and in positive self-esteem; father authoritarian parenting style had significantly greater impact on male students than on female student group in positive self-esteem; mother permissive and mother authoritative parenting style had greater impact on male students than on female students both in prosocial behaviour and positive self-esteem; but mother authoritarian parenting style had greater impact on female than male student group only in positive self-esteem. In comparison with previous literature, some similarities in conclusions were found. For example, in investigating senior high school students, Richards et al (1991) found that boys and girls who perceived their cross-sex parent to be warm and supportive were found to have higher self-esteem. Rubin et al. (2004) also found that having a supportive mother protected boys from the effects of low-quality friendships on

their perceived social competence. This indicated that, in dealing with their children, both parents in a family had to consider not only the cooperation between them, but also their children's gender.

10.1.8 Different Matches of Father and Mother Parenting Styles Corresponding to Different Only Children Learning Outcomes

The analysis of father and mother parenting style match indicated that if the best children outcomes were expected, both father and mother in a family should hold the right parenting styles. For instance, in study of the 1980s Chinese only children, when both father and mother in a family held permissive-authoritative parenting style to their child, best children outcomes were produced; when both parents presented authoritarian parenting style, worst children outcomes were resulted in; when one parent figure held authoritarian, the other held permissive-authoritative to their child, child outcomes produced were somewhere between the best outcomes and worst outcomes. However, in study of the 1990s Chinese only children, similar conclusions existed only on performance goal and avoidance goal. That is, when both father and mother in a family held permissive-authoritative parenting style to their child, best children learning outcomes in performance goal and avoidance goal were produced; when both parents presented authoritarian parenting style, worst children learning outcomes in performance goal and avoidance goal were resulted in; when one parent figure held authoritarian, the other held permissive-authoritative to their children, learning outcomes of performance goal and avoidance goal produced were somewhere in the middle between the best outcomes and worst outcomes. Two more unique conclusions were reached with other learning outcomes studied. Firstly, on the normally mostly desired outcomes such as mastery goal, prosocial behaviour and positive self-esteem, when the match of parenting styles was father authoritarian and mother permissive-authoritative parenting style, best outcomes were produced; when the match of parenting styles was father permissive-authoritative and mother authoritarian parenting style, worst outcomes were produced; when both parent figures held either authoritarian or permissive-authoritative parenting style, the learning outcomes in mastery goal, prosocial behaviour and positive self-esteem would be somewhere in the middle between the best and worst outcomes. Secondly, the most unexpected conclusion was on the normally not desired learning outcomes in anxious solitary behaviour and negative self-esteem. That is, when both parent figures in a family held authoritarian parenting style, the lowest levels of anxious solitary behaviour and negative self-esteem (i.e., best outcomes)

were produced; when mother held authoritarian parenting style and father held permissive-authoritative parenting style, the highest levels of anxious solitary behaviour and negative self-esteem (i.e., worst outcomes) were produced; when both parent figures held permissive-authoritative parenting styles or father held authoritarian parenting style and mother held permissive-authoritative parenting style, mediocre outcomes in anxious solitary behaviour and negative self-esteem were produced. Therefore, in study 2, Hypothesis 4 was proved in a various ways in that, when both parents in a family held a variety of matches of parenting style to their child, best children outcomes were produced depending on different learning outcomes.

10.1.9 Conclusions about Direct and Joint Effects of Three Learning Environments and Chronic Self-Concept Levels

In order to provide a general conclusion about the direct and joint effects of the three learning environments and chronic self-concept levels, a generalization table (see Table 57) acted as a general result report table on bases of the regression models in Sections 9.3.5 and 9.3.6. Therefore, through testing of direct effects and interaction effects of each learning environments and chronic self-concept levels on student outcomes, the following conclusions were reached.

*Main Effects and Interaction Effects on Academic Achievement Orienta*tion

The regression models of academic achievement goals on the three learning environments and self-concept levels were summarized as the data listed in Table 57. First of all, it was obvious that, chronic self-concept levels had greater main impact than any individual learning environment on mastery goal and performance goal (variances explained ranging from 28% to 33%), however, the main effect of chronic self-concept levels on avoidance goal was much smaller (variances explained is 6%). Secondly, considering the direct effects of each of the learning environments on academic achievement orientation: on performance goal, following the order of greatest to least contributors, family environment contributed most (variances explained 14%), favourite and average teacher interpersonal behaviour the second (variances explained ranging from 2% to 4%), and peer relations the least (ranging from 1% to 2%); on mastery goal, peer relations, favourite teacher interpersonal behaviour and family environment

Table 57 Generalization of direct and joint effects of self-concept levels and learning environments

Predictor		performance goal	mastery goal	avoidance goal	anxious solitary behaviour	prosocial behaviour	positive self-esteem	negative self-esteem
	study 1	.02	**.17**	.02	.09	**.26**	**.23**	**.09**
PR	study 2	.01	**.20**	.02	.04	**.27**	**.16**	**.08**
	study 1	.02	**.15**	.05	.06	**.11**	.05	**.09**
FT	study 2	.04	**.20**	.05	.05	**.14**	**.11**	**.09**
	study 1	.03	.03	.05	.05	.02	.02	.03
AT	study 2	.03	.08	.07	.04	.06	.07	.05
	study 1	.01	**.12**	.00	.02	**.21**	**.15**	.04
FE	study 2	.14	**.14**	.07	.09	**.17**	**.16**	**.10**
	study 1	**.28(.37)**	**.25(.35)**	.04(.07)	.03(.06)	**.15(.37)**	.05(**.22**)	.04(.14)
SCL	study 2	**.28(.39)**	**.21(.34)**	.04(.07)	.03(.02)	**.13(.32)**	**.09(.17)**	.02(.04)
	study 1		.04			.03		.04
PR X SCL	study 2	.02	.02	.02	.03	.01	.03	.04
	study 1					.04		.04
FT X SCL	study 2			.01	.03	.01	.05	.01
AT X SCL	study 1	.01	.02	.02(.03)	.03	.05	.04	.05

(Continued)

Predictor		performance goal	mastery goal	avoidance goal	anxious solitary behaviour	prosocial behaviour	positive self-esteem	negative self-esteem
	study 2	.01	.02	.02	.02	.01	.04	.04
	study 1	.02	.04(.03)	.05			.04	.05
FE X SCL	study 2	.02	.04	.05	.05	.03	.07	.04
	study 1	**.18**	**.11**	**.13**	n.s.	**.11**	**.11**	n.s.
2-way LE interactions	study 2	**.09**	**.10**	**.13**	.08	**.09**	**.10**	.08

Note. Numbers in cells with "()" stands for alternative effect sizes in different analyses; PR=peer relations; FT=favourite teacher interpersonal behaviour; AT=Average teacher interpersonal behaviour; FE=family environment; SCL=chronic self-concept levels; 2-way LE interactions=2-way interactions between learning environments.

explained relatively much greater variances (ranging from 12% to 20%), while average teacher interpersonal behaviour explained less variance (ranging from 3% to 8%); on avoidance goal, each of the three learning environments, such as favourite teacher and average teacher interpersonal behaviour and family environment were almost equally important and explained variances ranging from 5% to 7%, and peer relations explained the least variance (2%). Thirdly, interaction effects between learning environments and chronic self-concept levels existed on students' academic achievement orientation not extensively in study 1 and 2, especially the small or no contributions of the interaction effects between favourite teacher interpersonal behaviour and chronic self-concept levels. Although the sums of the interaction effects between chronic self-concept levels and every learning environment on each academic achievement goal were not greater than 10%, it seemed that peer relations, average teacher interpersonal behaviour and family environment, each played significant role, though small, in the interactions with chronic self-concept levels of Chinese only children. Finally, the two-way interactions between the learning environments played quite important role in academic achievement orientation and variances explained in performance goal ranging from 9% to 18%, in mastery goal ranging from 10% to 11%, in avoidance goal about 13%.

On academic achievement orientation, the very significant predictors were best friendship quality, favourite teacher cooperative behaviour, and family cohesion and significant predictors were peer group acceptance, favourite teacher strict behaviour and mother permissive-authoritative parenting style; among student chronic self-concept levels, individual level had much greater impact on performance goal and avoidance goal, while relational level and collective level only had great impact on mastery goal and individual level exert only a small effect on mastery goal.

Main Effects and Interaction Effects on Prosocial Behaviour and Anxious Solitary Behaviour

The regression models of prosocial behaviour and anxious solitary behaviour on the three learning environments and self-concept levels were summarized as the data listed in Table 57. First of all, in terms of direct effects of the learning environments and chronic self-concept: on prosocial behaviour, it was obvious that peer relations, chronic self-concept levels, family environment and favourite teacher interpersonal behaviour had much greater main effect (variances explained ranging from 11% to 27%), however, average teacher interpersonal behaviour

contributed much less (variance explained ranging from 2% to 6%); on anxious solitary behaviour, all of the learning environments and chronic self-concept exerted some direct effects (variances explained ranging from 2% to 9%). Secondly, in terms of the interaction effects between learning environments and chronic self-concept levels, some variances were explained both on prosocial behaviour and anxious solitary behaviour (variance explained for each interaction ranging from 1% to 5%). Finally, the two-way interactions between the learning environments played important roles in prosocial behaviour and anxious solitary behaviour (variance explained ranging from 8% to 11%).

Main Effects and Interaction Effects on Self-Esteem

The regression models of positive and negative self-esteem on the three learning environments and self-concept levels were summarized as the data listed in Table 57. First of all, in terms of direct effects of the learning environments and chronic self-concept: on positive self-esteem, it was obvious that peer relations, family environment, chronic self-concept levels and favourite teacher interpersonal behaviour had much greater main effect (variances explained ranging from 9% to 23%), however, average teacher interpersonal behaviour contributed much less (variance explained ranging from 2% to 7%); on negative self-esteem, all of the learning environments and chronic self-concept exerted some direct effects, but not as great as those on positive self-esteem (variances explained ranging from 3% to 10%). Secondly, in terms of the interaction effects between learning environments and chronic self-concept levels, some variances were explained both on positive and negative self-esteem (variance explained for each interaction ranging from 1% to 7%). Finally, the two-way interactions between the learning environments played important role in positive and negative self-esteem (variance explained ranging from 8% to 11%).

In summary, living in the greater social cultural environment affected by Chinese culture and China's One-Child Policy, the learning outcomes of these Chinese only-children's were influenced, first, directly by the three separate learning environments, such as family environment, peer relations, and average and favourite teacher interpersonal behaviours, second, directly by their chronic self-concept levels, third, partly by the interactions between their chronic self-concept levels and the three learning environments, and finally, by the interactions between the three learning environments. That is, it was not the person himself or one separate learning environment that were able to determine the learning outcomes, but in consideration of the specific learning outcomes and the personal characteristics of the person, all the parties involved had to make the right efforts

individually and cooperatively. This implied that Chinese only children could grow and learn better under the condition that a bioecological system of learning environments existed.

10. 2 What If There Were No Interactions between Learning Environments?

In present study, only in study 1, on anxious solitary behaviour and negative self-esteem, there were no interaction effects between the three learning environments. Hence we could infer that between these learning environments, there should be an exchange of information and cooperation, otherwise negative student outcomes would come out, such as problems of anxious solitary behaviour and high level of negative self-esteem.

10.3 Discussion

10.3.1 Theoretical Implication

Theoretically, according to the standard proposed by Lewin (1951), "What means are most appropriate for analysing and representing scientifically a psychological field have to be judged on the basis of their fruitfulness for explaining behaviour" (p. 240). Present study indicated that future learning environment theoretical models should integrate factors regarding the person and peer relations and other learning environments because, although more variances were explained in present study, there is still much in the rest of the variances in learning conditions and academic achievement waiting for being explained. Furthermore, present research results proved again that it was not only the traditional learning environments that had impact on student outcomes, but the students themselves could actively construct their learning environments through their bio-psychological environments and through interactions between their bio-psychological environments and the environments around them.

Based on the results, an illustration of direct effects of chronic self-concept and learning environments on the studied learning outcomes were indicated. As predicted, it was the direct and joint effects of learning environments and chronic self-concept levels that had impact on student outcomes. Moreover, different aspects of learning environments and chronic self-concept levels functioned differently on different student outcomes. But how differently they worked and

whether interactions between relevant learning environments and chronic self-concept happened, on one hand, depended on the specific student outcome; on the other hand, depended on the person characteristics.

In the present study, the proposed theoretical model was proved in that, when only consider the impact of a separate learning environment, little variance in the outcomes could be explained, but only when considering together the direct and especially the interaction effects among the learning environments and the personality variable chronic self-concept on the outcomes within the larger atmosphere of culture and public policy, much more variance could be explained. And in turn, with the corresponding levels of student outcomes, in one way, it proved the impacts of learning environment, biopsychological environments and culture and public policy while in the other way, it provided some ideas about how to improve positive outcomes but avoid negative outcomes by changing the learning environments, biopsychological environment (such as by activating the right working self-concept levels), or even the public policy etc.

This theoretical model in present study coincided with part of the prediction of Bronfenbrenner's Ecological Systems Theory (1979): The interaction between factors in the child's maturing biology, his immediate family/community environment, and the other social environments affect the development of the child. Changes or conflict in any one layer will ripple throughout other layers. To study a child's development, we must look not only at the child and his or her immediate environments, but also at the interaction between these learning environments and other important macro environments as well.

From a perspective of psychological ecology of human development, the ecological environment is conceived as a set nested structure, each inside the next. Altogether five environmental systems ranging from fine-grained inputs of direct interactions with social agents to broad-based inputs of culture encompass microsystem, mesosystem, exosystem, macrosystem and chronosystem (see Figure 3).

In line with the definitions of each system, we could find a position for each component of the proposed theoretical model in present study and see where the coincidence of predictions lies. Microsystem refers to the settings in which an individual lives including family, peers, school, and neighbourhood etc., which have most direct interactions with the developing individual. And biopsychological environment of the individual is also an important part of the microsystem. Obviously, self-concept levels and the 3 sub-learning environments are representatives of microsystem. Mesosystem refers to relations between microsystems or connections between contexts. Therefore, interactions between self-concept levels and 3 sub-learning environments and interactions between sub-learning environments belong to mesosystem. Exosystem refers to experiences in

a social setting in which an individual does not have an active role but which nevertheless influence experience in an immediate context. But in present proposed theoretical model, there are no representatives there. Macrosystem is identified with attitudes and/or ideologies of the culture in which individuals live and accordingly, public policy is also a part of macrosystem. Thus Chinese culture and China's One-child Policy considered in present study belong to macrosystem. The final system is chronosystem and refers to the patterning of environmental events and transitions over the life course, that is, the effects created by time or critical periods in development. Here in present study, the period of older adolescence and young adulthood could act as chronosystem.

There are several points worthy of note. First of all, a very important thesis of this theory is that what matters for behaviour and development is the environment as it is perceived rather than as it may exist in "objective" reality. Secondly, this theory emphasizes using rigorously designed naturalistic and planned experiments for studying development in the actual environments, both immediate and more remote, in which people live. Thirdly, it also emphasizes that the evolving reciprocal relation between person and environment through life is conceptualized and operationalized in systems terms and that a child's own biology is a primary environment as well. Finally, the theory contends that behaviour and development should be examined as a joint function of the characteristics of the person and of the environment. The former includes both biological and psychological attributes (e.g., an individual's genetic heritage and personality). The latter consists of the physical, social, and cultural features of the immediate settings in which human beings live (e.g., the society and times into which an individual is born). The key to this theory is the interaction of structures within a layer and interactions of structures between layers.

10.3.2 Practical Implications

If the theoretical model in present study was considered under the background of Lewin's Field Theory, Bronfenbrenner's Ecological Systems Theory and Wasserman and Faust's Social Network Analysis, great practical implications were to be offered for people and institutions of all levels: parents, teachers, school administrators, extended family, mentors, work supervisors, legislators, and government etc. for example, based on the results, as it was predicted that it was the interdependence between peer relations and chronic self-concept that had impact on student outcomes. Moreover, peer group acceptance and best friendship quality functioned differently on different student outcomes. But how differently

they worked and whether interactions between peer relations and chronic self-concept happened, on one hand, depended on the specific student outcome; on the other hand, depended on the person himself. Interaction effect mainly came from interaction between peer group acceptance and collective level or relational level of self-concept, or interaction between best friendship quality and relational level of self-concept.

Hence practical implications were offered as well. First of all, besides the job of teaching, teachers should be aware of the importance of peer group acceptance in promoting positive student outcomes and in preventing negative student outcomes. Meanwhile, more attention should be given to the greater positive effects of best friendship quality on the desirable student outcomes, such as mastery goal orientation, prosocial behaviour, positive self-esteem and academic achievement. Teachers might help promoting students' peer relations by providing opportunities and creating activities. Secondly, when students' individual level of chronic self-concept was more prominent, less preferable or negative student outcomes such as performance goal, avoidance goal, anxious solitary behaviour, negative self-esteem would be prominent and it was less possible to produce interaction effects between peer relations and chronic self-concept. Third, when students had more prominent relational level and/or collective level of chronic self-concept, desirable or preferable student outcomes would come into being and interactions between peer relations and chronic self-concept levels would arise as well. Therefore, in order to facilitate interactions between peer relations and chronic self-concept levels and the production of desirable student outcomes, teachers might take actions by priming factors to activate students' relational and collective levels of chronic self-concept and to reduce or deactivate students' individual level of chronic self-concept. Furthermore, present study indicated that peer group acceptance and best friendship quality had great impacts on mastery goal, social competence, positive and negative self-esteem, thus, relevant parties, not only teachers, but also parents, communities, schools and other relevant institutions, even the nation, could help to facilitate better peer relations in ways of providing time, space, activities and social networks and systems.

However, since on academic achievement goals, chronic self-concept levels had greater impacts, this implied that parents, teachers and other relevant parties should help students only in an authoritative or supportive way because academic achievement goals are a really personal matter. Furthermore, the interaction effects between peer relations and chronic self-concept were found on mastery goal, prosocial behaviour orientation, negative self-esteem and academic achievement. This signalizes that encouraging students' interaction with peers would either lead to favourable learning conditions or avoid unfavourable learning conditions.

Last, but not least, another practical implication should be mentioned resulting from the outcomes that were not predicted. For example, there were no interaction effects on performance goal, avoidance goal and anxious solitary behaviour in study 1. This might indicate that ways should be found to help the students who were individual-level-centered in chronic self-concept by activating their relational and collective levels of self-concept, in order to prime cooperation or interactions between the person and their learning environments.

Reality has already reflected the predictions. For instance, after the implementation of China's One-Child Policy, women have more chance to enter into full employment. Hence the so-called equality between women and men in employment world brought more work to Chinese women besides the housework at home and an increasing divorce rate to Chinese household. Due to mother's full employment, their only-children do not have the constant mutual interaction with their mothers, which is necessary for development of children. According to the ecological theory, if the relationships in the immediate microsystem break down, the child will not have the tools to explore other parts of his environment (Bronfenbrenner, 1979). And apparently, parents could also do something in exosystem to help their children. For example, the mother could try to find a job requiring less work hours on weekdays and find more time to increase their own interactions with their children to create more opportunities for their children to interact with others etc. within a microsystem, parents at least could, through their direct (e.g., appropriate parenting style) and indirect (e.g. providing a general family environment with high family cohesion) interpersonal behaviour, exert their impact; they could also encourage their only-children to increase interactions with their peers and teachers to improve the dyad quality, say, a primary dyad; and meanwhile increase their own interpersonal behaviours with teachers to get more information about other systems in order to decide in time what to do to help their children. Finally, in a macrosystem, parents could do something for their children's rights to express their opinions to some institutions. For example, although it has been realized that there is necessity for the continuity of China's One-Child Policy and there are less social relations of the family due to the impact of this policy, the only-children need peers, other extended family members and even other adults. As parents, they could ask the government to make it a law that each community shall establish some play grounds for children and create more microsystems for children to interact with their peers, make use of the characteristics of Chinese culture (relational and collective culture) to develop relations with other families with similar aged children and improve social contact with extended family members and other adults such as grandparents and their friends.

Great implications for the practice of teaching are offered as well. Knowing about the breakdown occurring within children's homes, it is possible for our educational system to do some mending work to some degree. As the result in present study showed, teachers, especially favourite teacher interpersonal behaviour had great impact on mastery goal, positive self-esteem, and social competence as well. And, of course, teachers and schools could try to create some ways or occasions to help increase the interactions or communications between students and their parents.

And government could improve the macrosystem or create favourable macrosystem with public policies and new laws. For example, to ease the social burdens brought by China's One-Child Policy and the accelerating aging process of the population, Chinese government could have taken some measures earlier in health insurance systems.

Not only people and institutions at all levels should create more interpersonal structures for these only-children, but also they should attend to the quality of these interactions. As Bronfenbrenner (1979) noticed that dyads (or other n＋2 system) had different qualities, such as observational dyads, joint activity dyads and primary dyads and the quality of dyads could be improved through improving reciprocity and affective relations, and controlling balance of power (p. 56-59). In present study, for example, peer group acceptance and best friendship quality both as peer relations had different importance to different outcomes and they also interact differently with other systems.

Since different systems or interactions between different systems might have different effects on different outcomes, to solve different behaviour or development problems, there should be different concentrations on systems. For example, in present study, father permissive-authoritative parenting style and best friendship quality had great impact on positive self-esteem, but no impact on negative self-esteem. Therefore, when there is problem with an only child on negative self-esteem, solutions should be found in systems like peer group acceptance, favourite teacher cooperative behaviour and favourite teacher opposition behaviour.

More attention should be given to biopsychological environment. Since there existed interactions between the learning environments and between student chronic self-concept levels and the learning environment, this emphasized the great importance of increasing interactions between the learning environments by interpersonal behaviour, exchange and sharing of information between Microsystems. And in learning environments, adjustments in interpersonal behaviours are necessary on base of student different chronic self-concept levels. That is, to different students, same interpersonal behaviour might function differently.

The present study also implied the great impact of a macrosystem, that is, the Chinese culture. Although the direct and interaction effects of Chinese culture were not tested through data analyses, chronic self-concept levels of these Chinese only-children expressed the print of Chinese culture, with relational level and collective level loaded most but individual level loaded least. Probably due to this cultural impact in that they could turn to others easily, on anxious solitary behaviour, Chinese only-children did not record high although they have fewer extended family relatives and have no siblings or cousins in the family or extended family. This implied again that for the development of Chinese only-children, turning to macrosystem for help really functioned as well. On the other hand, other factors in macrosystem might disturb the development of children. To some degree, China's One-Child Policy is an example. As mentioned before, chronic self-concept of Chinese only-children still concentrated on relational and collective levels of self-concept, but how come they could have an individual-level-like career orientation. Probably this phenomenon is a reflection of the helpless souls because on the one hand, together with this public policy, the government has not taken complementary measures in time; on the other hand, Chinese only-children felt helpless and had no other choice, but to take the heavy social burdens on them alone.

In short, the present research has great implications to parents, teachers, educational researchers, as well as to policy-makers and practitioners in terms of finding a more integrated theoretical model, improving student outcomes, and creating better series of systems ranging from microsystem, mesosystem, exosystem, macrosystem and chronosystem.

10.3.3 Limitations and Future Research

Present study has limitations. Firstly, the present data mainly rely upon self-report information from students. These raise an important validity concern. Thus, future research might make use of multiple sources of information such as informants, principals, parents, communities and multiple methodologies (interviews, observations, surveys), in order to provide a more valid research method in identifying the relevant effects (Roeser & Eccles, 1998). Secondly, the non-experimental nature of the study limits our ability to make real causal inferences. Future studies should consider examining these relationships within different cultures and through longitudinal study to address the causal and even reciprocal effects over time. Finally, it would be more thorough to take into account other learning environments and other facets of learning environments, personal

characteristics and other contexts.There are other limitations in present study. For example, due to the capacity of this research project, no experiences in exosystem, such as those from parents' work places were considered in research design. Secondly much was ignored in family environment, such as other aspects of family relations, family conflict and family expressiveness; and other dimensions of general family environment. Thirdly, school-level learning environments and more limited student outcomes, such as the academic orientations of the school and social orientations of students in school, etc. were not studied as well. Fourthly, the impact of community or neighbourhood is not considered in this study, but actually it is very important because in a collective culture such as in China, reputation and fear of losing face in neighbourhood actually has been influencing behaviour and development of individuals much more than other cultures. However, these limitations left much room for future research.

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