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Student Mapping of Singaporean Teachers' Social-Emotional Skills

A thesis presented in partial fulfilment of the requirements for the

Masters of Educational Psychology

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New Zealand

Nicole Chia

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ABSTRACT

Hargreaves (2000) argued that emotions were central to teaching practices. However, research investigating how emotions are best used in teaching is still in its infancy and very little research has examined this issue from the perspective of students. Harvey, Bimler, Evans, Kirkland and Pechtel (2012) sought to address this issue when they organised teachers' social-emotional skills into a three-dimensional model. As Harvey et al. developed this model in the New Zealand and German contexts, it primarily drew on teachers' perspectives in a Western context. Further research is required to evaluate social-emotional skills that teachers use from students' perspectives in a non-western setting. Two studies were conducted to achieve this. Eighty-eight descriptions of social-emotional skills (known as items) were generated in Study 1, based on Harvey and Evans' 2003 study, Harvey et al.'s 2012 study, and a recent review of the literature. Using these 88 items, a sorting task was conducted with Singaporean participants to cluster and organise groups of items, in order to validate Harvey et al.'s (2012) model in the Singaporean context. Using the three-dimensional solution developed in Study 1, the focus of Study 2 was to identify key emotional practices and idiographic response styles. Eighty-eight Singaporean students completed a rating task to identify what social-emotional behaviours their teacher practised. Eight "hotspots" or highly applicable clusters of social-emotional skills were identified as salient to teachers' practices. Furthermore, analysis revealed that teachers' response profiles against these hotspots could be separated into five patterns. Overall, the results partially validate Harvey et al.'s 2012 model both within the Singaporean context and from students' perspectives, thus supporting its applicability across cultures and stakeholders. Specifically, support is added to the notion that teachers' social-emotional practices can be identified and established into profiles. These findings make an initial step toward being able to identify students' preferences in teacher social-emotional skills and these skills can be utilised in future teacher training programmes.

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All parts of the here presented research project were approved as low risk and as a result did not require approval by the Massey University Human Ethics Committee (Appendix A and B).

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LIST OF ABBREVIATIONS

ANOVA	Analysis of variance
EI	Emotional Intelligence
GOPA	Grouping, Opposites, Partitioning, Addition
GPA	Generalised Procrustes Analysis
HCA	Hierarchical cluster analysis
JC	Junior College
MOSS	Method of Successive Sorts
MDS	Multidimensional Scaling
PCA	Principal component analysis
SE	Social-emotional
SEC	Social-emotional competence
SEL	Social-emotional learning
SDT	Self-determination theory

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CHAPTER ONE: INTRODUCTION

The importance of emotion in the classroom has been a long neglected topic in education, yet some theorists argue emotion is central to teaching (Hargreaves, 1998; Evans, Harvey, Buckley, & Yan, 2009). The value of this is becoming increasingly recognised, and a broadened focus in education to include not just academic learning, but social and emotional development as well, is becoming evident (Hargreaves, 2000).

There are three points to note with the extant literature on emotions in the classroom. The first point is that the majority of studies aimed at improving the classroom emotional climate focus on formally teaching students emotional skills, neglecting the importance of the teacher's own emotional skills evident through everyday interactions that foster students' social and emotional competence. Notably, an alternative stream of thought is emerging whereby attention is specifically given to the importance of teachers' social-emotional skills and the effect these have on the classroom emotional climate (Evans & Harvey, 2012). In addition to the overall classroom climate, teachers' emotional skills have been found to influence students' academic motivation and social-emotional competence (Harvey, Bimler, Evans, Kirkland, & Pechtel, 2012). Harvey et al. distilled essential emotional behaviours and developed teachers' emotional response profiles based around teachers' perspectives.

A second point worthy of raising is that although gaining teachers' perspectives are important, it would seem necessary to further investigate key emotional behaviours and emotional patterns from the perspectives of students. This is because emotional interactions are likely to have significant impacts on students. Moreover, the perspectives of teachers and students on the nature of emotions in the classroom climate may vary quite widely. Students' perspective may highlight important features that are emphasised differently and will inform best practice. Moreover, students are also important stakeholders in their learning from their time in school, and these interactions are likely to shape their learning and social-emotional development.

Finally, although there have been studies concerning teacher emotional interactions in the classroom, these studies are mostly conducted in Western countries. This raises the question of whether findings from largely Western sources about beneficial expression and management of emotions can be applied to non-Western cultures. In order to explore this, it is important to understand emotional skills in different cultural settings, as Western studies on emotional skills may not be applicable to the Asian educational context.

Based on these issues, investigation is necessary into understanding teachers' beneficial emotional interactions from the perspective of students, in a non-Western context. In particular, the focus of this paper was twofold. The first was to organise emotional behaviours in a Singaporean context. The second focus was to understand what Singaporean students between the ages of 17-20 in Singaporean polytechnics identified as important behaviours and response styles of their teachers.

To do this, this research was correspondingly conducted in two parts. Multidimensional scaling (MDS) was used to map the data collected using a two-part methodology. In Stage one, a comparative study was carried out using a GOPA-sorting procedure (**G**rouping, **O**pposites, **P**artitioning and **A**ddition) of 88 items describing teachers' social-emotional practices, with 33 adults in Singapore. The aim of the first phase was to validate the model of the classroom environment in the Singaporean context by developing a stable structure of teachers' emotional interactions in the classroom, using student-derived items of teacher interactions developed by Harvey and colleagues (2003). These data from the GOPA were then used for Stage two. In Stage two, 88 polytechnic students in Singapore indicated how accurate they felt that each of the 88 items' statements were of their teacher's social-emotional practices in the classroom. Most students followed a rating procedure but some followed the Method of Successive Sorts (MOSS), a ranking procedure. These data were then used to find significant clusters of teacher emotional behaviour (known as hotspots) and then used to evaluate and profile teachers' emotional response patterns across these hotspots.

It was expected that these hotspots would be intercorrelated and would contribute to the outcome. Additionally, we expected that each participant's responses on these hotspots could be illustrated as profiles and that these profiles could be compared for emotional patterns between sample groups. This study will show students' perspectives of their teachers in the Singaporean context and what behaviours these teachers are likely to show in class. Additionally, students' preferences on the types of emotional interactions displayed by their teacher will be taken into account. This will enable us to see which teacher emotional behaviours students like or dislike. It is expected that there will be a variety of teacher profiles and that some students may prefer certain profiles to others, showing that there are multiple teaching styles with different student preferences.

The implications from this study are fourfold. First, results will be useful for evaluating teachers' emotional interactions in a Singaporean context. Second, it will guide the further development of interventions and curriculum for teacher training around teachers' emotional skills. Furthermore, the results may potentially be generalised to other countries and used for further research. Finally, it is anticipated that this paper will add to international research on the classroom environment, as it will include Singaporean students' perspectives of teacher social-emotional interactions.

This thesis begins with a literature review, which will explore the meaning and nature of emotion, and how it is expressed and managed in different cultures. This will be followed by details of the Singaporean education context and models that target student and teacher social-emotional skills. Subsequently, the method and results sections are divided into two studies. The first study covers the GOPA method and results, and emotional behaviours that have been organised as themes. The second study concerns the method and results from both the rating procedure and MOSS, and on the hotspots and teacher profiles that have emerged. Next, a discussion of the findings will cover a discussion of GOPA themes from Study 1, and hotspots and teacher profiles from Study 2. Implications of the findings on and future research will be discussed, followed by limitations of the study. Lastly, a conclusion summarises this report.

CHAPTER TWO:
LITERATURE REVIEW

"He who controls others may be powerful, but he who has mastered himself is mightier still."

— Lao Tzu (604-531 BC)

"Feelings are just visitors. Let them come and go."

— Mooji (born 1954)

"One can be the master of what one does, but never of what one feels."

— Gustave Flaubert (1821-1880)

"I don't want to be at the mercy of my emotions. I want to use them, to enjoy them, and to dominate them."

— Oscar Wilde (1854-1900)

As these four quotes illustrate, recommended management of emotion can vary widely. Lao Tzu, a Chinese philosopher, viewed emotion as something to be mastered, with self-control seen as strength. To Flaubert, a French author, one can only control one's behaviour but control cannot be exerted over one's feelings. Oscar Wilde, an Irish author, on the other hand, would argue that knowing how to manage and direct emotions would be more important than controlling or suppressing emotion. To Mooji, an Indian guru, mindfulness is learning to accept emotions as they arise, and not to engage with them, but instead allowing them space to come and go. These contrasting views depict how the expression and management of emotion can be viewed across Eastern and Western contexts, often as a result of differing cultural values.

Conceptual foundations

Functions of emotion

We all know that emotions are useless and bad for our peace of mind and our blood pressure.
— B. F. Skinner (1904-1990)

Sadness gives depth. Happiness gives height. Sadness gives roots. Happiness gives branches. Happiness is like a tree going into the sky, and sadness is like the roots going down into the womb of the earth. Both are needed, and the higher a tree goes, the deeper it goes, simultaneously. The bigger the tree, the bigger will be its roots. In fact, it is always in proportion. That's its balance.
— Osho (1931-1990)

As different cultures perceive emotion in different ways, this also affects how they approach and manage emotion. For example, if emotions were believed to be useless, then the focus increasingly moves to suppressing and controlling emotion. If, on the other hand, emotions were viewed as useful, then emotional skills such as learning to express and manage emotions would be seen as important to one's development and growth. Differing approaches on emotion may be due to cultural views, as well as the prevailing philosophies and theories of the time. The question of whether emotions have functions has been debated for centuries (Keltner & Gross, 1999). From one perspective, behaviourists such as Skinner argue that emotions serve no useful function, and instead disrupt peace of mind, disorganise behaviour, and generally lack the logic, rationality, and principled orderliness of reason. In support, theorists such as the Stoics and the Rationalists from the 18th century Enlightenment proclaimed that reason should be the master of emotions (Solomon, 1993). On the other hand, theorists such as Osho, an Indian guru and author on mindfulness and meditation, view the experience of different kinds of emotions as important and essential to developing as a person. Similarly, those from a social-functionalist perspective would argue that emotions serve important functions and are adaptations

to the problems of social survival, such as helping us to form attachments, and maintain positive relations with others (Keltner & Gross, 1999). This approach assumes that humans are social by nature and solve problems through forming and maintaining social relationships. The experience and expression of emotions can bring about beneficial social consequences for individuals and their relationships. For example, emotions such as anxiety, love, and gratitude are capable of motivating behaviours to enable individuals to form bonds. Thus emotions are dynamic, relational processes that coordinate actions and behaviours of individuals (Keltner & Kring, 1998). Additionally, this perspective views emotions as useful as they can evoke behaviours, provide information about others' states of minds, and influence and incentivise positive social behaviours (Thorne, 1987).

A social-functionalist perspective would emphasise the importance of teachers' social-emotional interactions, as the emotions that a teacher displays towards students in the classroom will have either positive or negative consequences on students' emotions, motivation and behaviours. However, emotional expression is not universal and is dependent on factors such as culture, personality type, interpersonal relationships and socialisation (Keltner & Haidt, 1999). Moreover, culture influences the way we perceive, organise and process information and the way we communicate, interact with others and solve problems (De Vita, 2001; Keltner & Haidt, 1999). Furthermore, certain emotions are functional within specific contexts or contexts fostered by culture. For example, emotional suppression may be functional in Asian cultures in order to be socially accepted or successful in interactions with others (Matsumoto, Yoo, & Nakagawa, 2008) while unregulated emotion may be seen as inappropriate, leading to social scorn (Beer & Lombardo, 2007). In agreement with the social-functionalist approach proposed by Keltner and Kring (1998), the approach taken in this thesis is that emotions are functional and that they are beneficial within education, as emotions may motivate students and help them learn (informative) and teachers are able to use emotions to encourage learning (evocative and incentive). However, this view may not necessarily be shared by all cultures or theories, and

therefore is important to investigate, especially in the Singaporean context (Ee & Chang, 2010; Ministry of Education (MOE), 2014b).

Emotional and social intelligence

If we are to proceed with the argument that emotions have social functions, then it is logical to assume that cultural variations exist in how emotions are expressed and managed, in order to fulfil functional needs. The ability to skilfully manage emotion for the purpose of meeting goals or needs can be thought of as emotional intelligence (Mayer and Salovey, 1993). Emotional intelligence (EI) includes being able to use emotion competently within interpersonal relationships. Mayer and Salovey (1993) describe EI as a type of social intelligence that includes the ability to perceive and understand one's own and others' emotions, to discriminate among them, and using this information to direct one's thinking and actions. Saarni (1999) further states that emotional competence includes the four abilities mentioned in Mayer and Salovey's definition of EI, but incorporates social abilities related to emotional expression; empathy, relationships and self-efficacy. A third theorist, Goleman (1996), argued that EI includes the ability to motivate oneself, to persist in frustrating situations, to control impulses and delay gratifications, as well as to regulate one's mood. However, Goleman has been criticised for having too broad a definition of EI, which includes warmth, empathy, zeal, persistence, optimism, motivation, self-control and social skills, despite all of these qualities being different from each other (Craig, 2007).

Salovey and Mayer (1993) define social intelligence as the ability to perceive one's own and others' internal states, motives, and behaviours, and to act toward them optimally on the basis of that information. This is extremely similar to their definition of EI. Scarf (1989) further adds that social competence means getting along well with others, and this involves extraversion, self-confidence, low anxiety, and social perceptiveness. According to Bar-On (2006), emotional-social intelligence consists of both intrapersonal and interpersonal social-emotional competencies that determine

how effectively we understand and express ourselves, understand others and relate with them, and cope with daily demands.

Several criticisms have been levelled at EI and social intelligence. One criticism of EI is that it contains too many measures and definitions. This has the unfortunate consequence of becoming meaningless when it is all-encompassing (Zeidner, Roberts, & Matthews, 2002). It is also difficult to select what abilities or skills fall within or outside the domain of social intelligence (Keating, 1978). A third related issue is the difficulty distinguishing between EI and social intelligence, as EI is not necessarily innate and emotional skills are learnt though socialisation (Zeidner et al., 2002). From looking at these different definitions, it would appear that social intelligence and emotional intelligence are closely connected and in fact, are likely to substantially overlap (Bar-On, 2006). Therefore, Bar-On suggests that using the term 'emotional-social intelligence' is more accurate than using 'emotional intelligence' or 'social intelligence'. Similarly, for the purposes of this study, the term 'social-emotional skills' will be used, as this term implies that these competencies can be learned through instruction and practice in a social environment, such as culture. As a result, cultural variations will lead to differences in how social-emotional skills are displayed.

Motivation

Motivation is considered to be an important feature of emotional intelligence (Goleman, 1996) as it influences behaviour. From a social-functionalist perspective, positive emotion is thought to motivate certain behaviours, and negative emotion demotivates others (Keltner & Kring, 1998). In the school setting, motivation is important for both students and teachers as firstly, motivation is among the most powerful determinants of students' success or failure in school (Ryan & Connell, 1989; Wang & Liu, 2008). Given the importance of student motivation, it would seem valuable for teachers to develop skills in fostering this. According to self-determination theory (SDT) (Ryan & Deci, 2000), when students feel autonomous, competent and positively related to others, they will have increased motivation, sense of wellbeing and optimal functioning (Connell & Wellborn, 1991; Wang & Liu, 2008). In order to

increase students' motivation in class, teachers can encourage collaborative student relationships as well as showing care and support towards students (Hadjioannou, 2007; Jennings & Greenberg, 2009). Furthermore, providing students with feedback and encouraging improvements in their work can increase students' sense of competency. Students' motivation is linked to better behaviour and academic success, which in turn affects teachers' motivation, increasing their sense of wellbeing, job satisfaction, and self-efficacy (Ryan & Deci, 2000). Regarding teachers, intrinsic motivation is related to higher wellbeing, higher job satisfaction, and higher self-efficacy (Thoonen, Sleegers, Oort, Peetsma, & Geijsel, 2011). Given the link that emotion has to motivation, it is unsurprising that teachers' emotional wellbeing is related to their motivation. Low mood or emotional exhaustion, for instance, could lower teachers' self-efficacy beliefs, job satisfaction, and reduce the amount of energy and behaviour they invest in teaching (Ryan & Deci 2000).

Students' and teachers' motivation have been strongly linked to supportive classroom climates, but most noticeably in Western contexts. Conversely, little research has been conducted investigating this relationship in Asian contexts. Given the cultural influences relevant to emotion and motivation, findings from Western-based research carry tenuous links when applied to Asian students without first validating that these constructs and relationships function similarly in the Asian education system. So far, according to several studies conducted in Taiwan, Hong Kong and Singapore, there is some evidence that Western studies on SDT can be generalised in Asian contexts (Hardre et al., 2006; Wang & Liu, 2008). For example, a study conducted in Taiwan by Hardre et al. (2006) found that students who regarded peers and teachers as being supportive were more engaged in class and worked harder. The findings indicate that most students place a lot of importance on their emotional interactions with teachers and collaboration within the peer group (Hardre et al., 2006), which are consistent with Western studies on the importance of relatedness in SDT. However, some differences were also found in East–West cultural perspectives on motivation, such as individual versus collectivist values, or the importance of ability versus effort in achievement (Moneta, 2004). These studies underscore the need for

further research that tests SDT in Asian nations to identify what social-emotional behaviours shown by Asian teachers are likely to motivate students. It would be interesting to identify which teacher social-emotional behaviours motivate Singaporean students, as well as the effects of motivation on Singaporean students' behaviour.

Importance of teacher social-emotional skills

Wellbeing and burnout

As previously mentioned, emotional skills have been linked to teachers' motivation, increased wellbeing and the prevention of burnout. Jennings and Greenberg (2009) argue that when teachers lack social and emotional skills, they are less able to tackle social and emotional challenges that occur in the classroom, leading to a decline in students' performance and on-task behaviour, a deterioration in classroom emotional climate and an increase in challenging behaviour. In turn, teachers become even more emotionally exhausted and increase punitive discipline practices. This downward spiral is known as the burnout cascade (Jennings & Greenberg, 2009). Therefore it is important that teachers have the social-emotional skills to deal with challenges in the classroom as they arise, in order to maintain wellbeing and prevent burnout.

Both burnt-out teachers and demotivated students face high levels of stress and lack a sense of purpose for being in the classroom (Cozolino, 2013). Hochschild (2003) further argues that teachers may respond to stressful teaching situations through depersonalisation, becoming passive, remote and detached from their students. They may become emotionally numb, and do not respond genuinely to their students, but rather through an emotional shell. In this case, teachers may develop a mask in order to deal with stress, leading to an inauthentic relationship between teacher and students. Having an authentic and positive relationship with students also has a large impact on teachers' wellbeing and motivation. Teachers are motivated when students show them affection, or show enjoyment in their learning. On the other

hand, teachers who feel distant and disconnected from their students, and unable to effectively respond to students' needs on a personal level, perceive themselves as incompetent and feel unfulfilled (Cozolino, 2013). An authentic relationship is important in developing a close bond between teachers and students. Teachers who genuinely care about students find it easier to achieve close personal relationships, and mutual understanding. For example, instead of immediately resorting to punishments when a student misbehaves, teachers who have a close relationship to their students may have more insight into the cause of their misbehaviour, which then enables the teacher to respond in a more patient and understanding way (Jennings & Greenberg, 2009). This sort of response further promotes caring and supportive relationships between teachers and students—a key to reducing both student behaviour problems, and teachers' emotional exhaustion.

Conversely, negative emotion for teachers is linked to decreased intrinsic motivation, pleasure, and interest in teaching (Pekrun, Goetz, TItz, & Perry, 2002). Without the emotional skills and leadership support necessary to manage negative emotions, frustration and emotional exhaustion are likely to occur, leading to burnout. Thus there is a need for broader teacher training, at least within the Singaporean context, as current pre-service training only covers academic instruction and curriculum (National Institute for Education, 2014). As a result, many teachers feel unprepared for facing actual students in the classroom – where they have to deal with the diverse learning needs of students, and the social, emotional and practical issues they will encounter (Cozolino, 2013). Perhaps it would be useful to screen aspiring teachers for emotional strengths and weaknesses, in order to help them acquire required coping and social skills during pre-service training (Cozolino, 2013). Given the very high demands placed on teachers, it is surprising that they rarely receive specific training on the importance of social and emotional issues in the classroom or how to develop the social-emotional competency (SEC) to successfully handle them (Hargreaves, 1998). Although students' social-emotional development receives much attention, there has been little focus on teachers' own social-emotional development despite evidence that teachers are an important factor in creating a positive classroom

and positive student outcomes (Jennings & Greenberg, 2009). It will be worthwhile to understand what emotional skills and characteristics are necessary to enable teachers to function well, as well as whether certain emotional patterns cause teachers to be more prone to burnout.

Burnout in the Asian context

Within the Singaporean context, burnout is prevalent amongst teachers, who work long hours and suffer a lot of work stress and performance pressures (Tan, 2014). As Singaporean teachers struggle to keep pace with the many educational initiatives from their Ministry of Education (MOE) and rising demands from parents, they tend to suffer from burnout, thus leading to many teachers leaving the profession (Ee & Chang, 2010). According to Gibson and Dembo (1984), resilience is an important factor in preventing burnout. Resilient teachers have high self-efficacy and are persistent in the face of setbacks, allowing them to bounce back from challenges. Compared to teachers with low resilience, resilient teachers are also more open to new ideas and approaches to better meet their students' needs, manage students' emotions more competently, work longer with struggling students, and exhibit greater enthusiasm in teaching and planning. This results in higher student achievement and greater student resilience (Ee & Chang, 2010). However, in a study conducted by Ee and Chang (2010), it was found that the majority of Singaporean teachers had below-average resilience, implying that they face difficulty in managing emotions as they arise for themselves and their students. Looking at the benefits of resilience, teacher-training programs should offer resilience-building activities and teach resilient strategies. However, additional studies may need to be conducted on resilience and its effect on burnout in the Asian context (Ee & Chang, 2010).

Additionally, burnout is reduced when teachers feel they have an emotionally supportive network and feel connected and supported by their colleagues (Hadjioannou, 2007). Interestingly, cultural factors may play a part in how connected teachers feel to their colleagues. Stevenson (1992) reported that compared to teaching in America, teaching in China is seen more as a group endeavour and teachers

may experience less burnout due to more frequent consultations with other teachers, help from more experienced teachers, and frequent meetings to discuss teaching techniques. Being able to seek help from other teachers on topics such as classroom management and managing challenging behaviours enables teachers to develop social-emotional skills in these areas. As seen, teacher social-emotional skills are important in dealing with students' emotions competently, and increasing both teachers' and students' sense of wellbeing and motivation.

Classroom climate

Although there is no set definition of classroom climate, generally, classroom climate has been described as the classroom social atmosphere (Johnson & McClure, 2004) or the social–psychological environment for learning (Fraser, 1994). Classroom climate has also been described as the quality of social-emotional interactions between students and teacher, such as teacher and peer support (Rowe et al., 2010). Teachers' emotional skills have been shown to have the largest impact on classroom climate (Jennings & Greenberg, 2009). Classroom climate has been linked to student outcomes such as motivation, engagement in class activities, goal orientation, academic values, social competence and academic achievement (Baker, 2006; Fraser, 1994; Rowe et al., 2010). Thus measures of classroom climate are useful not only for evaluating educational environments but also for improving educational settings to enhance children's learning and development (Moos, 1979). Teachers who have strong social-emotional skills are able to develop a positive class climate, which is related to reduction in behaviour disorders, greater engagement and motivation to learn, improved attendance, higher levels of student achievement and better attitudes (Fraser, 1989; Harvey et al., 2012). On the other hand, negative climate is related to aggression and social-emotional difficulties (Evans et al., 2009). As teachers' emotional skills have such a large impact on classroom climate, it is important to examine how teachers' SEC affects students' SEC and academic performance (Harvey et al., 2012).

As discussed, according to SDT, teachers who positively regard students' perspectives, encourage positive interactions, and provide students with the

autonomy and confidence for learning to occur effectively, create positive classroom climates (Hadjioannou, 2007; Rowe et al., 2010). In turn, students who have a close emotional bond with their teachers are more likely to be engaged in learning (Ryan & Grolnick, 1986; Hamre & Pianta, 2001). One of the most important constructs of classroom climate is students' perceptions of teacher support, which includes teacher–student relationships, teachers' expectations of students, and caring (Pianta, Hamre, & Stuhlman, 2003; Rowe et al., 2010). Teacher support is further related to students' academic achievement as it increases student motivation, prosocial behaviours and self-concept (Wentzel, 2003).). Positive teacher–child relationships can serve as a protective factor for children with behaviour problems (Baker, 2006). On the other hand, the lack of teacher support undermines students' motivation, which in turn leads to disengagement and withdrawal (Roeser & Eccles, 1998). Moreover, students who are well liked by their teachers also tend to do better academically than do those who are not as well liked (Baker, 2006; Wentzel, 2003).

However, it is also likely that students who are well-behaved and do well academically tend to be well liked initially, which makes it difficult to determine whether being well-liked results in better grades, or whether initial good grades and good behaviour cause the student to be well-liked. An important related question to this is whether teachers who are perceived as supportive are more liked by their students. It would be interesting to see whether teacher support affects students' academic performance at all ages, or whether teacher support is more important for younger primary-level students, compared to secondary school students who might view peer support as more important. Furthermore, secondary school teachers tend to have more distant relationships with their students, as compared to at primary level (Hargreaves, 2000; Harvey et al., 2012). As seen, teachers' emotional skills have consequences for both students' social-emotional development and academic outcomes. It will be important for future investigations to explore whether students' own social-emotional behaviours are related to teachers' emotional skills, as well as how important teacher support is for students at different ages.

Importance of students' perspectives on classroom climate

As students spend years of their lives in school, their perceptions of their school experiences are important (Fraser, 1989). Students can offer valuable perspectives of the classroom environment, and should be included in teacher development and education (Anderson, Evans, & Harvey, 2012). Students are often good judges of the classroom climate as they commonly experience many different learning environments (Fraser, 1989). In Singaporean society, education is of extreme importance and it has been entrenched in children from a young age as the way to succeed. If a child is struggling at school, parents seek extra tuition for the child. This provides students with a diversity of experiences with different teaching styles (Sclafani, 2008).

Furthermore, a discrepancy may exist between students' and teachers' perceptions of the classroom climate (Fraser, 1986). Previously, researchers have measured classroom climate using methods such as direct observations and interviews with teachers, but teachers may not be able to accurately rate the classroom climate based on self-report (Rowe et al., 2010). Fraser (1986, 1989) argued that students' own perceptions of their classroom environment offer valuable insight about their classroom experience. After all, students' perceptions of their classroom climate are the result of a relatively long period of exposure to the classroom environment and they are able to form accurate impressions of their teacher's emotional interactions over a long period of time, rather than having an external observer produce observational data over a few lessons (Fraser, 1989). Furthermore, students' perceptions of the classroom climate can influence their academic outcomes and social-emotional development (Rowe et al., 2010). Although classroom climate is often considered a group-level construct, with a single class environment that is experienced by all individuals or students in a particular class, individual students may have different perceptions of their experiences in the classroom. By gathering a variety of student opinions, researchers are able to understand students' individual experiences. For example, two students in the same class may have very different relationships with

their teacher, thus their personal experience of teacher support in the class could be different. With a focus on personal perceptions, there is an understanding that the data are a collection of individual experiences (Rowe et al., 2010).

Looking at the benefits of using students' perspectives, this study will draw on students' perspectives on their teachers as they can offer valuable insights into their teachers' instructional styles and emotional interactions. So far, there is a paucity of studies investigating students' or multicultural perspectives on teachers' social-emotional skills. As this study is conducted in Singapore with students at post-secondary level, it will also increase understandings of teachers' emotional skills in different cultures and different age groups. By conducting research in classrooms internationally, one can discover culturally diverse perspectives on teachers' emotional interactions (Yan, Evans & Harvey, 2011).

Cultural factors in emotional expression

Although many theories and programmes exist that focus on increasing student and teacher social-emotional skills, the majority of these are developed and researched in Western countries and therefore have questionable applicability to Asian cultures. According to the social-functionalist approach, culture shapes the way individuals communicate and interact with others, and therefore emotions are likely to be expressed and interpreted differently in Asian and Western cultures (Butler, Lee, & Gross, 2007). For instance, in Western cultures, independence, self-assertion and open emotional expression are generally encouraged, while emotional suppression is associated with a lack of trust in others, reduced perceived likeability and closeness, and tendency toward social withdrawal (Matsumoto et al., 2008). In contrast, interdependence, humility, avoiding conflict, being sensitive to others' feelings, and flexibility are highly prized traits in collectivist Asian cultures (Church, 1987; Markus & Kitayama, 1991). As a result, emotional suppression (such as suppressing anger) may in fact be considered beneficial in Asian cultures due to the importance of social order and conforming to cultural norms for social cohesion (Matsumoto et al., 2008; Markus & Kitayama, 1991; Butler et al., 2007).

Long (2003) supports the view of cultural differences in self-expression by describing how in a mix of international students, Japanese students may be seen as lacking critical thinking skills, compared to American students, who are taught to value self-expression and tend to be more opinionated. Atkinson (1997) further argues that certain aspects of critical thinking (a Western construct) are unlikely to align with Asian cultures, given their strikingly different value systems. However, although Japanese students may have difficulty expressing their personal opinions, this does not necessarily support the notion that they are poor at critical thinking or passively accept information. Thus it is important that concepts such as 'critical thinking' have a more holistic approach, and incorporate different skills and methods of evaluation such as being open to multiple perspectives, rather than being opinionated or expressive (Long, 2003).

As seen, depending on cultural demands, different cultures may not only express emotions differently, but also may value and encourage certain emotional expressions over others (such as emotional suppression versus openness). Therefore emotional expression should be viewed in a cultural context rather than purely in an individual (Butler et al., 2007) as culture largely influences the idea of the self (Markus & Kitayama, 1991). In relation to education, these differences in emotional expression are likely to be seen in Asian and Western education contexts. Perhaps in the Asian context, for instance, it is expected that teachers will have more control and give students less autonomy, and students will rarely question teachers' authority and knowledge. Furthermore, in a cross-cultural study by Stevenson (1992) conducted in America and China, it was found that teachers in China stated that enthusiasm, clarity, and ensuring academic success of students were the most important characteristics of a good teacher. On the other hand, according to American teachers, meeting the emotional needs of students, sensitivity to the needs of individuals, and patience, were noted to be the most important characteristics of a good teacher. Stevenson (1992) argues that as in China, greater cultural emphasis needs to be placed on education and academic success in the U.S.A. in order to increase student success. At the same time, different cultures require different sorts of teaching styles and it is not advisable to

simply transplant a successful teaching style in China to the American classroom (Stevenson & Lee, 1995).

Culture not only affects emotional expression, but also influences students' preferred learning styles, due to the exposure of certain styles to others. Thus it is important for teachers to be aware of students' preferred learning styles to tailor their teaching styles to students' learning needs. Students are shaped by different teaching styles that they are exposed to within their culture, thus learning style preferences are likely to be subject to cultural conditioning. According to a 'cultural learning style', certain cultures are used to certain learning styles and not others. This may explain why certain teaching methods are effective in certain cultures and ineffective in others, depending on the learning style preferences that have been reinforced (De Vita, 2001). Literature on teaching methods that has been developed in Western contexts may not be applicable to Asian contexts, thus it is important to further investigate how culture affects preferred teaching styles. For this reason, the applicability of models such as Harvey and Evans' (2012) model of the classroom emotional environment needs to be trialled and validated in the Singaporean context. Ideally, model validation should happen at the level of item organisation, before building maps of inter-item relationship and response patterns. Once this is achieved, comparison of teacher profiles across the different contexts can begin to be compared and contrasted.

Models on Social-Emotional Learning

Models of social emotional learning (SEL) can be divided into two groups—student-focused curricula and teacher-focused models. Curricula-based (student-focused) models are based on the assumption that children can be formally taught emotional competencies, such as the recognition of emotions in oneself and the perception of emotions in others, coping skills, and conflict-resolution skills (Zeidner et al., 2002). In comparison, environment-based (teacher-focused) models focus on changing the students' environment by improving teachers' SEC in order to promote student SEC and learning outcomes. The majority of SEL models are curricula-based

and aimed at formally teaching students SEC. By comparison, fewer models are aimed at developing teachers' social-emotional skills (Evans & Harvey, 2012) and even fewer of these models appear to be derived from the perspective of students. Therefore, it would seem important for research to investigate the nature of teachers' social-emotional emotional interactions from students' perspectives. Although there have been interventions developed to improve SEC, for the purposes of this literature review, the main focus will be on teacher models.

Curricula-based: Student-focused

The school setting is arguably one of the most important contexts for gaining emotional skills and competencies (Mayer & Salovey, 1997). In the process of emotional learning, students develop the abilities, skills, attitudes, and values necessary to acquire emotional competence. Students' psychological states are important in their learning. Social-emotional skills can be taught as part of values education, which uses school-based activities to promote student understanding of values and social-emotional skills to be used as members of a wider society (Zbar, Brown, Bereznicki, & Hooper, 2003). Recently, there has been an increase in explicit social skills programmes as research has shown that there are many benefits for both students and teachers (Mergler & Spooner-Lane, 2012). Programmes include skills such as teaching students to identify and understand their emotions, and express them appropriately, increasing self-control, managing conflict, understanding others' perspectives, and developing positive self-esteem (Zeidner et al., 2002). Most Western models are focused on the individual and how one should relate to and communicate with others, such as by understanding and expressing one's feelings. However, the Asian perspective tends to see the self as interconnected, and in relation to the world, with a more holistic view of reality (Long, 2003). These models may focus more on being considerate and empathising with others, putting others' needs before oneself, and loyalty to family and country (MOE, 2012). Cultural differences will determine the social-emotional skills that are included in social-emotional curricula.

Within the Singaporean context, a curriculum that is currently implemented in schools for students is the Character and Citizenship Education (CCE) programme. The ideal social-emotional behaviours in CCE are skills in recognising and managing emotions, developing care and concern for others, make responsible decisions, establishing positive relationships, and handling challenging situations effectively (MOE, 2014b). The main values in CCE are based on a collectivist approach that emphasises responsibilities to one's family, community and country, such as filial piety and loyalty towards Singapore. Reflecting societal values, the curriculum also includes the importance of building an inclusive society, social cohesion and harmony, respecting diversity in Singapore, socio-cultural awareness, caring for people in the community, perspective-taking, and on being an active citizen in a globalised world (MOE, 2014b). Within a multicultural society, these topics reflect the importance of respecting diversity and social harmony in Singaporean society, with one of the shared values as 'nation before community and society before self'.

Teacher-focused skills and SEC models

"We now understand that higher-level thinking is more likely to occur in the brain of a student who is emotionally secure than in the brain of a student who is scared, upset, anxious, or stressed."

— Mawhinney and Sagan

Given that teachers' social-emotional skills affect students' emotions in school as well as teachers' own wellbeing and motivation, it would seem somewhat important to understand the nature of beneficial emotional skills. Some important SE skills for teachers include questioning skills (to help students discover their values by asking open-ended questions, and to engage students in a meaningful way); listening skills (to show they care about students developing meaningful connections with students); and recognising diversity in the classroom (recognising and catering for diverse learning styles and abilities, and looking for reasons for why a child might not be engaging or learning). It is also important for teachers to be reflective on their teaching practices and values, which can be achieved by reflecting with peers and learning about their

own teaching and values through engaging with others in discussions (Mergler & Spooner-Lane, 2012).

According to the Teaching Through Interactions framework (Hamre & Pianta, 2007), teachers require skills in emotional support, classroom organisation and instructional support, in order to create a positive classroom climate. Within the emotional support domain, teachers need to be sensitive to students' needs; have warm and caring teacher-student relationships; regard for students' perspectives; and refrain from using sarcasm and harsh disciplinary practices. In these classrooms, teachers express warmth, respect and interest in students, encouraging teacher-student relationships and peer collaboration. Teachers are also aware of their students' emotional and academic needs and design lessons to encourage students' self-expression, autonomy and interests. Prior research shows that students in classrooms with these characteristics engage more in learning (Furrer & Skinner, 2003) and exhibit fewer problem behaviours (Crosnoe, Johnson, & Elder, 2004; Rowe et al., 2010). There is also initial evidence that the Teaching through Interactions framework for understanding classroom interactions is consistent across other cultures and into secondary school settings (Hamre & Pianta, 2007).

Similarly, the Jennings and Greenberg (2009) Prosocial Classroom Model emphasises teachers' SEC. These authors propose that teachers with high SEC produce a healthy classroom climate through building supportive and encouraging student–teacher relationships, designing lessons that build on students' strengths, effective classroom management, coaching students through conflict situations, encouraging student collaboration, and acting as a role model for respectful communication and prosocial behaviours. In turn, the resulting positive classroom climate enhances students' academic, social and emotional outcomes. Furthermore, Jennings and Greenberg suggest mindfulness and stress reduction programmes for teachers in order to promote emotional awareness and SEC.

The model that is most relevant to this current study is the Harvey and Evans classroom emotional environment model (2012). This model identifies six key social-

emotional skills teachers require that benefit students emotionally (Harvey *et al.* 2012, see *Figure 1***)**. These include emotional relationships, emotional awareness, emotion management, emotional intrapersonal beliefs, emotional interpersonal guidelines, and emotion contagion. These concepts are divided into intrapersonal and interpersonal, with emotional relationships as the central organising principle.

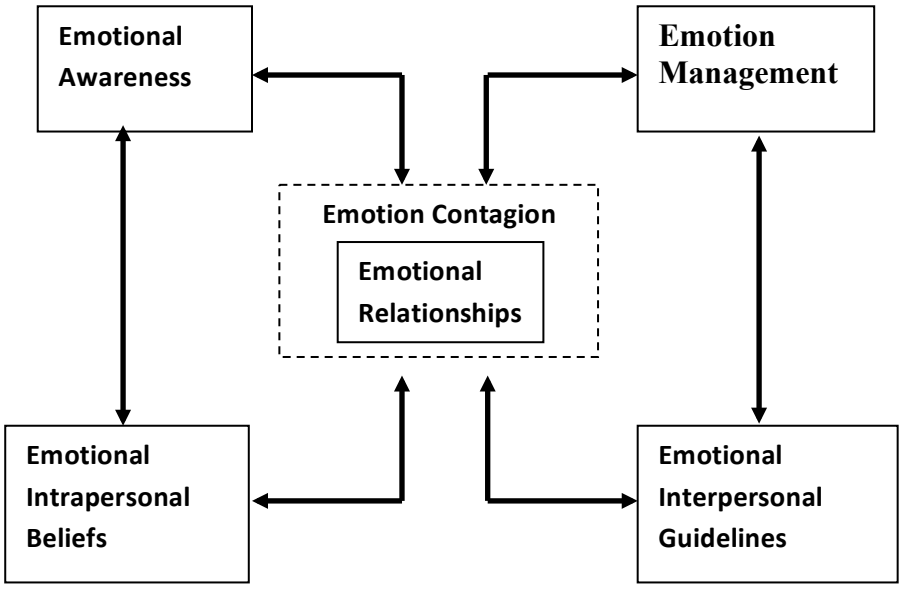

Figure 1: Note. Key emotional practices in the classroom. Reprinted from "Mapping the Classroom Emotional Environment," by Harvey et al., 2012*, Teaching and Teacher Education*, *28,* p638. Copyright 2012 by Elsevier. Reprinted with permission.

Rather than focusing on curriculum that teaches children social-emotional skills, it may be more beneficial to support training and development for teachers so they have the skills and knowledge required to create positive classrooms by infusing SEL into the existing curriculum through the use of informal learning in everyday situations (Zeidner et al., 2002). This can be done through teacher modelling of behaviours and through teachable moments. In order to teach SEC to students, teachers themselves must have good social-emotional skills. After all, teachers who work with children need to have high social-emotional skills to understand and manage their own emotions, in order to model desired behaviours to their students. It can be difficult for teachers who are untrained in social-emotional skills to teach SEC to

students if they themselves lack these skills. As teachers are typically not trained in teaching SEL, many teachers are often not confident in tackling such an unfamiliar topic (Zeidner et al., 2002). Investing in good quality teacher training is likely to be more effective in building students' SEC than teaching students a specific curriculum, as teacher social-emotional skills are the best predictor of students' learning (Lopes & Salovey, 2003; Mergler & Spooner-Lane, 2012).

Background of Singapore – history and education

Given that this study will be positioned in Singapore, a background of Singapore's history and its impacts on educational policies is warranted. This will include an overview of teacher training in Singapore and their education system.

Why Singapore?

Singapore has consistently been ranked highly in education worldwide (Steiner, 2010) and so its educational policies and practices are worth a closer examination. Singapore is a large city-state of 5 million people, with a very diverse multicultural population consisting of three main ethnic groups: 74% Chinese, 13% Malay, and 9% Indian and 3% other (OECD, 2010; Tan, 2007). Although English is the official language in Singapore, other languages are widely spoken and children are typically bilingual when they start school at 6-7 years old (Steiner, 2010). As students are so culturally and linguistically diverse, teachers have to tailor their teaching styles to suit different students' learning styles (Sclafani, 2008).

In today's globalised world, multiculturalism is becoming the norm and may be seen as a challenge, however the government inculcates the importance of social harmony and respecting diversity in values education from a young age. While governmental policies are made to ensure that all students have equal educational opportunities (Kam & Gopinathan, 1999; MOE, 2014a), there are still students from low-income families who slip through the cracks. Since 1965, when Singapore gained independence from Britain, the focus has been on nation-building and educating students to ensure that they are globally competitive (OECD, 2010; Kam & Gopinathan,

1999). As Singapore has developed into a first world country within a relatively short time of 50 years, continuous improvement has been key to its development, with high educational standards (OECD, 2010). Singapore's education system includes primary schools, secondary schools, post-secondary and pre-university institutes, as well as universities (Sclafani, 2008).

Is competitiveness the best solution?

As Singapore does not have any natural resources, education is prioritised, given its close relationship to the economy (Tan, 2007). Education in Singapore is extremely competitive, leading to a high degree of stress for students, teachers and parents. Students are ability-streamed into different schools and classes based on grades (Sclafani, 2008) and schools are ranked according to students' results. School-selection is extremely competitive for both primary and secondary schools, as students fight to enter top schools (Tan & Gopinathan, 2000). Although the education system is based on meritocracy (OECD, 2010), streaming has also led to negative consequences, such as some students being stigmatised as 'slow' or 'weak' from a very young age. This inevitably leads to stress and anxiety when students feel that they are not living up to their own or their parents' standards (Kam & Gopinathan, 1999; Sclafani, 2008).

Due to interschool competition, it can be difficult for principals and teachers to come up with innovative teaching strategies, for fear of deviating from the curriculum. This makes it difficult to foster creativity and critical thinking in students, when the focus is simply on reaching performance standards. Teachers who are curriculum-driven may be less willing to allow flexibility for students' learning, taking away from authentic learning. Authentic learning is when teachers and students understand the value in what they are learning, and see learning as connected and meaningful, rather than taught in isolation, and being able to apply learning to the real world (Rowe et al., 2010). This lack of intrinsic motivation and work pressures may lead to teacher burnout (Ee & Chang, 2010). Although school ranking has been criticised for these reasons, it is still in practice (Tan & Gopinathan, 2000).

The question then arises as to whether such a strong focus on assessment and testing is really necessary. Finland, which has one of the most highly rated education systems in the world, challenged this notion when they ceased ability-streaming since reforms in the 1970s. Instead, they focus on providing inclusive, comprehensive education and high-quality education to all students. Teachers are given freedom and flexibility to create their own curriculum according to students' learning needs (Moore, 2008). Singapore may benefit from Finland's example by reducing the testing culture and focusing more on authentic learning that emphasises critical thinking and discovery. Schools and teachers will have more freedom in developing curriculum to suit their students' learning needs and interests, and focusing on teaching social-emotional skills and learning based on discovery and exploration rather than only learning in order to do well in tests.

Teacher education in Singapore

As education is so important in Singapore, teachers are well-respected professionals (Sclafani, 2008), and the MOE provides a high salary, bonuses, professional development training, and promotions in order to promote teacher motivation and reduce turnover rate (Sclafani, 2008; Steiner, 2010). In regards to teacher education, Singapore has one of the most coherent systems of teacher education and employment in the world (OECD, 2010; Sclafani, 2008). In order to work in public schools, there is only one teacher preparation program at the National Institute for Education (NIE). Currently, pre-service teacher training programmes at NIE focus mainly on instructional skills (NIE, 2014), yet there is no training for improving teacher social-emotional skills. Furthermore, having a national curriculum has led to a lack of freedom for teachers to develop their own curriculum (Neo & Chen, 2007; Sclafani, 2008).

Recently though, there has been increased recognition of the need to focus on flexibility and diversity in teaching in order to produce students capable of mental flexibility, creativity, innovation, and critical thinking (Neo & Chen, 2007). In order to achieve this, the MOE in Singapore is attempting to reduce the focus on grades by

emphasising holistic learning and modifying curriculum to include new and diverse subjects that students can choose according to their strengths and interests (Neo & Chen, 2007; Tan & Gopinathan, 2000). The MOE acknowledges that while Singaporean students score highly in math and science internationally, they lack creativity and innovative skills at school and later, in the workplace. Proposals by NIE include giving schools more autonomy, creating an engaging curriculum that emphasises creativity and innovation, and providing real-world learning opportunities for students (Neo & Chen, 2007). Although these recommendations are more instructional-based and do not explicitly focus on teaching social-emotional skills to teachers, they give teachers and principals more autonomy to create their own curriculum. This will hopefully create less of a focus on testing, and more on authentic learning, leading to more engagement and intrinsic motivation for students to learn. As the MOE in Singapore begins to investigate motivation enhancing education techniques, it is timely in this current climate to investigate teachers' social-emotional skills.

Singapore's education system

This current study will be carried out with polytechnic students, aged 17-20. Polytechnics are post-secondary institutes in Singapore and are seen as more technical compared to Junior Colleges (JCs). One gets a diploma following a typically 3-year course. The Singaporean education system is quite complex and there are many post-secondary pathways one can follow (see *Figure 2*). After completing their course, those in polytechnics may continue onto university, or may go straight to employed work (Lee, 2008).

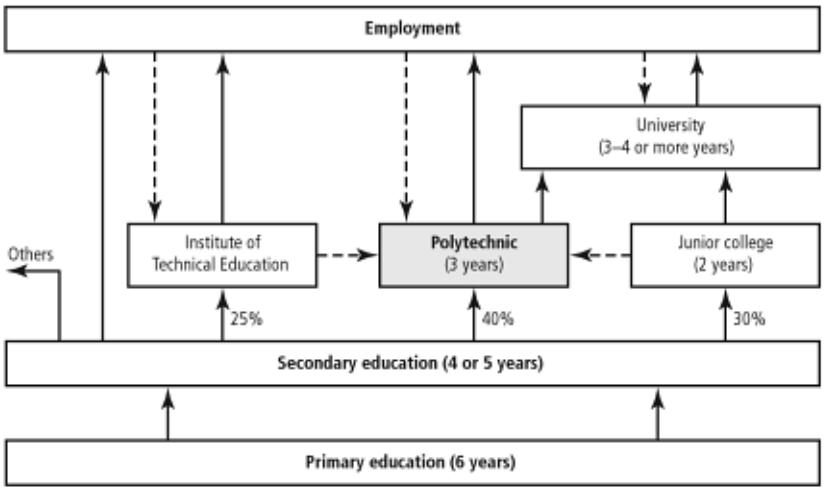

Figure 2. Note. Singapore Education System. Reprinted from *Toward a better future: education and training for economic development in Singapore since 1965* (p. 136), by Lee S.K., 2008, World Bank Publications. Copyright NIE 2008. Reprinted with permission.

Polytechnics and Junior Colleges

As this study will be conducted in polytechnics, an overview of post-secondary education is provided. After completing secondary school, students typically go on to Junior College (JC) or polytechnic at the age of 17 or 18. Polytechnics used to be seen as less academic than JCs, but nowadays more students are choosing polytechnics over JCs as they wish to gain more practical experience, and some courses at polytechnics are highly sought after. Polytechnics' main focus is on preparing students for work, and thus they offer pre-employment training (Lee, 2008).

Recently, polytechnics are increasingly seen as an alternative route to university and an increasing number of students choose to continue on to university after completing training at a polytechnic. Furthermore, diplomas from polytechnics are usually recognised in overseas universities and students may be able to transfer credits if they choose to study at Australian or British universities and some are able to complete the degree in two years, as compared to the typical three to four years (Lee, 2008). The polytechnic structure is similar to university. The first two years are more

broad-based courses whereas in their third year, students apply learnt skills and knowledge through practical experience working in the field. In contrast to three-year long courses at polytechnics, students study for two years at JCs and the main focus is on continuing to university. In JC, students take academic subjects such as Maths, English, and similar subjects from secondary school. In Singapore, there are approximately 70,000 students across five polytechnics and 30,000 students across twelve JCs (MOE, 2014a).

Considering the differences in focus between JCs and polytechnics, teachers may also display different emotional interactions in the classroom. For example, as polytechnics are more job-focused than in JCs, students may work more independently and teachers may allow students more autonomy in polytechnics compared to JCs. It would be interesting to investigate differences in teacher social-emotional skills in JCs compared to polytechnics.

Relevance to Singaporean context

As Singapore is a melting pot of Western and Asian influences, previous studies on emotion that have been conducted in either Western or Asian cultures may not be valid in the Singaporean context. Recognising that students have differing needs in emotional expression and sensitivity is an essential skill for teachers. Significant differences in Singaporean teachers may occur for example, in what is considered important emotional behaviours and practice styles to those reported by Harvey and colleagues' (2012), who investigated the emotional practices of teachers in New Zealand and Germany. More research is necessary to investigate how emotional practices occur in the Asian/ Singaporean context.

To do this, the discussion will now focus on social-emotional learning programmes and their underlying values, with a view to apply these into the Singaporean context.

Conclusion

Teachers' social-emotional skills are viewed here as a vital ingredient in the creation of a positive classroom emotional climate and influential in the expression and development of both teacher and student emotional wellbeing. As teacher SEC plays an influential part in effective classroom practice, it is important to be more precise about understanding what social-emotional skills exist and how they are used. However, given the functional nature of emotion and emotional expression, it is imperative to consider the expression of social-emotional skills within a cultural context.

Specifics of this Research

The objective of the study is to understand students' perceptions of teachers' social and emotional interactions in the Singaporean classroom. This study replicates Harvey et al.'s 2012 previous research, but is undertaken using students' perspectives instead of teachers' perspectives. Furthermore, it is positioned within a Singaporean cultural context. The purpose of this is to understand key social-emotional teaching practices and patterns of Singaporean teachers, based on Singaporean students' perspectives. If Singaporean students organise emotional practices and patterns similarly to New Zealand and German teachers and students, this also provides a level of validation support for the themes and hotspots generated from the Harvey-Evans (2012) model within the Asian context.

This study is informed by Harvey and colleagues' model of the classroom emotional environment (2003, 2012), which identified six key areas of social-emotional skills that teachers require in order to benefit students emotionally. These are: *emotional relationships, emotional awareness, emotion coaching, emotional intrapersonal beliefs, emotional interpersonal guidelines* and *emotion contagion*. It will be of interest to evaluate whether themes and hotspots generated from this current study correspond to those reported by Harvey et al.'s (2012).

This research will use a specific form of multivariate analysis called Multidimensional Scaling (MDS) to investigate the structural dimensions of emotional practices. This will result in a geometric reproduction of the relationships between entities represented on an *N* dimensional model (Kruskal, 1964; Van Deun & Delbeke, 2000). Theory will inform the interpretation of the resulting map to provide semantic explanations of the relevant dimensions as well as to isolate particular items that tend to cluster together according to the conceptual model. This form of analysis has been used successfully as a way to create conceptual models of data that profiles recurring and/or interrelated features (Harvey et al., 2012). The first stage, using GOPA, will be conducted in Singapore in order to validate these concepts, using items based on Harvey and Evans (2003) research as well as an extensive search of the current literature. The second aim of this study is to develop hotspots and social-emotional practice profiles from the perspective of students, and to investigate the relationship between practice profiles and student preference for subject matter, tutor, and level of aptitude.

CHAPTER THREE
STUDY ONE: GOPA METHOD & RESULTS

METHOD

Overall approach

Multidimensional scaling (MDS) is an approach which enables an examination of the relationship between items when the underlying structure and characteristics are not known. The resultant analyses generate a geometric representation of participants' judgments on the (dis)similarity of stimuli (Schiffman et al., 1981). This approach is useful when limited information or research is available to provide a basis for generating attributes (as is the case here). Additionally, MDS can reveal how the attributes relate to each other. As this is a direct approach to collecting judgment data, MDS is less exposed to experimenter contamination or bias (Schiffman et al., 1981). Participants are able to assess and categorise the items in relation to each other without having to articulate their categories. Finally, when there are a large number of items, MDS is able to examine conceptual relationships with fewer participants and data sets compared with other approaches. A further benefit of the MDS approach is how the end product is presented (Jaworska & Chupetlovska-Anastasova, 2009). Multidimensional scaling produces a graphic representation of the item relationships, whereby an observer can see the conceptual distance between items represented graphically. In other words, the proximity of two items (represented as points) in the geometric space reflects the items' similarity of meaning (Bimler & Kirkland, 2001). This can facilitate understanding of the structure by expert and lay audiences alike and provides a more readily interpretable solution (Schiffman et al., 1981). The MDS solution tends to be easier than factor analytic solutions to rotate to align axes with key conceptual attributes. Finally, unlike factor analytic methods, which discard items that fail to load on the identified factors, all items contribute to the MDS map and its dimensions. Using this approach, items can be removed or culled when overlapping or conceptually analogous items are identified. Consequently, MDS analyses circumvent

the removal of potentially valuable item constructs due to low factor loading.

Participants

Participants were 33 volunteers recruited from a convenience sample in Singapore, from colleagues, friends and family of the author. A convenience sample of this size has been shown to produce stable dendrograms and spatial maps with adequate face validity (Bimler & Kirkland, 1998). The sample consisted of 9 males and 24 females. The age range was between 20-57 with the mean age being 27.3 years (SD=8.09). 95% of participants were between 24-30 years old, as it was preferable to understand these concepts from a younger age range. Although it was a convenience sample, Bimler and Kirkland (1998) have shown that having at least 30 full GOPA sorts is enough to provide a stable inter-item structure. Furthermore, studies have shown no difference between different populations of sorters for GOPA, such as differences in age or whether they are teachers or not (Kirkland et al., 2004; Pechtel, 2008). 29 participants stated their ethnicity as Chinese, two as Caucasian, one as Japanese and one as Indian. Out of the 33 participants, 16 were teachers. Teachers were chosen as they were likely to have a strong understanding of the meanings/ relevance of items (or maybe they applied items to their own teaching while sorting). Volunteers excluded were non-Singaporeans, the principal author and the supervisors for this project.

Materials

Each participant received the following:

- A deck of 88 cards. The cards were 35 x 75mm, and printed with the various behavioural items and their identifying numbers (Appendix D-1).
- An information sheet describing the project and detailing ethical considerations (Appendix E)
- GOPA instruction and response form (Appendix E)
- A consent form (Appendix E)

Procedures

This project was judged to be low risk (see Appendix A) and was peer-reviewed in lieu of being sent to the Massey University Human Ethics Committee. The study was

conducted in accordance with the Massey University Code of Ethical Conduct for research, teaching and evaluations involving human participants. Participants volunteered to take part in the study and written and informed consent was obtained prior to conducting the study (see Appendix D for a copy of the consent forms and information sheets). The participants were also advised of their rights to refuse to answer any question or to withdraw at any stage. Assurances were given regarding the confidentiality of participant data.

Item Development

An initial pool of 76 items was taken from Harvey & colleagues' 2003 study (Appendix C). These items described teachers' emotional behaviour in the classroom from the perspective of students. The items initially drawn from Harvey et al.'s 2003 study were taken from student focus groups and interviews before being revised, edited, adjusted and checked with the EPIC lab group in order to ensure they were clear and understandable. The EPIC lab group stands for **E**motional **P**ractice **I**n **C**ontext and is made up of researchers and students investigating social-emotional practices. Items were further checked to ensure that items were phrased neutrally, and at a behavioural, action-oriented level.

The number of items was increased from 76 to 88 and further refined by applying rules with regard to clarity, neutrality, brevity and simplicity. All items were designed with a positive or neutral valence, to avoid clustering of items in a bipolar manner by valence in the Hierarchical Clustering Analysis (HCA and Multidimensional Scaling (MDS) during data analysis. Undesirable emotional behaviours (behaviours phrased negatively) were also removed or reworded. For example, the negatively phrased "Teacher is unconcerned about students or schoolwork", was rephrased to "Interested in our schoolwork/ Genuinely cares about us". Phrases such as "Teacher uses punishment to control how students feel" were rephrased more neutrally to "Teacher states consequences for certain behaviours". Items were reworded from third person "Students care what teachers think about them" to first person "I care what my teacher thinks about me".

All items considered redundant were removed or merged with similar items from the item pool. For example, the phrases “Teacher appropriately controls own negative emotions” and “Teacher fails to control own negative reactions” were rephrased to “Teacher controls their negative emotions”. The deletion of redundancies included the removal of items which were semantically opposite. After item reduction was complete, items were reworded so that their content was more specific to a teacher’s practice. Some items were removed as they were redundant such as “Positive but firm” which was similar to “Good but strict”. The item “Because of how this teacher responds, I am more likely to comply” was removed as it was similar to “The way this teacher responds makes me behave better”. Concepts are described by a constellation of behaviours. Consequently, an effort was made to design all items on a behavioural level of abstraction. The item “Teacher deals with emotional situations instead of sending student out of the room”, for example, was rephrased to “Addresses emotional situation at the time it occurs”.

The sorting task of this test is cognitively demanding as it involves sorting items into groups of similarities and comparison of items. In order to minimise this demand, an effort was made to keep items brief. For example, “Teacher’s expression of emotion is calm and low key but effective in regulating students’ emotion” was replaced with “My teacher's emotional responses settle the class down”. In addition, keeping items simple also reduces cognitive demand, but more importantly removes the confounding effect of asking participants to consider two factors in one item.

This process was extended through discussion amongst members of the Emotion Practice In Context (EPIC) research group and through discussion with the primary supervisor. In addition to addressing the aforementioned rules, members also ran a pilot that attempted to group the items. This was important to identify items that were outliers due to their dramatic effect on HCA and MDS structure. Pilot studies were also conducted with Singaporeans to get feedback, and in order to make sure that items were understandable and specific to the Singaporean context for this study. This step was important, in order to take into account cultural differences, as items

from Harvey et al.'s 2012 study had been previously developed for the New Zealand and German contexts.

Following the feedback from EPIC group and Singaporean participants, a number of items were added, changed, or removed. The items were edited constantly, and in the end, the following items were added: "Taught us an emotional vocabulary to use"; "Speaks warmly to us"; "Talks to us on a level we understand"; "Enjoys spending time with us"; "Takes time to help us"; "Makes us feel welcome"; "Knows which other students I work well with"; "If a student is upset, my teacher lets them go and calm down"; "My teacher helps me to think before I act"; "Tells stories using examples of how others have responded emotionally", "Motivates us to take on the task at hand", "Teaches us how to express our emotions with words". Items such as, "Models what different facial expressions might look like" and "Helps us change our emotions to fit the situation (e.g. brainstorming to generate creativity) were removed as the meanings were likely to not be understood when presented during GOPA sorting or unlikely to be demonstrated by secondary school teachers. Some items that were unclear were reworded, such as "Puts me in the right frame of mind to get the best outcome (e.g. prep talk to help prepare for my exam)" which was quite vague, was replaced with "Prepares us to face upcoming events (e.g. exams)". The item "Helps us to change our emotions to fit the situation" was modified to "Motivates us to take on the task at hand". "Changes his/her emotions to suit the situation" was edited to "Adapts his/her emotions to suit the situation (e.g. being caring with a sad student)". Giving examples would likely help participants to have a clearer understanding of the items.

Items using the word 'calm' were reworded, using 'settle down' or 'composed' instead, to prevent participants from grouping items together semantically. For example, the item "His/ her calmness settles us down" was removed and the item was reworded to "My teacher's emotional responses settles the class down". Instead of "Remains calm in difficult situations", this was reworded to "Remains composed in difficult situations". At the conclusion of this validation and refinement process there were 88 behavioural items (Appendix D). These 88 items were then given random

identifying numbers, and printed on cards, in order to identify items during data analysis (Appendix D-1).

Data Collection

The sorting tasks were undertaken individually. The participants were given the 88-item deck (items can be found in Appendix D-1), information and instruction forms, consent form, a recording sheet (Appendix E), and a pen. Participants were given instructions, shown a demonstration of the sorting-task and pending any questions, asked to begin. Participants could refer to their instructions sheet or ask any further questions at any time during the sorting task. Most of the participants' responses were supervised, however some took the items home for sorting after the researcher had demonstrated what to do. Moreover, the provided instructions meant the task is readily self-directed, and the principal researcher could be contacted via email or phone to clarify any difficulties.

Participants sorted items regarding teacher emotional behaviours (Appendix D-1) by perceived similarity using the GOPA sort method. Respondents provided their answers by recording the corresponding numbers of each item on the response sheet as described in the Methods section. The instructions provided an estimated time requirement of 60 minutes to participants, although no time limit was imposed upon them. The response form provides spaces for the Grouping, Opposites, Partition, and Adding phases of the card sort, with each response space beginning with a summary of the phase requirements. Participants organised the 88 item statements into groups based on their judgment of each item's "face value". The task begins with the Grouping phase. Participants are asked to shuffle the item cards and organise them into self-defined groups, with a group being defined as items that are in some way similar. For example, "Calmly talks with students having difficulties" and "Remains composed in difficult situations" are similar in both relating to the teacher's ability to remain calm and composed in class. The participants were not asked to define the nature of the similarity between items in a group. Furthermore, the instructions emphasise that any relationship is considered reasonable, and only has to be

identifiable to them. Participants were encouraged to have between 8-16 different groups. A group could consist of a single item.

The Opposites phase asked participants to consider a theme that defines each group from phase 1, and then to identify any pairs of groups which they consider to represent opposite underlying themes. Participants were encouraged to identify at least two pairs of opposite groups, and were to designate as many as they deemed appropriate. Opposite groups were identified by the number of a single item within each group on the response form.

The subsequent Partitioning phase asked participants to identify subgroups of items within the groups from phase 1, illustrating slight differences between items at a lower level of abstraction. Participants were discouraged from breaking up the larger groups of cards to achieve this, but were allowed to rearrange cards within a given group. The subgroups were recorded on the response forms by copying the items from the original groups and using brackets to represent the subgroups.

The final Addition phase asked participants to identify pairs of groups from phase 1 which they perceive to be most similar and to move these cards together. They were encouraged to make at least two such mergers, and the responses are recorded as in the Opposites phase with the number of one of item representing each group. A group could be added to an existing merger, but a merger cannot be undone to form a different merger. Participants additionally indicated if they were interested in receiving a summary of the research, and were thanked for their participation.

Data Analysis

The data from each of the recording sheets were entered by hand onto a personal computer using Data Organiser (Graybill, 2009). This bespoke software application is designed to enable faster and simpler data entry and to perform consistency checks to ensure item numbers had not been entered twice or that false item numbers had not been entered. Once all the sorting results had been entered, the results for the GOPA were analysed. The results from each phase were separately

collapsed for each participant and then averaged across participants and placed into a proximity matrix based on how often each item was grouped with every other item. The Grouping, Partitioning and Addition steps were used, but the Opposites step was not used in the present analysis. This provided estimates of mean similarity between each item. Results were then inserted into a Euclidean space with dimensionality determined by the goodness-of-fit (Kruskal & Wish, 1978).

Goodness-of-fit, or Stress1 function, reveals how closely the distances within a map match a given data set in a given dimensional solution. The Stress1 function is an iterative process which looks for successive approximations to the map until the Stress1 is minimised (Jaworska & Chupetlovska-Anastasova, 2009). The aim here is to maximise the goodness-of-fit, while minimising the number of dimensions to enable a valid and accurate, yet coherent configuration. The Stress1 function is presented as a number which shows how perfectly the data fit the configuration for a given level of dimensionality. The number generated falls between 0 and 1, with 0 being a nominally "perfect" fit. An implementation of the Kruskal algorithm was applied to the data via a bespoke multidimensional scaling application, with the formula presented as:

$$s1 = \sqrt{\sum_{ij}(d_{ij} - d_{ij}^{*})^2 / \sum_{ij} d_{ij}^2}$$

This determines the goodness-of-fit between the distances and disparities (the proximities after positive monotone transformation has converted it to disparities) in the spatial map (Schiffman et al., 1981). An elbow test plotting the Stress1 by dimension was also prepared to assist in finding the appropriate level of dimensionality for this data (Bimler & Kirkland, 2007).

Data Transformation

Similarity values are determined using data gathered during the GOPA sorts described above. These numerical values are translated from the data in accordance with the number of times that any two items appear in the same group. These similarity scores are determined for all possible pairs of items (∂*ij*). This is represented

with a 0-1 score where 0 means the items are never grouped together and 1 means they are always together, even at the most stringent levels of partitioning (Bimler & Kirkland, 1998). That is, a higher value ∂*ij* means a greater degree of judged similarity.

A central tenet of MDS is that the similarity value should have a monotonic relationship to distance when represented in a Euclidean space: d=f(∂) (Kruskal & Wish, 1978). In this case, greater similarity corresponds to shorter distances, thus the proximity data is inversely monotonically linked to distance. Using an MDS algorithm developed by Kruskal (1964), these similarity data are transformed into ordinal proximity data and displayed on an R dimensional map.

Map Stability

A map was generated from the data from the 33 participants in the sample. Statistical analysis was conducted to assess the consistency between the maps with regard to dimensionality as well as configuration.

RESULTS

Statistical Analysis

Raw data were entered into the software application Data Organiser for further analysis. It was found that most participants accurately completed response sheets, with the following exceptions. In five instances, there were inconsistencies between the item numbers in grouping and partitioning phases (e.g. in *grouping* the items may be [11, 32, 2, 6, 71, 5] but when transposed into *partitioning* the same items were re-written as: [11, 22, 2] [6, 71, 5]). In these cases, the number recorded in *grouping* was recorded at the data input stage (in this example, '32'). Data Organiser confirmed that such corrections did not lead to item duplicates, suggesting that the *grouping* item numbers were the intended responses. In other instances, items that were written in the grouping phase were duplicated (e.g. [45, 47,48, 50, 51] was written in another group below as [44, 47, 48, 49]. In three cases, not all items were included in phase one and thus these were left out in responses. Also, in 6 responses, not all items that were written in phase one's grouping stage were copied into the partitioning phase.

Two participants did not complete the partitioning phase, and one did not complete phases two and four (opposites and addition*).* In each of these examples, the sections for reporting those phases were left blank.

Data Analysis

Two separate approaches, hierarchical cluster analysis (HCA) and multi-dimensional scaling (MDS), were used to interpret the data in order to gather different yet complementary information (Carter, Enyedy, Goodyear, Arcinue & Puri, 2009). The end result of this research is the production of a three-dimensional (3D) model of teacher social-emotional behaviours. This 3D format was derived from the MDS analysis, but the identification of relevant clustering as they appear on the 3D model was informed by the HCA.

Hierarchical cluster analysis. HCA provides a direct translation of similarity data into a dendrogram, which allows the reader to see the levels of groupings as averaged across all participants. The HCA representing the 88 items is displayed using a dendrogram (see Appendix G). The dendrogram was interpreted by looking at the closeness of items according to the length of 'branching' required to join any group of items together. Relationships between items and clusters of items are represented visually in the dendrogram. In brief, the further from the root of the dendrogram the connecting lines appear, the more conceptually distant the relationship between items or item clusters. Put another way, items that unite quickly (i.e. their branches merge closer from the root) are combined more frequently by participants in their sort and are understood to be closely related conceptually. In this way, HCA informs categories or groupings of items (Carter et al., 2009). When looking at the dendrogram from the top, all items are joined together at the greatest level of inclusiveness. As the reader moves towards the root, the tree branches off into more and more specific subsets. This reflects the sorting phases conducted by participants in that the most inclusive groupings on the top are indicative of the additive phase of the GOPA procedure, and items that are closely linked (i.e. their branches merge with other items at short distances from the top of the dendrogram) are more likely grouped at even the most

stringent partitioning phases.

The HCA was used to inform clustering by overlaying items that group together onto the MDS model and then making adjustments according to group cohesion and clarity. Because of these adjustments, the final clusters do not perfectly match those as they appear in the dendrogram. A shortcoming of HCA, at least for present purposes, was that it did not explore the closeness or interrelationships between clusters. For that, the MDS spatial representation was needed in order to identify both the way that these items grouped (i.e. cluster), but also to explore proximity between clusters and decipher underlying dimensions or spectrums by which these items vary. The six preliminary clusters from the dendrogram were *emotion coaching, emotion contagion, student-student support, emotional boundaries/discipline, relationship-forming behaviours/warmth*, and *addresses student problems/caring*.

Multidimensional scaling. MDS was used to explore the underlying structure and dimensions ascribed to the items and to present them in a multi-dimensional model or "map." The statistical analyses involved in constructing this map were computationally intensive and beyond the scope of this thesis. My supervisor, Dr. David Bimler performed the initial computation-heavy stages of the analysis (converting raw data into estimated dissimilarities while I conducted some of the analysis (eyeballing data, labelling clusters). In constructing the map, the similarity scores were converted into proximity values so as to preserve the overall ordering of item pairs. This made it possible to use the proximity (i.e. inter-item distance) values to locate items multi-dimensionally.

In order to determine the best dimensionality of the model (the number of appropriate dimensions required to produce a meaningful model that conforms to the data), a number of factors were considered. Statistical analyses informed appropriate dimensionality according to the degree of Stress1, but informal criteria such as the interpretability of the solution were also relevant to deciding on the final representation of the data. This need to balance practical application of the model with the statistical framework in order to produce meaningful results is discussed in

several publications (Kruskal & Wish, 1978; Carter et al., 2009; Harvey et al, 2012).

Map Interpretation

There are two considerations informing the interpretation of the three dimensional map: clusters and dimensions. Clustering decisions were based on both forms of statistical analysis (HCA and MDS) and describe the groupings of items as they appear in the map. Dimensions are reliant on understanding the poles representing opposite sides of the model and determining the spectrums on which these items were sorted.

Dimensions

Table 1*. Dimensions 1-3*

Dimensions	**Poles**	**Polar Meanings**
D1: Emotional management	+	Emotion coaching
	-	Emotional attitude
D2: Teacher's emotional influence	+	Student-student support
	-	Teacher emotion contagion
D3: Teacher-student interactions	+	Emotional boundaries
	-	Teacher-student relationship

Each of the dimensions, or axes, in the 3D model is presumed to represent underlying perceptual differences in the data. To understand and interpret what each dimension meant, an approach was used to identify and confirm satisfactory descriptions. This included investigation of diametrically opposed clusters as well as consideration of dimensional weightings in order to identify meaningful poles. Care

was taken to pick dimensions that seemed most relevant for explanatory and practical purposes. This meant that the poles or extreme anchors were not necessarily those that held the greatest absolute value weighting on the dimensions for reasons due to model rotation.

The three underlying dimensions identified in this map were *Emotional management, Teacher's emotional influence*, and *Teacher-student interactions* (shown in Table 2). Each of these dimensions is divided into two categories to represent items nearing closer to one of the two poles. *Emotional management* is distinguished as either *emotion coaching* or *emotional attitude*. *Teacher's emotional influence* refers to whether the teacher encourages *student-student support* or uses *emotion contagion* to influence students' feelings and behaviour. *Teacher-student interactions* refers to whether the teacher has clear emotional boundaries or creates warm teacher-student relationships.

Clusters

Preliminary clusters were identified according to the dendrogram and then confirmed by the degree to which items conglomerated on the map. Iterations were made so that the final clusters as they appear on the 3D map were coherent, were informed by the dendrogram, and could be described as coalescing according to an identifiable reason. Table 2 shows the final clustering as they appeared in the combined solution, including both the composite items and descriptive labels assigned to each of the six clusters. The item(s) that appeared most central to the cluster geographically is/are marked with an asterisk. Not all 88 items are represented in the list of clusters and dimensions.

The clusters were evenly spread across the map and were distinguished by the behaviour classes. By considering both the spatial location of items on the map, as well as their distinct groupings according to the dendrogram, clear differentiation emerged between clusters based on teacher emotional influence or teacher-student interactions, or teacher emotional attitude.

It is also important to identify the abstract concepts linking the clusters together. Clusters are composed of items which are positioned close to one another in the geometric space. Both the map and a hierarchical cluster analysis dendrogram using a mean linkage algorithm created from the proximity data (see Appendix G) were used to visually identify items with conceptually similar meanings. A dendrogram is a diagrammatic tree obtained through hierarchical clustering where the items are arranged like leaves on a tree, with the branches representing the distance between items (Kirkland et al., 2004). The dendrogram demonstrates how the clusters were combined at each step of the procedure until all items form one single cluster (Hair, Black, Babin, & Anderson, 2010). The degree of similarities between items is represented by the height of the branch connection with other items. In the dendrogram, all items were identified as belonging to one of these clusters.

Table 2. *GOPA Items of Emotional Interactions Organised by Themes*

Dimensions and clusters with key items
D1+ Emotion Coaching
4. Tells stories using examples of how others have responded emotionally
64. Uses emotional situations to teach us how to cope better
8. Shows me how I took part in an emotional situation (e.g. started an argument or reacted to it)
19. Talks us through emotional situations that have affected us (e.g. student death/ bullying)
*88. Teaches us how to express our emotions with words
*9. Makes us aware of how we are managing emotion
10. Makes us aware of how others feel
D1- Emotional attitude
44. Proud to be a teacher
*33. Enjoys teaching
22. Believes in what they do as teachers
83. Likes teaching
39. Has enjoyable teaching style
42. Enthusiastic
76. Has sense of humour
D2+ Student-student support
*23. Encourages us to support each other
2. Encourages us to build enjoyable friendships with other students
37. Helps us work together
68. Uses students to support other students (e.g. student mediators, class monitors)
47. Knows which other students I work well with

D2- Emotion contagion

5. My behaviour is affected by what my teacher believes about me

*6. I care what this teacher thinks about me

14. My self-esteem is related to how this teacher feels about me

13. We mirror how our teacher feels

30. The way this teacher responds makes me work better

D3+ Emotional boundaries

*29. Consistently enforces consequences

52. Expects us to behave

67. Stated consequences for certain behaviours or emotion

38. Has clear class routines and structures

72. Accurately identifies the misbehaving student

35. Clear and reasonable expectations of us

3. Rewards fairly

*84. Disciplines fairly

65. Doesn't use negative emotion (e.g. shame, guilt trip) as punishment

43. Is fair

63. Good but strict

50. Is in control of the class

51. Maintains clear teacher-student boundaries with us

D3- Teacher-student relationship

*82. Takes time to listen

62. Takes time to talk

32. Understands how we feel

86. Speaks warmly to us

74. Calmly talks with students having difficulties

53. Makes us feel welcome

71. Enjoys spending time with us
85. Talks to us on a level we understand
69. Takes time to help us
45. Addresses our concerns
16. Takes our problems seriously

Additional Clusters:

Teacher emotional characteristics

11. Likeable
*36. Positive
42. Enthusiastic
76. Has sense of humour
48. Trustworthy
49. Understanding and caring

Relationship forming behaviours/ warmth

17. Tells us about themselves
20. Has a good relationship with us
53. Makes us feel welcome
54. Treats us like his/her own children
71. Enjoys spending time with us
79. Genuinely cares about us
*86. Speaks warmly to us
60. Respects us

Academic preparation/ provides necessary support

59. Prepares us to face upcoming events (e.g. exams)
*77. Motivates us to take on the task at hand
28. Encourages us to learn new things

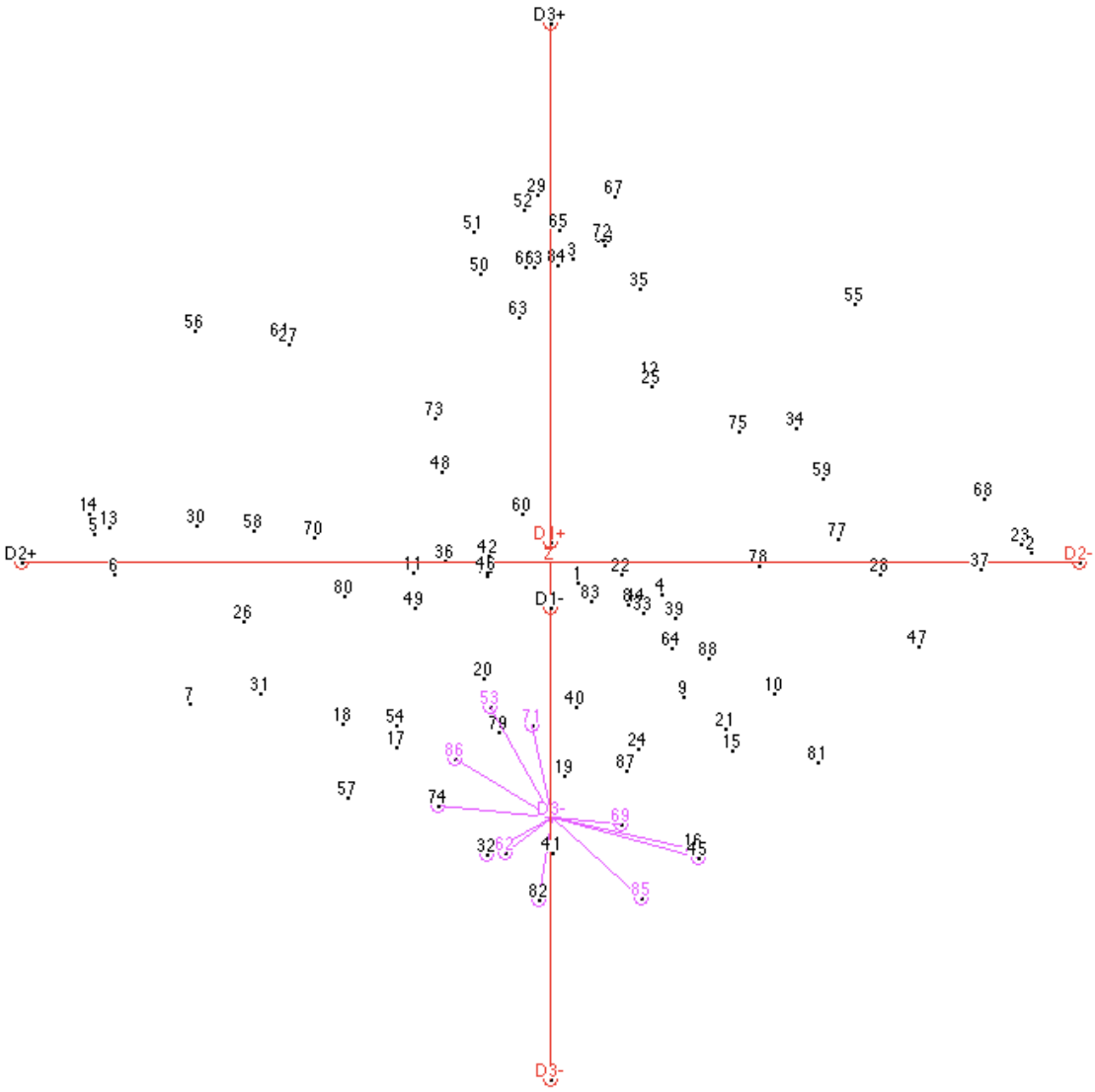

Figure 3. Multidimensional map of dimensions and clusters observed.

MDS converts the participants' judgments into a three-dimensional geometric space in which each item becomes a single point, located so as to represent the relationships between them. Items perceived as highly similar are shown as clustering closely, while dissimilar items appear in distant geographic locations. The goodness-of-fit between distances and perceived similarities is measured by an index called 'Stress1', which is minimized iteratively by moving the points to their final locations (Kruskal & Wish, 1978).

Figure 3 shows dimensions (D1-3) as identified by item numbers. This cloud of points was then divided into two hemispheres (as shown in Figure 4), flattening each

hemisphere separately into a circular map, and using symbols to code the cluster membership of each item.

A split-half test was conducted to check the internal consistency of the GOPA map (see Figure 4). First of all, comparing these separate half-data solutions with the overall solution from all 33 GOPAs, one correlated with it very well and the other reasonably well. This involved comparing the corresponding distances between a pair of MDS solutions, and taking the Pearson correlation -- the values were 0.97 and 0.77. Comparing the two half-data solutions with each other, the correlation is 0.60. The Procrustes distance was g_1 = 0.131. Although 17 GOPAs on their own are not fully stable, 33 is sufficient. This is evidence that a sufficient number of subjects were recruited for their consensus model to stabilise, and that the model would not change significantly with more subjects. That is, deducing from the stability of the results, the teacher sample was representative of a larger teacher sample.

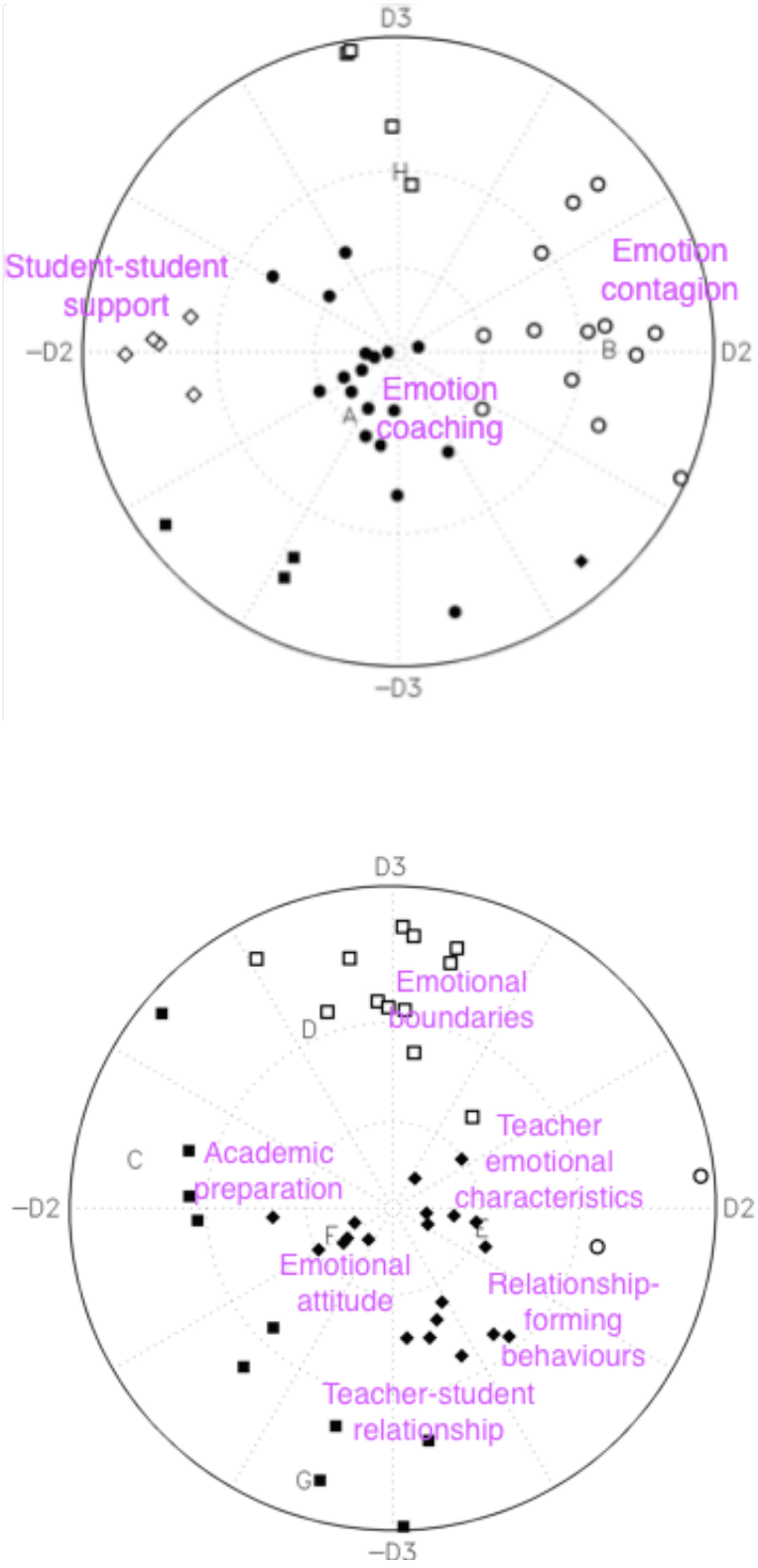

Figure 4. Split-hemisphere views of dimensions and clusters of emotional interactions in the classroom.

To assist interpretation, the map has been split into two hemispheres (*D*1+ and *D*1- halves). The 88 items are projected onto the surface of a hollow sphere and each half is flattened to see the distributions of items. The *D*1 axes are at the centre of the circle and the outer circle represents the 'equator' where *D*1= 0. The centre and middle circles equate to 30° and 60° angles respectively away from the *D*1 axes. Notable themes corresponding to item clusters have been identified on this map.

Items are arranged throughout the map to form clusters with identifiable emotional themes such as *emotion coaching, emotional attitude, student-student support, emotion contagion, emotional boundaries, teacher-student relationship, teacher emotional characteristics, relationship forming behaviours,* and *academic preparation.*

If the item set samples the conceptual domain comprehensively, their points in the map should look like a sphere with items consistently placed around the surface. Conversely, a "hole" or void would suggest the absence of an entire content area. That was not the case in Fig. 3, implying that it represents most content domains. These results suggest a complete, stable map of teachers' emotional interactions detailing several key underlying conceptual constructs.

The benefit of visualising the model in this way was two-fold. First, gaps in coverage could be identified, and, second, an internal validity could be considered regarding whether clusters appear in logically anticipated octants. For present purposes, allocation of clusters to symbols was broadly done and is not mutually exclusive. In several cases, clusters appeared in more than one symbol. For example, solid rhombuses represent *emotional attitude, relationship-forming behaviours* and *teacher emotional characteristics.*

Summary of results

Using the HCA approach, the dendrogram showed six preliminary clusters. These six clusters were *emotion coaching, emotion contagion, student-student support, emotional boundaries/discipline, relationship-forming behaviours/warmth*, and *addresses student problems/caring*. Using MDS and mapping, nine clusters emerged. The choice of which clusters to use and which level of structure to focus on is a subjective one. Thus, in addition to referring to both the dendrogram and 3D map, the EPIC group also helped in independently labelling clusters. In the end, the nine key themes which emerged from GOPA clusters and dimensions (see Table 1) included *emotion coaching, emotional attitude, student-student support, emotion contagion, emotional boundaries, teacher-student relationship, teacher emotional characteristics, relationship forming behaviours,* and *academic preparation*. Three of these themes, *emotional contagion, emotional attitude*, and *emotion coaching*, were similar to Harvey et al.'s 2012 study. Generally, identified emotional skills in Harvey et al.'s (2012) study appeared to be partially validated in the current study conducted within a Singaporean context. The results from this study will be further compared to and discussed with Harvey et al.'s 2012 study in the Discussion section (Chapter Five).

CHAPTER FOUR
STUDY TWO: DEVELOPING EMOTIONAL HOTSPOTS AND TEACHER PROFILES

METHOD

Participants

The participants in the current study consisted of 88 students who attended Singaporean polytechnics. They were recruited to participate in this study by email, word of mouth, phone and personal contact. There were 12.5% (*n* = 11) male students and 87.5% (*n* = 77) female students. All 100% (*n* = 88) of participants attended a Singaporean polytechnic and identified as Singaporean. Within that group, 84% (*n* = 74) identified their ethnicity as Chinese, 10% (*n* =9) as Malay, 1% (*n* =1) as Arab, 3% (*n* = 3) as Indonesian and one was unstated. Lastly, all participants responded in person. 96.6% (*n* = 84) of participants responded by rating items, while 3.4% (*n* = 4) responded by card-sorting.

Materials

A representative sample of 88 English-language items regarding social emotional interactions in the classroom was taken from the 76 item pool established in Harvey et al.'s 2003 study (Appendix C) and further revised and edited to be made relevant for the Singaporean context. The 88 items used in the rating approach and MOSS, a ranking approach, (Appendix D-1) were the same as those used for the GOPA. While looking at items regarding a description of teaching practice, participants indicated how true the items were for their teacher's interactions. In this way, students could state the behaviours they perceived their teachers displaying in class, rather than what teachers themselves felt they did in class. Using students' perspectives, it was hoped to gain a sample of responses pertaining to the social and emotional skills and behaviours actually used in practice rather than a set of ideals regarding what a teacher believes should be done in practice. Items were presented in

different fashions depending on the method of data collection, either by card-sorting or rank-sorting. When presented using the rating-approach, items were presented on a Word document using a projector. Conversely, when presented using card-sorting, items were printed on small (35 x 75mm) thin coloured card.

Procedures

Out of the 88 participants, a rating-approach was used for 84 participants (Appendix F-1). Items were projected onto a screen in a lecture hall and students were asked to rate the items according to 5 categories depending on how frequently these behaviours were displayed by their teachers. For 4 participants, a Method of Successive Sorts (MOSS), a Q-Sort two-phase ranking task, developed by Block (1978) was administered to participants. Initially, a MOSS was meant to be used by all participants by using card-sorting (Appendix F), however as there was an opportunity to do the study with a large number of participants at once, a rating-approach was administered instead. Ranking methods such as MOSS are slightly preferable over rating methods. This is because with ranking methods, the thresholds are constant across each participant's data since the participant reviews the assignment to piles (3 piles of cards, then into 5 piles). On the other hand, in a rating task, the thresholds can drift from beginning the checklist to finishing it. However, the opportunity to collect rating data from an entire cohort far outweighs the fact that ranking data may have been more reliable, but was not available. Thus data collection differed slightly depending on whether the participant responded through card-sorting or by rating items. This will be further discussed in the Discussions section.

In the rating-approach to data collection, participants were given an information sheet, instructions page, a consent form and a response sheet (Appendix F-1). After reading the instructions page and filling out the consent sheet, participants read each statement displayed on the screen and were asked to write down the 88 items into one of the five boxes in the response sheet, regarding how true that statement was to their teacher's practice. The five options were "clearly seen", "seen but less often", "unsure", "possibly seen" and "not seen at all". Upon rating all 88

items, participants were instructed to return the completed forms from which data was recorded and stored electronically.

As for the MOSS card-sorting phase (Appendix F), participants were instructed to sort one item at a time into one of three piles available (‘“seen more”, “unsure” or “seen less”) depending on how true that item’s statement was of their teacher’s practice. They continued doing this until all 88 items were sorted. Upon completion of this phase, participants were then asked to rearrange the items into five groups, “clearly seen”, “seen but less often”, “unsure”, “possibly seen” and “not seen at all”. Specifically, if organised into the pile of “seen more” during phase one of sorting, participants had the option of placing that item into the piles of “clearly seen” or “seen but less often”. Conversely, if participants placed the item into the “unsure” pile during phase one sorting, than they would have the option of placing that item into the piles “seen but less often”, “unsure” and “possibly seen”. Items which were organised into the pile of “seen less” during phase one of sorting could be placed into the piles of “possibly seen” or “not seen at all”. Participants were able to review and change their responses at any time during phases one and two of sorting and no constraints were placed on the amount of cards each pile was required to have. Upon completion of phase two, data was recorded and stored electronically.

This data were submitted to a data-reduction method known as “subjectivity profiling” or “hotspot modelling.” The goal of this procedure is to classify a small number of interrelated items within the pre-established three-dimensional map, created during the GOPA-sorting procedure. Each group of interrelated items is established as relating to a specific and separate theme or domain otherwise known as a “*hotspot*”. This hotspot becomes an abstract point on the three dimensional map and is located within its group of interrelated items. The proximity of each item to a hotspot’s location denotes how well that item defines that hotspot’s content. By summing the scores given by participants to each item, and depending on the weight of that item due to its proximity to the hotspot, a score is produced describing the extent to which that hotspot plays a role in a teacher’s practice. A core meaning for each hotspot is abstracted via researcher judgement and with help from the EPIC group, primarily based on reviewing the items encompassed by that hotspot with a

greater focus on items most proximal to that hotspot, i.e., items with the highest weights. This method is not unlike other methods such as Preference Mapping (Caroll, 1972) and Concept Mapping (Trochim, 1989).

The Hotspot Model

Once the subjective ranking data are obtained, profiles of emotion regulation strategy use can be derived using Kirkland et al.'s hotspot model (2000). Any ranking data are given to containing noise. However, the previously derived map can be used to reduce that noise (Bimler & Kirkland, 2001). If two items are near each other on the GOPA map, then it stands to reason that they would generally receive similar ranking scores during a MOSS sort (i.e. the behaviours are likely to coexist). In this procedure, any major discrepancy between the item distance on the map and the ranking scores is treated as noise. The way this is achieved is by "smearing out" each item's rank value by averaging it with other items near it on the map. When a sufficiently large *N* of ranking data responses is applied to the GOPA map, the result is a highlighting of the most prominent or important areas on the map. In other words, the item neighbourhoods that have high between-case variation, yet high within-case similarity across neighbouring items will be highlighted. These highlighted neighbourhoods are the hotspots. Areas which do not vary greatly between participants will not be highlighted and are considered less relevant.

Hotspot locations are determined using a gradient descent algorithm to shift the locations in order to find optimal agreement between the ranking data and the spotlight model (Kirkland et al., 2004). The hotspots make up the best approximation for all ranking responses and, once fixed, the same hotspot location on the MDS map is used to summarise all data (Pechtel, 2008).

Each hotspot domain contains items that have a shared understanding (as demonstrated by objective mapping) and have a shared likelihood of occurring together (Pechtel, 2008). In relation to this research, hotspot domains represent groups of items endorsed collectively by the informants as social-emotional behaviours most frequently and intensely seen in their teachers. They represent a summary of the

patterns of important social-emotional behaviours found in teachers.

Kirkland and colleagues outline a number of practical applications for a hotspot model once one has been obtained (2000). Once hotspot domains of emotion regulation strategies are identified, each individual teacher's scores on hotspot domain items (a weighted average based on each item's distance from the centre of the hotspot) can be calculated, generating an idiosyncratic profile of emotion regulation for every teacher. These profiles can then be clustered into groups of similar emotion regulation profiles, each representing a potential pattern or style of emotion regulation. Finally, once the individual profiles are constructed and patterns derived, they can then be related to theoretical concepts of emotional practices.

The applications described above make it possible for this research to identify key domains and patterns of emotion regulation used by teachers in Singaporean classrooms. Additionally, it then becomes possible to look at relationships between profile patterns of emotion regulation and variables which might play an important role in emotional styles. Such variables include gender, ethnicity, how much the student likes the teacher and subject, and how well they are doing in the subject. Furthermore, these models then make it possible for this research and any profiles generated to see which profiles are most well-liked and which social-emotional behaviours are displayed by the teachers who fit these profiles

Subsequent to hotspot identification and defining, individual MOSS reports using a participant's responses can be presented as idiographic summaries across the set of identified hotspots thus eliciting that individual's specific profile of responding. Ultimately, the goal was to divide the sample into collections of participants who responded in a similar pattern and to distinguish the response pattern that differentiates each cluster. Hotspot modelling facilitates this partitioning, by smearing out any 'noise' in the responses at the level of individual items.

Each participant's responses to the item sorts were entered into a spreadsheet that standardised the values to a mean of zero and a standard deviation of one, then obtained several weighted averages to condense them to a profile. A hierarchical

cluster analysis (HCA) was applied to the profiles, using Ward's (1963) method and Squared Euclidean distance to assess proximity, in order to determine the number of clusters for *k*-means analysis. Additionally, hierarchical cluster analysis was run on combined MOSS data and dendrograms and agglomeration schedules were examined (see Appendix H and H1). Alternatively, factor analysis was also used as a means for distinguishing factors and assessing loadings through Scree Test analysis and the Monte Carlo PCA for Parallel Analysis. Using k-means clustering, summary profiles (the mean profile of all profiles in that cluster) were created from these 88 profiles and subsequently each participant profile was categorised according to the summary profile that it most resembled. *K*-means cluster analysis assigns cluster membership by maximising the differences between cluster centroids while minimising within cluster variance.

Subjective Profiling

First, a multidimensional proximity map of students' data was generated. A matrix of Pearson's correlations between each pair of items (more specifically, the correlation between corresponding values across all MOSS sets) was created using SPSS. This was treated as a proximity matrix, MDS applied and the resulting three-dimensional solutions compared against the GOPA map created in Study One. The maps were compared using canonical correlation, cophenetic correlation and Generalised Procrustes Analysis (GPA). An overlap in dimensions and points between the similarity (objective) data and the student report (subjective) data as determined by the correlational analyses, as well as minimal residual distance or mismatch between items on the two maps as determined by the GPA, would support the use of the objective map as a framework for the subjective data.

The MDS analysis then integrated the MOSS ranking data into the similarity map to identify item clusters that are most relevant for parents in rating children's emotion regulation. As noted above, these clusters are centred upon psychological hotspots within the MDS solution. Items geometrically close receive more similar values than distances in the map would predict. Hotspots identify and highlight the most frequently co-occurring emotion regulation strategies. These hotspots are found in areas on the map where an individual's responses are consistent across

geometrically close items, but which also demonstrate variability across participants. A fundamental meaning for each hotspot domain was abstracted from the 88-items with the highest weighting for that hotspot: more specifically, the items with the greatest proximity in the Euclidean space.

Hotspot locations were found and optimised using a gradient-descent algorithm to find the optimal agreement between the subjective ranking data and the rankings predicted by the hotspot model (Bimler & Kirkland, 2001). More specifically, hotspots are moved along each of the dimensions and when the partial derivative of the badness-of-fit can no longer be further reduced the optimal locations have been found.

Ranking scores for each item were then presented in summary form as scores across the hotspots by inserting each MOSS-determined ranking response for each item into a table of weights that reflect the relative distances to each item from the hotspots. Scores a_{qf} for the hotspot values were obtained by normalising the v_{qi} (v = values in the MOSS data; q = the individual case; i = the item) to a zero mean and a constant variance for all q, then taking a weight sum by applying:

$$a_{qf} = \sum_i v_{qi} s_{if} / \sum_i s_{if}$$

Where the weighting parameters, $s_{if} = \exp(-\omega\, d_{if})$, and d_{if} is the Euclidean distance between x_i and y_f. x_i is the location in the MDS solution of the point representing item i and y_f is the location representing hotspot f. ω is the empirically defined parameter describing how quickly the importance or weighting drops with increasing distance from a neighbourhood. The denominator compensates for irregular scattering of points and allows for incomplete data.

Principal component analysis (PCA) was used to provide a comparison point for the MDS hotspot solution by determining a preliminary number of components within the data. Principal component analysis is an exploratory technique normally used to describe relationships between variables in a set of data and can then be used to inform measure development (Meyers, Gamst, & Guarino, 2013). Similarity between the number of factors predicted by the PCA and the number of hotspots predicted by

the MDS algorithm goes some way towards establishing the validity of the MDS hotspot solution. Consequently, the number of hotspots to expect was predicted and validated by comparing the hotspot solution generated using MDS against the PCA-derived component solution determined from the same MOSS data.

Finally, hierarchical and non-hierarchical clustering methods were used to explore patterns or clusters of similar scores across the 88 profiles of hotspot scores. An agglomerative hierarchical clustering method was applied to identify the optimal number of clusters for a meaningful solution. The proximity measure used was squared Euclidean distance and employed Ward's (1963) method as the clustering algorithm. Examination of the coefficient size in the agglomeration schedule, the form of the Ward's dendrogram and Q-factor analysis were all used to enable the identification of the optimal clustering solution.

The agglomeration schedule demonstrates the order in which the clusters were aggregated. The schedule also provides a coefficient, which is the value of the distance between the clusters being merged. The smaller the number, the more homogenous the clusters are. In determining the optimal number of clusters to represent the data, cluster formation should cease when the coefficient between two steps becomes comparatively large (Norusis, 2010).

As described earlier, the Ward's dendrogram is a diagrammatic tree obtained through hierarchical clustering. The dendrogram demonstrates how the clusters were combined at each step of the procedure until all items form one single cluster (Hair et al., 2010). The degree of similarities between items is represented by the height of the branch connection with other items. The dendrogram demonstrates the form of the clusters and how closely they are linked and is used by visual inspection to help determine optimal cluster solution.

Unlike standard factor analysis, which generally examines similarity between items or variables, Q-factor analysis examines patterns of scores across cases or participants (Coxon, 1982). The MOSS data used for a PCA is literally turned sideways, with the same analysis computed to enable a Q-factor analysis. The output is a set of

factors representing patterns of scores across cases and provides a baseline for establishing an optimal cluster solution.

Cluster stability was assessed using several methods: application of different hierarchical clustering algorithms (between-group and within-group average linkage), randomly splitting the sample, randomising the case order entry into the Ward's algorithm, assessing for multicollinearity between hotspot scores and removal of outliers (Hair et al., 2010).

The Ward's algorithm sequentially aggregates clusters in an agglomerative method based on comparisons between each cluster's sum of squares. However, once an element (or case) has been merged into a cluster, the Ward's algorithm does not remove it again, even if subsequent agglomerations cause a different cluster to become a more optimal match. Thus, the Ward's method is used to establish the number of clusters, profile the cluster centres and identify any significant outliers, but a non-hierarchical method is required to ensure cases have been assigned to the best or closest cluster (Hair et al., 2010). Thus, the hierarchical approach provides an explanatory step, with the non-hierarchical approach providing the definitive step. After the Ward's algorithm was used to determine the optimal number of clusters, the mean scores on each hotspot for each Ward's derived cluster were then used as the chief input to seed the subsequent non-hierarchical cluster analysis. *k*-Means cluster analysis was the non-hierarchical algorithm used here. The purpose of applying *k*-means to the Ward's clusters is to fine tune the assignment of individual cases or participants to clusters more precisely. This result is achieved by maximising within-cluster homogeneity and maximising the distance between clusters (Hair et al., 2010). The final clustered participant responses are then displayed as profiles across the final hotspots.

Hotspots and Interpretation

The structure of the GOPA map generated in Study Two was supported by the ranking and sorting data from students' reports of teachers' social-emotional behaviours in the classroom. First a Pearson's *r* cophenetic correlation was used to

compare the mean distances between corresponding pairs of items on each map. This revealed a moderate to strong correlation between the perceptual map and the subjective map (r =.60). Further to this, canonical correlations of the two maps indicated that all three dimensions were significantly correlated (R_C = 0.73 (p < 0.001); R_2 = 0.64 (p < 0.001); R_3 = 0.227 (p = .01) according to Wilk's lambda test. This shows that there are three mutually recognisable dimensions across the two MDS solutions. These results show that the MDS solutions from GOPA (objective) and MOSS (subjective) data are not as similar as the two split-half GOPA solutions, but they still have three mutually recognisable dimensions.

RESULTS

Hotspots generated

Eight regions of the most prominent or regularly co-occurring items formed the greatest approximation of response patterns (hotspots). Table 3 defines the eight hotspots by identifying the items most relevant to them. There were no obvious central items in the hotspots. Evidently, the items differ based on their format (either "I" statements or descriptions). Items not in italics were items that were changed for use in this current study, whereas items in italics are those items that were not used in this study, therefore remained unchanged, yet still representing the most proximal items to the hotspot's location; these items were from the 88-item pool developed for the Singaporean context.

These eight hotspots generated were *emotion coaching, emotional boundaries emotional attitude, emotional contagion, supportive relationships/ interpersonal skills, personable/ affective tone, caring & relating* and *consequence management/ limit setting* (see Table 3).

Table 3. *Hotspots*

Commonly reported item	*Groups representing their described hotspots*
Hotspot label and description	Hotspot items
Emotion coaching	*24* Helps me/us solve emotional problems; *19* Talks us through emotional situations that have affected us (e.g. student death/ bullying); *10* Makes us aware of how others feel; *9* Makes us aware of how we are managing emotion; 6*4* Uses emotional situations to teach us how to cope better; *88* Teaches us how to express our emotions with words.
Emotional contagion	*14* We mirror how our teacher feels; *13* My self esteem is related to how this teacher feels about me; *6* I care what this teacher thinks about me; *5* My behaviour is affected by what my teacher believes about me; *7* We can always tell how our teacher feels; His/ her positive responses are appropriate to the situation
Supportive relationships /interpersonal skills–	*59* Prepares us to face upcoming events (e.g. exams); *77* Motivates us to take on the task at hand; *28* Encourages us to learn new things; *37* Helps us work together; *23* Encourages us to support each other; *2* Encourages us to build enjoyable friendships with other students; *55* Encourages us to be responsible
Emotional boundaries	*35* Clear and reasonable expectations of us; *38* Has clear class routines and structures; *3* Rewards fairly; *84* Disciplines fairly; *12* Makes our class a safe place to be; *43* Is fair

Personable / Affective tone	*11* Likeable; *49* Understanding & caring; *36* Positive; *76* Has sense of humour; *42* Enthusiastic; *48* Trustworthy.
Emotional attitude	*44* Proud to be a teacher; *33* Enjoys teaching; *22* Believes in what they do as teachers; *39* Has enjoyable teaching style; *83* Likes teaching; *78* Uses creative techniques to teach
Caring & relating	*85* Talks to us on a level we understand; *69* Takes time to help us; *82* Takes time to listen; *16* Takes our problems seriously; *45* Addresses our concerns; *62* Takes time to talk
Consequence management/limit setting	*66* Uses rewards to manage how we feel; *65* doesn't use negative emotion (e.g. shame, guilt-trip) as punishment; *25* My teacher helps me think before I act; *72* Accurately identifies the misbehaving student; *67* Stated consequences for certain behaviours or emotion; *50* Is in control of the class.

Emotional self-acceptance and *emotional student-acceptance* are not relevant for the current study as the current study was done from students' perspectives. Arguably, emotional availability and emotional relationship (2012) are similar to the hotspot of caring & relating. Student-student support (2012) is similar to supportive relationships. Quite similar hotspots emerged, thus partially validating Harvey et al.'s 2012 study in the Singaporean context.

Profiles

To view regularities of responding within the sample, hierarchical clustering initially identified the suitable number of analogous profiles in the data set of 88 participants scoring across eight hotspots. Factor analysis, the "elbow test" and dendrogram interpretation suggested that all participant profiles could be summarised by five consistent clusters of profiles. Subsequently, to aid in assigning participants to these five clusters, *k*-means analysis was applied with $k = 5$. Students were distributed across clusters: Of the overall percentages, cluster 1 accounted for 3% (n= 3), cluster 2 for 23% (n = 20), cluster 3 for 31% (n=27), cluster 4 for 18% (n=16), and cluster 5 for 25% (n=22).

The trends in each profile are a combination of the weighted values assigned to each item by participants of a respective cluster, summarised across eight hotspots. A high positive value on a single hotspot signifies the presence of that particular parameter, whereas a high negative value on a single hotspot reflects the absence of that particular parameter. An assigned value of zero for a hotspot demonstrates that that parameter was unnoticed.

The summary profiles are plotted in Figures 5 to 10. Profiles are representations of respondent's priorities around emotional and social philosophies and behaviours. It is worth noting that explanations of profiles and the differences between them are not based on statistical analysis but rather eyeballing the data and as a result they are influenced by an individual's perceptions. Table 4 displays the demographic data associated with each profile and provides a brief outline of each profile respectively.

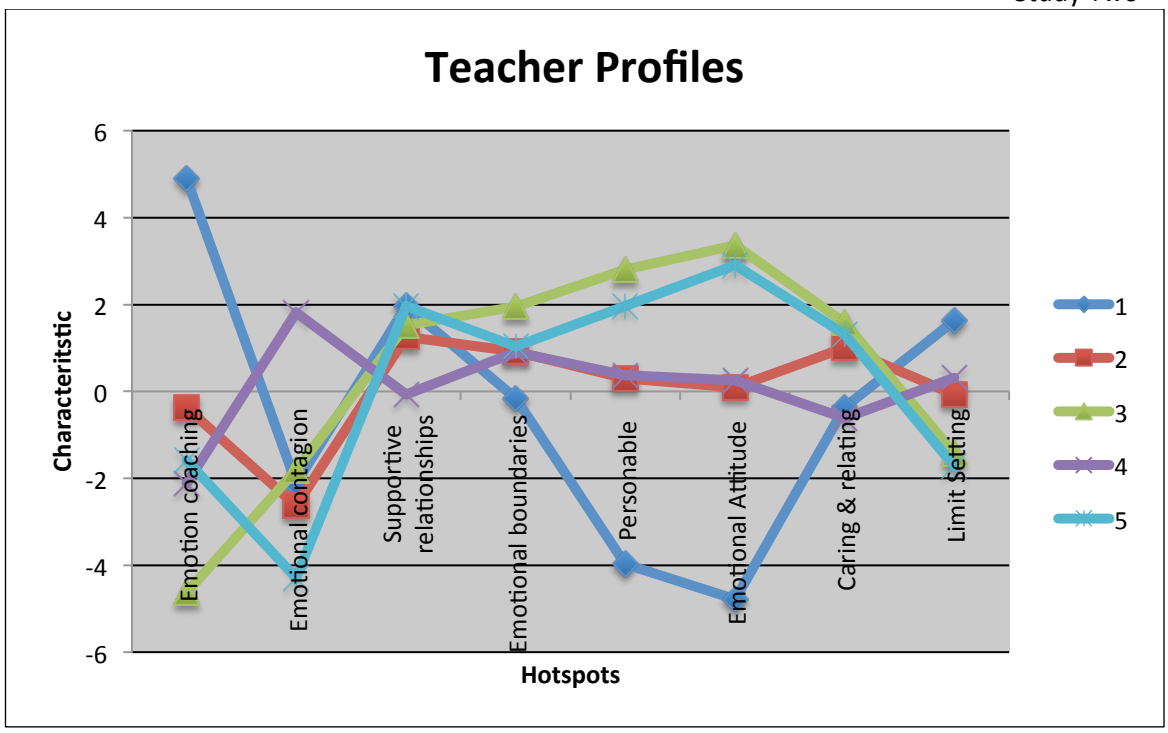

Figure 5. Five profiles summarising emotional behaviour responses from 88 participants.

Figure 1 displays all five teacher profiles to emphasise the mixture of similarities and differences that can be found among teacher profiles in this research. Figure 1 demonstrates that there are no consistently negative or positive hotspots. Differences between profiles are considered below, in Table 4. Out of 88 participants, there were a total of 77 female and 11 male students, reflecting mainly female students' perspectives.

Regarding tutor demographics, participants (students) were reporting on the social-emotional behaviours of 65.9% (*n* = 58) female tutors, 30.7% (*n* = 27) male tutors, with 3.4% (*n* = 3) unstated genders. The numbers regarding tutors do not represent 88 tutors, but 88 students' perspectives of their tutors (different students may be describing the same tutor). As the ethnicity for tutors were Chinese (94%, *n* = 83), this rules out the possibility of checking whether there was a relationship between ethnicity and how much students liked the tutor. 4.5% (*n* = 4) other ethnicities were unstated, and 1% (*n* = 1) tutor was listed as Indian.

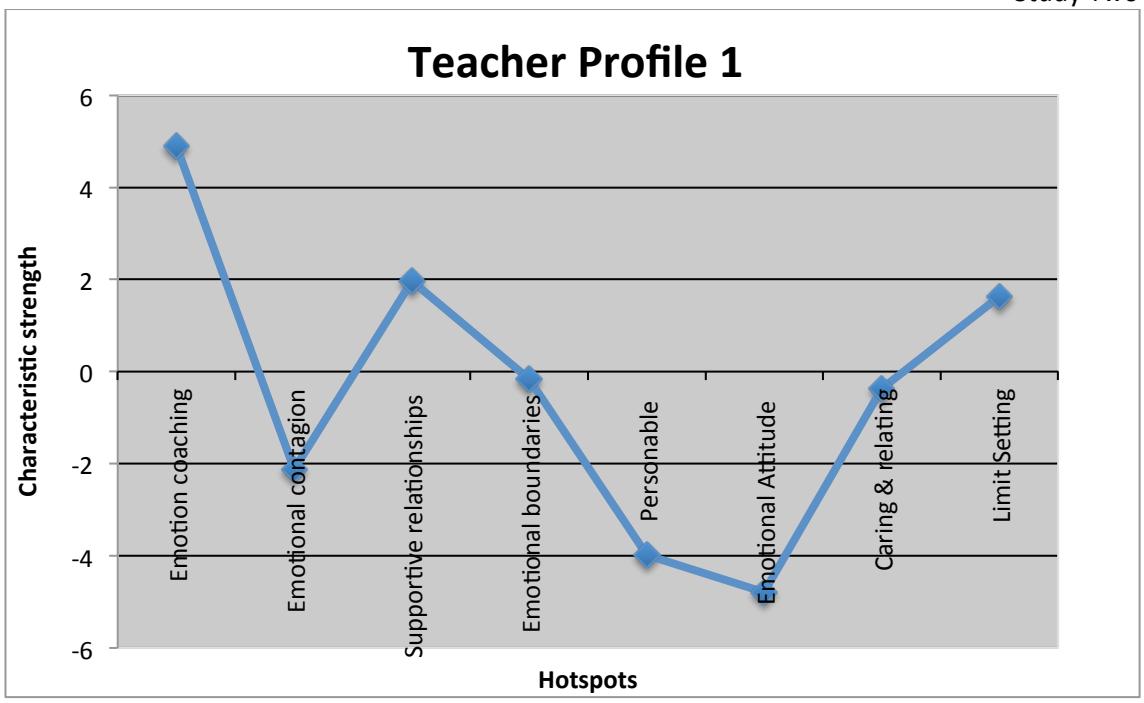

Figure 6. Profile 1 with its respective hotspot responses reported by 3% of participants.

Profile 1 accounted for only 3% of all participants (*n* = 3) with two female students and one male student belonging to this cluster. It represented the practices of one female tutor and two male tutors. This cluster had the fewest participants of any profile, thus results may not be very reliable.

Profile 1 was characterised by having the most extreme values out of all the profiles. It has the highest score on *emotion coaching* and lowest score on *emotional attitude* out of all the profiles. It has a high negative value of *emotional attitude*, *personable,* and *emotional contagion,* with correspondingly high positive values of *emotion coaching* and *supportive relationships* thus indicating the absence and presence of these factors in the practices of teachers associated with Profile 1 respectively. *Emotional boundaries* and *caring & relating* were unnoticed in Profile 1.

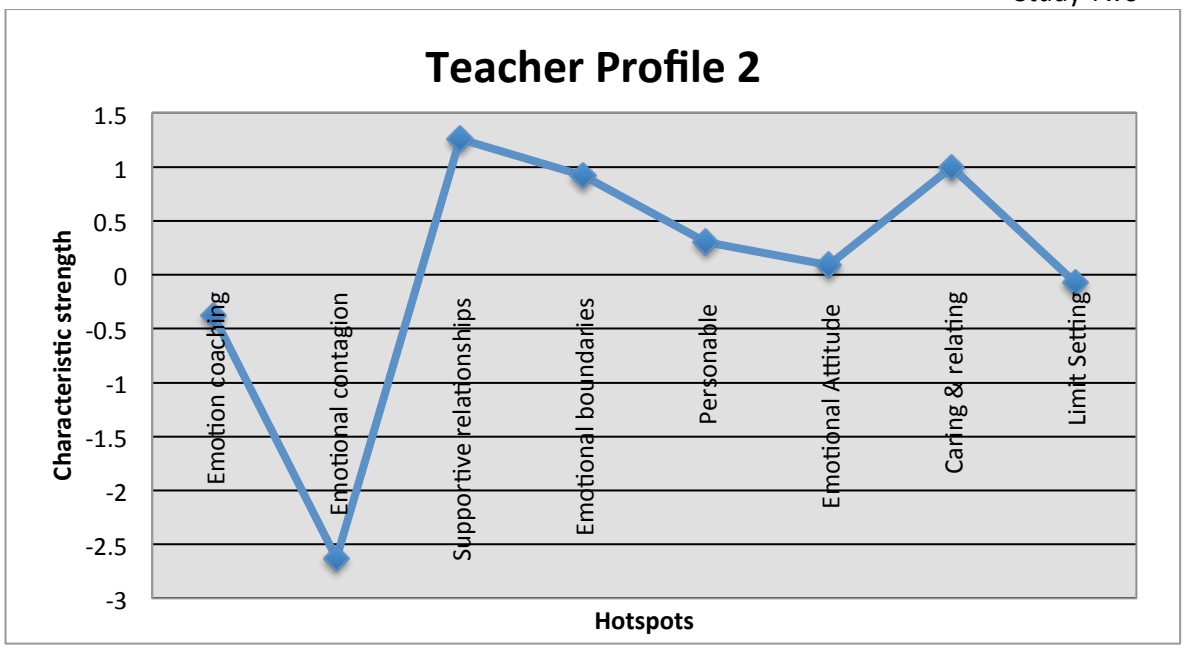

Figure 7. Profile 2 with its respective hotspot responses reported by 23% of participants.

Profile 2 accounted for 23% of participants (*n* = 20) with 17 female students and 3 male students, thus representing mostly females. Profile 2 described the practices of 15 female tutors, 3 male tutors, with 2 unstated genders, thus representing mostly female tutors. Profile 2 was characterised by having the least extreme values, thus being the profile that was the most average in comparison to all other profiles. Profiles 2 was characterised by having large negative values of *emotional contagion* and small positive value of *supportive relationships* and *caring and relating* in comparison to all other profiles. *Personable, emotional attitude* and *limit setting* were unnoticed.

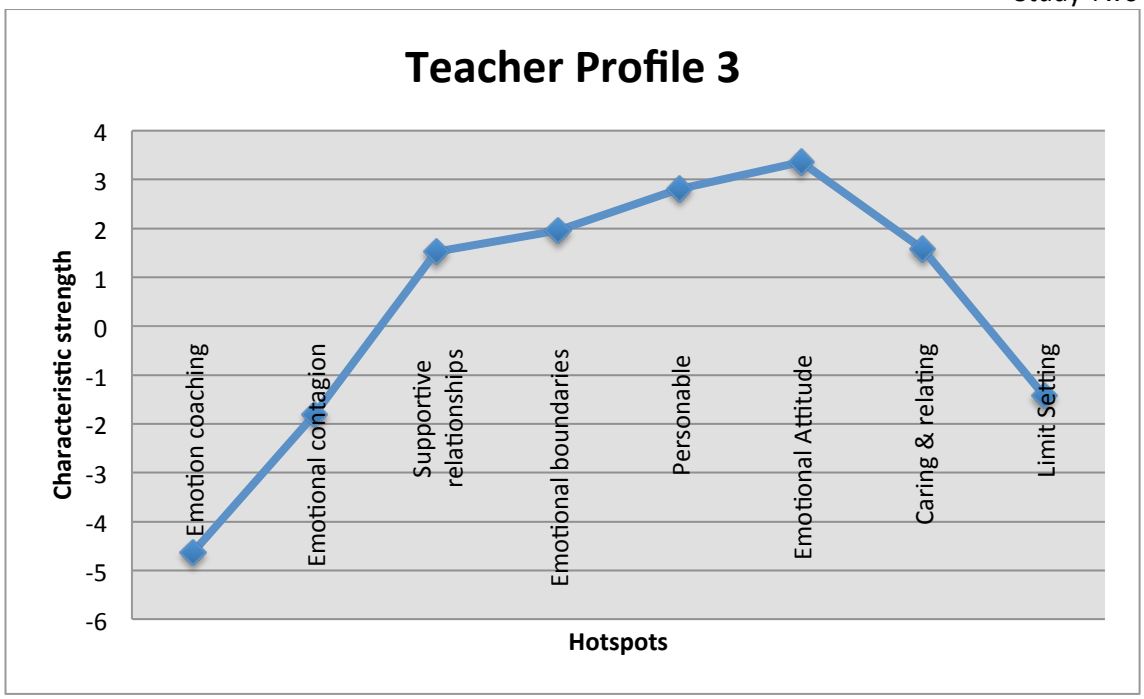

Figure 8. Profile 3 with its respective hotspot responses reported by 31% of participants.

Profile 3 accounted for 31% of participants (*n* = 27) with 24 females and 3 males belonging to this cluster, representing emotional practices of 16 female tutors and 11 male tutors. Both teacher genders were represented fairly equally. Profile 3 had the second most well-liked tutors after Profile 5.

This profile was characterised by its extreme values. Compared with the other profiles, it had the highest positive values associated with *emotional attitude* and *personable* and moderately high values of *emotional boundaries*. In addition to these values, Profile 4 showed a largest negative value for *emotion coaching* out of all the profiles, and moderate negative values for *emotional contagion and limit setting.*

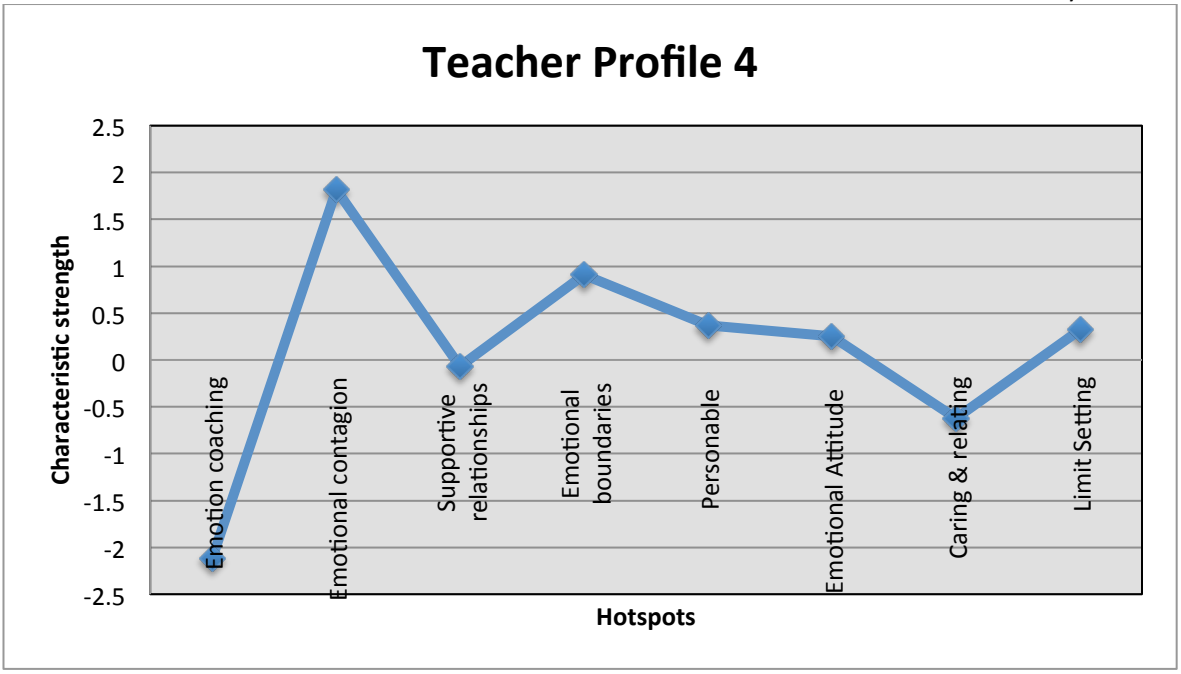

Figure 9. Profile 4 with its respective hotspot responses reported by 18% of participants.

Profile 4 was reported by 18% of participants (*n* = 16) with 14 female students and 2 male students belonging to this cluster, while representing 14 female tutors, 1 male tutor and 1 unstated gender. As a result, Profiles 2 and 4 are seen to be representing mostly female tutors.

Profile 4 showed mostly average values. It displayed low positive values on *emotional boundaries,* with a moderate positive value on *emotion contagion.* It had moderate negative values on *emotion coaching* and zero to low negative values on *caring & relating*. *Supportive relationships, personable* and *emotional attitude* were unnoticed.

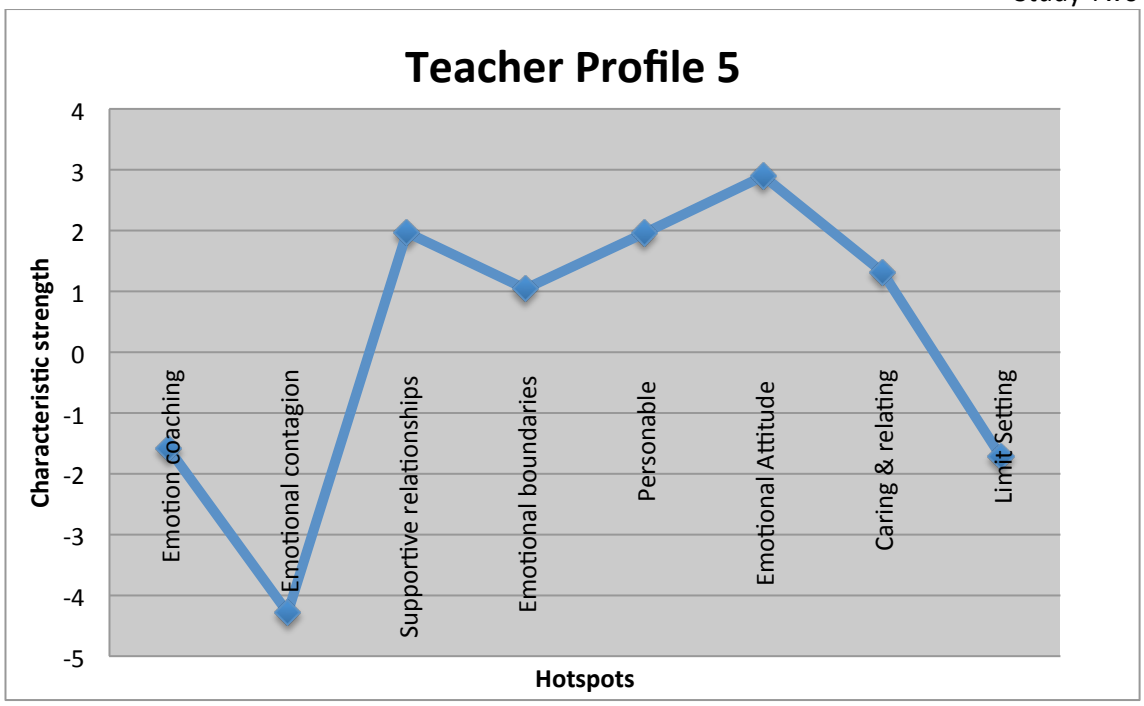

Figure 10. Profile 5 with its respective hotspot responses reported by 25% of participants.

Profile 5 was reported by 25% of participants (*n* = 22) with 20 female students and 2 male students belonging to this cluster, representing 12 female tutors and 10 male tutors. Both teacher genders were represented fairly equally.

Profile 5 was characterised by a high positive score on *emotional attitude*, moderately high scores on *supportive relationships* and *personable*, and the lowest negative score out of all the profiles on *emotional contagion*. Other than those, Profile 5 had low negative scores on *emotion coaching* and *limit setting,* and low positive scores on *emotional boundaries* and *caring & relating*. Profile 5 had the most well-liked tutors (mean = 9.32, SD = 0.84).

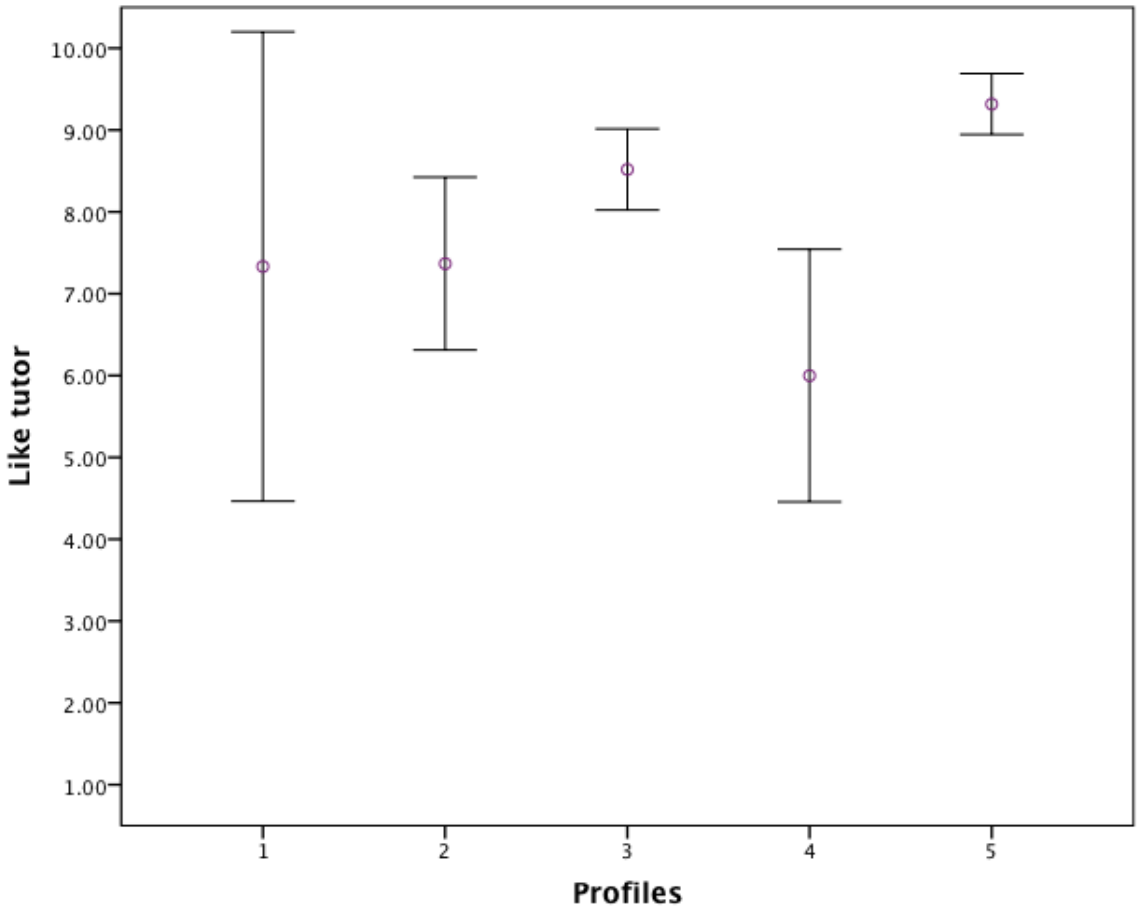

Figure 11. Results of 'liking tutor' variable across 5 profiles

According to the 'like tutor' variable, students' perspectives of teachers in Profile 5 were most favourable (mean = 9.32, SD = 0.84) with the least variability (most stable), followed by teachers referred to in Profile 3 (mean = 8.52, SD = 1.25). Next was Profile 2 (mean = 7.37, SD = 2.19). Teachers referred to in Profile 4 were the least liked (mean = 6.00, SD = 2.90). Caution should be applied when interpreting Profile 1 (mean = 7.33, SD = 1.15), as there were only 3 participants in this group and error bars were very large. The larger the sample, the smaller the error bars. Overall results were significant at $p < .001$.

Furthermore, there was found to be no significant difference (P=0.348) between tutors' gender and how much students liked the tutor. For female tutors, the liking mean was 7.93, SD= 2.21, while for male tutors, the mean was 8.37, SD= 1.45.

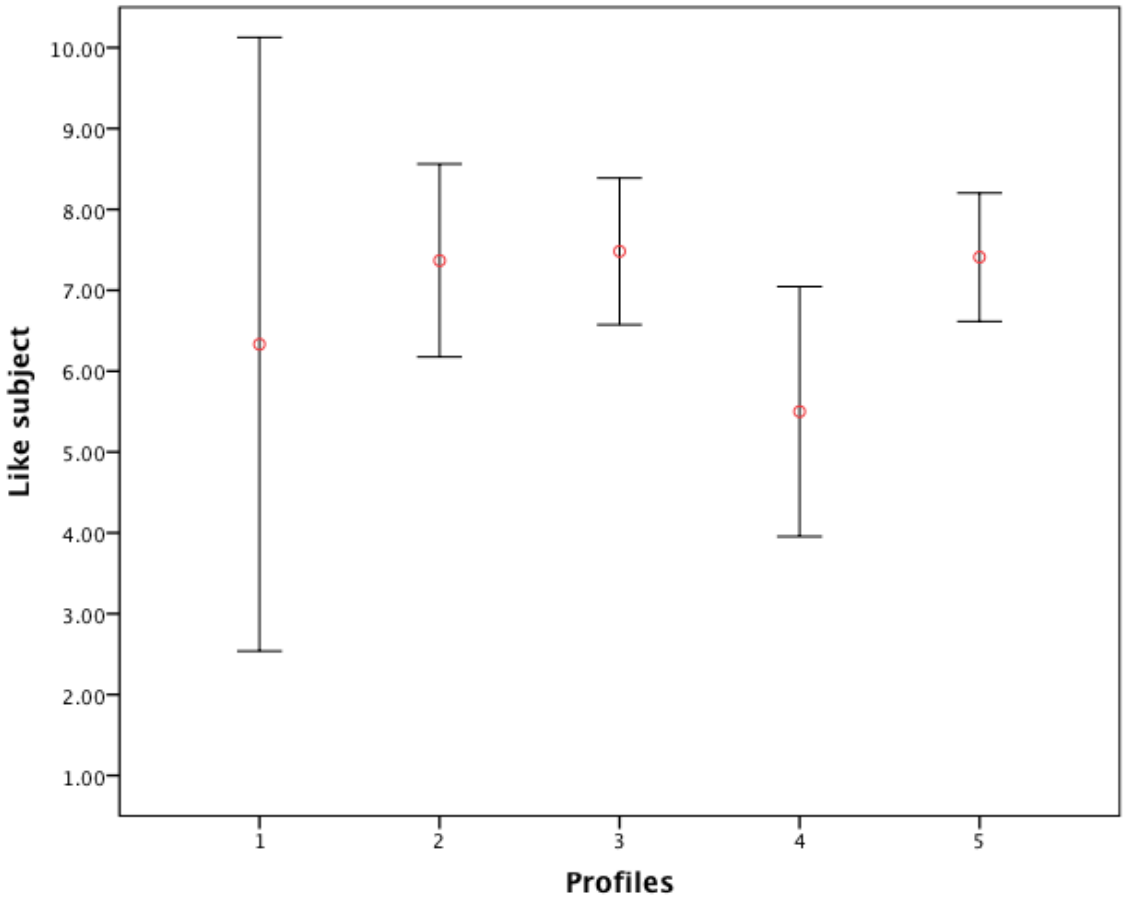

Figure 12. Results of 'liking subject' variable across 5 profiles

Profile 2 (mean = 7.36, SD = 2.48), Profile 3 (mean = 7.48, SD = 2.29) and Profile 5 (mean = 7.4, SD = 1.79) seem to have similar liking for their subjects, with Profile 4 liking their subject the least (mean = 5.50, SD = 2.90). Once again, caution should be applied when interpreting Profile 1 as there are only 3 participants, and with very large error bars (mean = 6.33, SD = 1.53). Overall results were approaching significance at p=0.067.

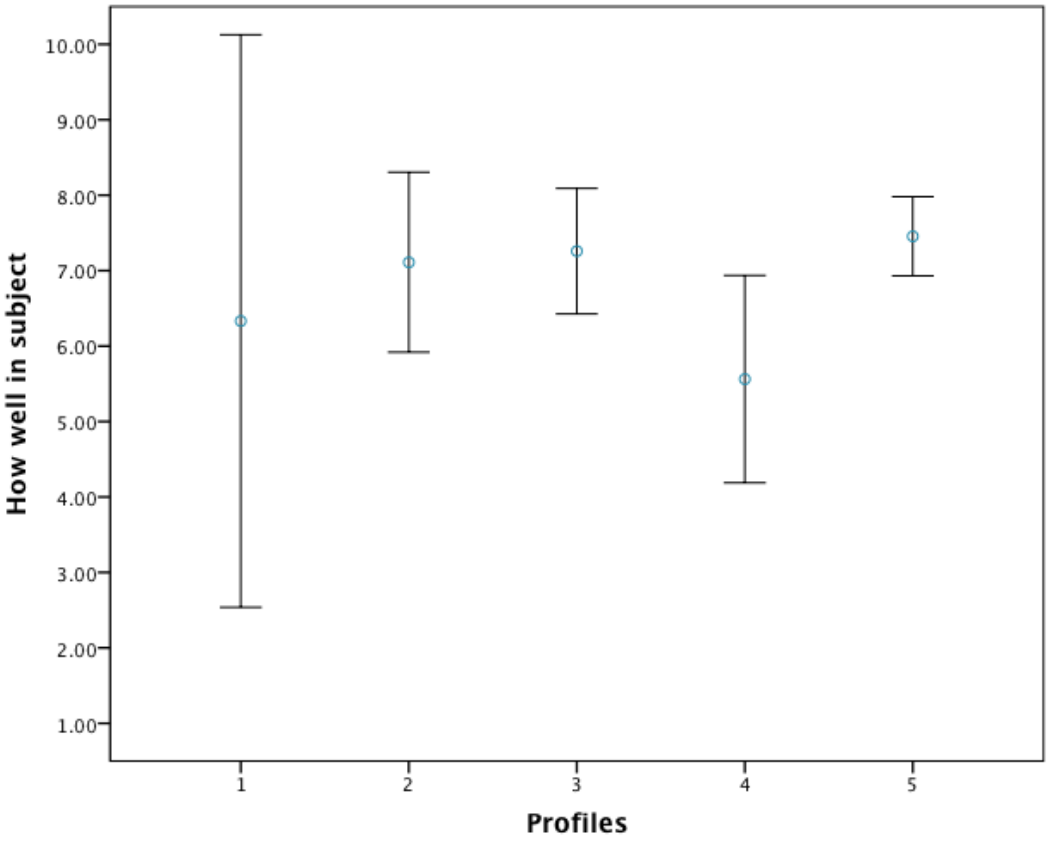

Figure 13. Results of 'how well doing in subject' variable across 5 profiles

Similar to the 'like subject' variable, students in Profile 2 (mean = 7.11, SD = 2.40), Profile 3 (mean = 7.26, SD = 2.10) and Profile 5 (mean = 7.45, SD = 1.18) seem to be doing similarly well in their subjects, with students in Profile 4 doing the least well in the subject (mean = 5.56, SD = 2.58). Again, caution should be applied when interpreting Profile 1 as there are only three participants, and a huge standard deviation (mean = 6.33, SD = 1.53). Results were reaching significance, at 0.06.

From eyeballing the data, students' liking for their tutor, aptitude in a subject, and subject preferences appeared to be correlated. Overall, Profile 5 has the highest scores in the three variables, while students in Profile 4 have the lowest scores in the three variables. Thus it seems that within Singaporean schools, teachers referred to in Profile 5 are the most ideal.

Table 4.

Brief outline of each profile

Teacher Profile	Profile characteristics	Description
1. Collaborative but distant.	Highest score on *emotion coaching* out of all the profiles Lowest score on *emotional attitude*. Characterised by high negative value of *emotional attitude*, *personable,* and *emotional contagion* High positive values of *emotion coaching* and *supportive relationships*.	Teacher teaches students to cope with feelings and deal with emotional problems, also encourages supportive relationships amongst students. However, does not have strong belief in self as teacher (does not enjoy teaching/ not proud to be a teacher). Is not personable or warm, doesn't use emotions to influence students' behaviours and feelings.
2. Moderate, low in passion.	Least extreme values, most average in comparison to all other profiles. Large negative values of *emotional contagion* and small positive value of *supportive relationships* and *caring and relating.* Similar to profile 4. Characterised by mostly female tutors.	No strong beliefs. No extreme behaviours. Doesn't use emotions to influence or affect students' behaviours and feelings.
3. Strong belief in self, passionate about teaching, but minimises emotion.	Characterised by its extreme values. Highest positive values associated with *emotional attitude* and *personable* Moderately high values of *emotional boundaries*, Largest negative value for *emotion coaching* out of all the profiles	Strongly believes in self as a teacher and is likeable, friendly, personable. Is also firm and has clear expectations. Does not use emotion coaching nor teach students to solve emotional problems. Doesn't use emotion to influence students.

	Moderate negative values for *emotional contagion and limit setting*. Similar to profile 5. Represents both genders fairly equally.	
4. Moderate. Uses emotion to influence students.	Mostly average values. Characterised by low positive values on *emotional boundaries* Moderate positive value on *emotion contagion* Moderate negative values on *emotion coaching* Characterised by mostly female tutors.	Average values. No extreme beliefs or behaviours. Uses own emotion to influence students' behaviours and feelings. Does not use emotion coaching to teach students or show them how to deal with/ solve emotional problems.
5. Strong beliefs in self. Encourages supportive relationships	Strongly characterised by *emotional attitude*, Moderate characteristics on *supportive relationships* and *personable*, and low positive scores on *emotional boundaries* and *caring & relating*. Lowest negative score out of all the profiles on *emotional contagion*. Low negative scores on *emotion coaching* and *limit setting*. Represents both genders fairly equally.	Has strong beliefs in self as a teacher and enjoys teaching. Encourages supportive relationships and is likeable. Does not use emotions to influence students' feelings and behaviours.

CHAPTER FIVE: DISCUSSION

This thesis began by asking the question of what social-emotional skills teachers display within Singaporean schools. Understanding the nature of Singaporean teachers' emotional skills from the perspective of students is an important topic as students' perspectives of teachers' emotional interactions in the classroom influence their learning outcomes. Furthermore, students' perceptions of teachers' social-emotional practices may differ to those of teachers'. The topic of teachers' social-emotional interactions was important to investigate, as they affect the classroom climate, influencing students' academic outcomes and social-emotional development. Teachers' social-emotional skills also increase teachers' own personal wellbeing and prevent burnout. This research was concerned with the applicability of the Evans-Harvey (2003, 2012) model of the classroom emotional climate to the Singaporean context, which had previously been conducted in New Zealand and Germany. Data were drawn from the perspectives of students in order to determine whether the Evans-Harvey model was applicable to students, as it had previously been conducted with teachers.

This investigation was conducted as two studies. Using multidimensional scaling, 88 items detailing the social-emotional interactions of teachers were first clustered into nine key themes in Study 1. The purpose of Study 1 was to organise emotional behaviours into a coherent inter-item structure based on relatedness. Nine themes emerged from the GOPA study. These included *emotion coaching, emotional attitude, student-student support, emotion contagion, emotional boundaries, teacher-student relationship, teacher emotional characteristics, relationship forming behaviours, emotional attitude*, and *academic preparation*. In Study 2, these items were reduced to eight hotspots or fundamental nodes of meaning. Hotspots identified included *emotion coaching, emotion contagion, supportive relationships, emotional boundaries, personable, emotional attitude, caring & relating*, and *limit-setting*. By analysing the responses given by participants against these eight hotspots, five summary profiles were identified that represented participant responses.

Tables 5 and 6 below compare the GOPA themes and hotspots that have emerged from this current study to Harvey et al.'s 2012 study.

Table 5. *Comparison of GOPA themes*

GOPA Themes from 2012 study	**GOPA Themes from current study**
1. *Emotion coaching	**1. *Emotion Coaching**
2. *Emotional attitude	**2. *Emotional attitude**
3. *Emotion contagion	**3. *Emotion contagion**
4. Emotion management	4. Student-student support
5. Emotional relationship	5. Emotional boundaries
6. Emotional awareness	6. Teacher-student relationship
7. Emotional philosophy	7. Teacher emotional characteristics
8. Emotional self-acceptance	8. Relationship forming behaviours
9. Emotional regulation	9. Academic preparation/ provides necessary support
10. Interpersonal guidelines	

Table 6. *Comparison of hotspots*

Hotspots from Harvey's 2012 study	**Hotspots from current study**
1. Emotion coaching	**1. Emotion Coaching**
2. Emotional boundaries	**2. Emotional boundaries**
3. Emotional attitude	**3. Emotional attitude**
4. Emotional philosophy	4. Emotional contagion
5. Emotional relationship	5. Supportive relationships/ interpersonal skills
6. Emotional student-acceptance	6. Personable/ affective tone
7. Emotional availability	7. Caring & relating
8. Student-student support	8. Consequence management/ limit setting
9. Emotional self-acceptance	
10. Emotional regulation	

Study One:

Four themes that emerged from GOPA informed mapping - *emotional contagion, emotional attitude, emotion management* and *emotion coaching* - were found to be similar to Harvey et al.'s (2012) study. The concepts of *emotional self-acceptance* from Harvey et al.'s (2012) study did not receive support from the current study, possibly because the internal nature of this notion meant it was not accessible or pertinent from students' perspectives. Generally, however, identified emotional skills in Harvey et al.'s (2012) study appeared to be validated in the current study conducted within a Singaporean context. The differences which were noted could be due to changes in the items generated as a result of the item refinement process necessary to adapt items to the Singaporean context. As this study was conducted in the Singaporean context, contextual and cultural factors were taken into account when developing items and running studies 1 and 2.

Study Two:

Hotspots that were consistent with Harvey et al.'s 2012 study included *emotion coaching*, *emotional attitude*, and *emotional boundaries*. *Self-acceptance* and *student-acceptance* did not appear and were arguably less observable and/or relevant given the current study was drawn from students' perspectives. Arguably, *emotional availability* and *emotional relationship* (2012) are similar to the hotspot of *caring & relating*. Student-student support (2012) is similar in this study to *supportive relationships*. Overall, it was interesting that hotspots that emerged in this study were quite similar to the 2012 study given the stakeholder and cultural differences between the two samples. Judging from the hotspots which have been developed, it seems that students see emotions as functional, as hotspots such as *emotion coaching, emotional attitude, emotional boundaries*, and *caring & relating* emerged. It seems that teachers are able to use emotions to motivate learning (*emotional contagion*).

It was noted that both the hotspots 'emotional boundaries' and 'limit setting' represented similar emotional interactions of teachers. While emotional boundaries refers to boundaries which have been set, including clear expectations and routines, 'limit setting' refers to consequences of students' behaviours, with the use of rewards

and punishments. As there are clear similarities between these two hotspots, we would have expected to see similar scores across two domains for each profile. However, this was not seen in the results. In fact, none of the hotspots had similar scores across each profile.

As this study regards the social-emotional skills of teachers in practice, it is unsurprising that hotspots pertaining to *supportive relationships*, *caring & relating*, and *personable* should arise. In a sense, all these emotional attributes represent supportive relationships between teacher and students, as teacher support is a key factor for positive classroom climate and students' motivation (Rowe et al., 2010). Additionally, four of these hotspots correlate to the hotspots reported by Harvey & colleagues' (2012). In particular, these included *emotion coaching*, *emotional attitude* and *emotional boundaries*, and arguably, the hotspot *emotional availability* (2012 study). The latter hotspot includes the items "Students can share with teacher how they feel", "Teacher is interested in students", and "Teacher listens to students' concerns". *Emotional availability* (2012 study) could be seen as representing the same concept as the hotspot *caring and relating* (current study). *Emotional availability* contained items such as 'Students can share with teacher how they feel, Teacher is interested in students, Teacher listens to students' concerns', while *caring and relating* contained similar items of "Talks to us on a level we understand", "Takes time to help us", "Takes time to listen", "Takes our problems seriously", Addresses our concerns", and "Takes time to talk". The difference in labelling could be due simply to different people labelling hotspots. This difference in hotspot labelling also supports the independence of this study – if all hotspots were identical to Harvey et al.'s 2012 study, this could depict a bias in results due to the influence of the 2012 study as well as involvement of supervisors (Shane Harvey & David Bimler). The EPIC group was further asked to help in labelling hotspots, in order to reduce the influence of my supervisors.

Profiles

This research identified that participants' could be clustered into five profiles based on patterns of responding. As this research is based on Harvey and colleagues' 2012 study, these profiles can be used to compare the social-emotional characteristics

that are salient to teachers' practices. Furthermore, by eyeballing the data we are able to perceive differences between the trends of profiles identified in this study.

As summarised in Table 3, each profile is described by using weighted scores attributed by participants of that profile to each hotspot. In summary:

- Profile 1 was named "Collaborative but distant", as teachers in this group scored the highest on *emotion coaching*. They encouraged *supportive relationships* amongst students, but were lowest on *emotional attitude*, which includes warmth and beliefs in self as a teacher.

- Profile 2 was characterised as moderate in all social-emotional behaviours and low in passion. Teachers who matched this profile were seen as moderate in their social-emotional behaviours with no strong beliefs and no extremely emotive behaviours. They did not use emotion to influence students' behaviours or feelings.

- Profile 3 was characterised by a strong belief in self, passionate about teaching, but minimises emotion. This profile is characterised by highly weighted values, with high scores of *emotional attitude* and *personable*, but low values in *emotion coaching*.

- Profile 4 was identified as having moderate social-emotional behaviours, similarly to Profile 2, except for moderate positive values on *emotion contagion* (using own emotion to influence students' feelings and behaviours).

- Profile 5 was typified a teacher with strong beliefs in self, similar to profile 3. Teachers in Profile 5 were also characterised as *personable*, and encouraging *supportive relationships* amongst students. Teachers in this profile scored low on *emotion contagion*. Profile 5 was the most liked profile by students.

As seen by these brief descriptions of the five profiles identified, it is apparent that considerable similarities and differences were evident among clusters. This finding supports the notion that teachers do not all have the same social and emotional teaching styles. However, it does show that there are consistencies between groups of individuals and that these styles can be identified and analysed.

There seemed to be an effect of gender in the distributions of social and emotional profiles. Profiles 3 and 5, which were the most well-liked profiles, represented tutors of both genders fairly equally. Profiles 2 and 4, which were characterised as being moderate in social-emotional behaviours, represented mostly female tutors. Based on this data, emotional profiles could exist between gender groups. Profile 1 was characterised as having the most extreme values out of all profiles. However, due to this profile only representing only 3 participants, data must be interpreted with caution given the low sample size. Profiles 3 and 5 were the most well-liked profiles. These profiles had high positive values in *emotional attitude* and were seen by students as *personable*. It seems that beliefs in self as a teacher, enjoyment in teaching, teaching techniques, being enthusiastic and likeable were important factors. These findings are consistent with theories that show the importance of warm student-teacher relationships (Hardre, 2006; Ryan & Deci, 2000), as well as the importance of teaching techniques and enthusiasm (Stevenson, 1992).

Students in Profile 5 had the most favourable perspectives of their tutors. Profile 5 was characterised by a high positive score on *emotional attitude*, moderately high scores on *supportive relationships* and *personable*, low positive scores on *caring & relating* and the lowest negative score out of all the profiles on *emotional contagion*. These findings support Hargreaves' theory that secondary school classrooms tend to be characterised by less close emotional bonds between teacher and students and that secondary school teachers tend to be more distant, with clear boundaries. Future research could be conducted from teachers' perspectives, to see if there are differences in students' and teachers' perspectives on the importance of *caring & relating*. Teachers represented in this profile tended to foster student relationships while keeping their own relationship distance to students (Harvey et al., 2012). The finding of *supportive relationships* supports studies which have demonstrated the link

between students' perceptions of peer support and sense of behavioural and emotional engagement (Furrer & Skinner, 2003). Students who feel related to peers have higher motivation and better academic outcomes. Although older students (middle school) reported drops in relatedness to teachers, it was still an important factor of engagement (Furrer & Skinner, 2003). It would be interesting to see if teacher relatedness has different levels of importance for different students' age groups. Surprisingly, although Profile 5 had low positive scores on *caring & relating,* these teachers were the most liked. These findings are inconsistent with the theory that teachers' support and caring for students is extremely important (Ryan & Deci, 2000). This may be due to students in this study being older, at a post-secondary level, and thus more independent. They perhaps valued having autonomy and collaborating with peers more than a close and supportive relationship with the teacher. *Caring & relating* may be much more important in a primary school setting, or perhaps teachers' perspectives on the importance of *caring & relating* may differ from students' perspectives. Additionally, Profile 5 was seen as having strong beliefs in self, supporting Stevenson's (1992) findings that enthusiasm, clarity, and ensuring academic success of students were the most important characteristics of a good teacher.

Students' liking for their tutor, aptitude in a subject and subject preferences appeared to be correlated. The relationship was particularly strong for students' liking toward their tutor, which was statistically significant at $p < .001$. These data suggest that social-emotional behavioural patterns evident in Profile 5 seem to foster a high level of engagement with subject, tutor, and consequently academic outcomes. Given the apparent popularity of Profile 5, future research could further investigate whether Profile 5 is linked to better academic outcomes. If so, it would be most beneficial to have teachers to be most like Profile 5 in Singaporean schools, at least within the polytechnic setting. By looking at the hotspots of emotional behaviours that these teachers employ, we will be able to include these emotional skills in future teacher training within the Singaporean context. This can be further tested and replicated in other educational settings, internationally, and for different age groups, in order to check whether these profiles are linked to better student outcomes.

Implications and future research

This study is a step towards elucidating teachers' social and emotional characteristics that are salient to their practices. The organisation and development of these social and emotional hotspots across several profiles is significant as it lends itself to the evaluation and measurement of such interactions in teaching. In turn, this would enable researchers to identify whether these profiled hotspots can be generalised across cultures and to find out which are preferred profiles. Significant findings such as these would increase the current understanding of the emotional and social skills teachers use in practice. Firstly, however, further research is required to establish the stability of teachers' emotional and social profiles over time, across different age groups, educational institutes and cultures. Secondly, further research is necessary to assess the convergent and divergent validation of the themes identified in this study. Once these themes have been validated, more research is needed to assess the emotional and social influence that each profile may have on students and whether any favoured profiles existed for most-liked teacher, how well students do in a subject and their enjoyment in the subject. Alternatively, by profiling teachers and subsequent comparison to validated profiles, researchers may elucidate differences between experienced and new teachers, thus indicating which skills certain groups of teachers are lacking. A finding such as this could herald the development of measures designed to screen for candidate potential during teacher training intakes, the incorporation of training programs during teacher training and to indicate areas that qualified teachers could improve on.

Further research could also include different age groups such as primary school, secondary school, or JC students, to see if there are differences in teacher profiles and interactions. It would also be interesting to see if there are different preferences in teacher profiles depending on age groups, from students' perspectives. However, conducting this study in primary schools may produce less reliable results due to younger students' limited ability to report on teachers' behaviours. If conducted in primary schools, the written language used would have to be made simpler for younger children (e.g. 5-8 year olds) to understand. This study could also be replicated in different cultures or in other Asian countries to look at the impact of

culture on results. Although Singapore is in Asia, it is influenced by both Western and Asian cultures. Results may differ if conducted in Korea or China, both of which adhere to more traditional Asian values. Alternatively, this study could be conducted in New Zealand, for Year 13 students, post-secondary institutes, universities, in order to see if there are different teacher profiles developed, or different preferences in teacher profiles across cultures and institutes.

Limitations

This study had several shortcomings that may have influenced the outcomes and/or applicability of findings. Firstly, items were drawn from Harvey et al.'s 2003 study and modified to suit a Singaporean sample. More research could be done to determine the applicability o items to the Singaporean context through focus groups and interviews. Secondly, for the GOPA study, some of the items may have been too complicated as some participants did not understand the meanings of items and had to clarify. For example, the item 'Acts as if they are feeling something different to what they are' was confusing to some participants. Perhaps giving an example would have helped. Furthermore, some participants were unsure of how to group the items into concepts and some participants who were teachers, grouped the items according to how applicable these items were to their own teaching practice. Other participants stated they were clustering cards based on their idea of a 'nice teacher' or a 'strict teacher' rather than items of similar concepts. At the same time, this was an exploratory study and it was difficult to provide concepts or ideas for the participants to group items accordingly.

Thirdly, Study 2 used two procedures to collect data, (card-sorting and rating procedure), and the card-sorting approach only contained four participants. Although the process between procedures was not substantial enough to be considered a liability, this does pose some implications for this study's validity. Although ranking methods such as MOSS are slightly preferable over rating methods, the opportunity to collect rating data from an entire cohort outweighs the fact that ranking data may have been more reliable, but was unavailable. As the card-sorting procedure was preferred but was not used with the majority of participants, the different sampling

methods used could have influenced respondents' responses. Different methods of sorting are shown to have different results. Fortunately, this potential error source was accounted for as researchers identified the method of data collection of each participant for eyeballing. After viewing the distribution of responses according to the method of data collection, it appeared that there was no indication that the method of data collection influenced the results obtained. Nevertheless, it would have been more appropriate to obtain a sample from only one method source as to ensure findings were a true representation of disparities in reality rather than an influence from the method used to collect data.

Furthermore, there was also the issue of human error when participants filled out demographic information and response sheets. Some participants left out the gender or ethnicity of themselves or their teacher, how much they liked the tutor or subject, or how well they were doing in the subject. As demographics could not be checked for significant variations, a future study could include more varied ethnicity of students and tutors to see if there was a relationship between ethnicity and liking (e.g. if Malay students preferred Malay tutors over Chinese tutors). Some also did not include all items in the response sheet and participants included replicated numbers. Some participants' handwriting was also illegible. It may have been more effective to ask students to perhaps conduct the survey online, in order to reduce error.

Another limitation pertains to comparison. It was difficult to be sure of whether differences and similarities in themes and hotspots to Harvey et al.'s 2012 study were due to culture or stakeholder positions. For example, it is unsure of whether differences in hotspots were due to wording, the differences between using teachers' and students' perspectives, or due to cultural differences. Future research could replicate this study in New Zealand to determine student responses as well as replicating this study with Singaporean teachers.

Although the sample size was adequate in forming hotspots and organising profiles, it would have been beneficial to have more participants in Profile 1 to increase the power of our findings. Profiles with less than 10 participants make generalising the results of our findings difficult and therefore an adequate sample

would ensure that at least 10 participants were associated with each profile. Nevertheless, this study was exploratory in nature and as a result, the small sample size was justified. A goal of future research should be the replication of this study with a larger sample size as to validate the profiles identified and begin the generalisation of results. Future research may also include measuring academic outcomes with Profile 5 to determine whether Profile 5 is linked to better student outcomes.

Conclusion

Overall, this study found that the social and emotional interactions and behaviours of teachers could be organised into eight hotspots. Additionally, as participant responses could be organised into five patterns of similar responding, this adds support to the notion that teachers' social-emotional skills have consistencies among practitioners and that they may be able to be grouped and themed accordingly. Both of these findings support our initial expectations, specifically that, a) teachers' emotional interactions are interrelated and contribute to the general emotional classroom climate and b) that teachers' responses are able to be grouped into similar emotional response patterns. Teachers' social-emotional practices appear to have similarities and differences between New Zealand and Singaporean samples. However, this is clouded by the position of the stakeholders completing these studies (teacher vs. student perspectives and cultural differences). Within the Singaporean context, it appears gender may influence teachers' emotional practices. As regards to ethnicity, 84% (*n* = 74) of students identified as Chinese and 94% (*n* = 83) of tutors were identified as Chinese. As a result, we could not determine whether ethnicity influenced students' perceptions of teachers' emotional practices.

Lastly, the implications of these findings are important. Consistent teacher profiles emerged. The implications of this study are threefold. First, the study identifies what teacher social-emotional skills are important in the Singaporean context. Second, it enables measurement of beneficial emotional interactions by Singaporean teachers. Third, it will be useful in the development of teacher training in addressing which skills teachers should be taught to promote teacher SEC. Future research would be well placed to first replicate this study using a larger sample size, or with different age

groups/ cultures, thus validating the hotspots and profiles identified. Findings from these studies may incorporate relevant emotional skills into teacher training programmes.

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Appendix A: Low-risk Ethics Confirmation for GOPA

MASSEY UNIVERSITY
ALBANY

12 March 2014

Nicole Chia
[redacted]

Dear Nicole

Re: Student Mapping of the Classroom Emotional Environment

Thank you for your Low Risk Notification which was received on 21 February 2014.

Your project has been recorded on the Low Risk Database which is reported in the Annual Report of the Massey University Human Ethics Committees.

You are reminded that staff researchers and supervisors are fully responsible for ensuring that the information in the low risk notification has met the requirements and guidelines for submission of a low risk notification.

The low risk notification for this project is valid for a maximum of three years.

Please notify me if situations subsequently occur which cause you to reconsider your initial ethical analysis that it is safe to proceed without approval by one of the University's Human Ethics Committees.

Please note that travel undertaken by students must be approved by the supervisor and the relevant Pro Vice-Chancellor and be in accordance with the Policy and Procedures for Course-Related Student Travel Overseas. In addition, the supervisor must advise the University's Insurance Officer.

A reminder to include the following statement on all public documents:

> *"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.*
>
> *If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor John O'Neill, Director (Research Ethics), telephone 06 350 5249, e-mail humanethics@massey.ac.nz".*

Please note that if a sponsoring organisation, funding authority or a journal in which you wish to publish requires evidence of committee approval (with an approval number), you will have to provide a full application to one of the University's Human Ethics Committees. You should also note that such an approval can only be provided prior to the commencement of the research.

Yours sincerelv

J.O'Neill

John G O'Neill (Professor)
Chair, Human Ethics Chairs' Committee and
Director (Research Ethics)

cc Dr S Harvey & Dr D Bimler
School of Psychology
Manawatu campus

Prof Mandy Morgan, HoS
School of Psychology
Manawatu campus

Massey University Human Ethics Committee
Accredited by the Health Research Council

Appendix B: Low-risk Ethics Confirmation for MOSS

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA

9 April 2014

Nicole Chia
[redacted]

Dear Nicole

Re: Student Mapping of the Classroom Emotional Environment

Thank you for your Low Risk Notification which was received on 1 April 2014.

Your project has been recorded on the Low Risk Database which is reported in the Annual Report of the Massey University Human Ethics Committees.

You are reminded that staff researchers and supervisors are fully responsible for ensuring that the information in the low risk notification has met the requirements and guidelines for submission of a low risk notification.

The low risk notification for this project is valid for a maximum of three years.

Please notify me if situations subsequently occur which cause you to reconsider your initial ethical analysis that it is safe to proceed without approval by one of the University's Human Ethics Committees.

Please note that travel undertaken by students must be approved by the supervisor and the relevant Pro Vice-Chancellor and be in accordance with the Policy and Procedures for Course-Related Student Travel Overseas. In addition, the supervisor must advise the University's Insurance Officer.

A reminder to include the following statement on all public documents:

> *"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.*
>
> *If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor John O'Neill, Director (Research Ethics), telephone 06 350 5249, e-mail humanethics@massey.ac.nz".*

Please note that if a sponsoring organisation, funding authority or a journal in which you wish to publish requires evidence of committee approval (with an approval number), you will have to provide a full application to one of the University's Human Ethics Committees. You should also note that such an approval can only be provided prior to the commencement of the research.

Yours sincerely

J. O'Neill

John G O'Neill (Professor)
Chair, Human Ethics Chairs' Committee and
Director (Research Ethics)

cc Dr Shane Harvey
School of Psychology
PN320

Assoc Prof Mandy Morgan, HoS
School of Psychology
PN320

Appendix C: Harvey et al.'s 2003 76-item list

1. Instead of sending student(s) out of the room, teacher deals with emotional situation
2. Peer relationships are important for students' enjoyment of school
3. Teacher rewards are consistent and fair
4. Teacher punishments are inconsistent and unfair
5. Student behaviour mirrors what teachers believe about students
6. Students care about what teachers think of them
7. Student is aware of their teacher's emotional cues
8. Student is made aware of own contribution to emotional situation and causes of own emotions
9. Student is made aware of her/his own emotional regulation
10. Student is made aware of others' perspectives and emotion
11. Student likes teacher
12. Students feel safe and secure with teacher and class
13. Students mirror their teacher's emotional behaviour
14. Students' self-esteem is related to teachers' perspectives
15. Teacher is actively concerned with students' learning
16. Teacher acts confidentially and with discretion about student concerns
17. Teacher allows class to know them by sharing own personal information
18. Teacher does not alter their emotional state from one classroom incident to another
19. Teacher and student talk about emotion/ emotional situations
20. Teacher and students have a positive relationship
21. Teacher believes in students' potential
22. Teacher believes in what they do as teachers, in the classroom
23. Teacher develops and relies on students to provide support for each other
24. Teacher develops students' emotion regulation by using emotional events to teach appropriate responses
25. Teacher displays positive emotion with appropriate boundaries
26. Teacher displays positive emotion freely, without constraints
27. Teacher displays negative emotion with appropriate boundaries
28. Teacher displays negative emotion freely, without constraints

29. Teacher does not enforce consequences of student actions
30. Teacher loss of emotional control reduces student compliance and productivity
31. Teacher emotional displays influence student engagement with teacher
32. Teacher empathises with students' emotional experiences
33. Teacher enjoys teaching
34. Teacher explains the appropriateness of particular behaviour to students or class
35. Teacher expresses clear, reasonable expectations and responsibilities of students
36. Teacher expresses positive emotion
37. Teacher facilitates students' peer relationships and co-operation
38. Teacher has clear class routine and structure
39. Teacher has enjoyable and creative teaching style
40. Teacher is aware of class emotional atmosphere
41. Teacher is aware students' emotions
42. Teacher is enthusiastic and has positive attitude toward teaching
43. Teacher is fair and equitable
44. Teacher is proud to be a teacher and proud of the profession
45. Teacher is seen to act on behalf of class to address their concerns
46. Teacher is seen to not care about students or schoolwork
47. Teacher is stressed out and acts as stressor for students
48. Teacher is trustworthy
49. Teacher is understanding and caring
50. Teacher loses control of class
51. Teacher manages teacher-student boundaries carefully
52. Teacher models expectations and appropriate class behaviour
53. Teacher openly expresses any emotions when these occur
54. Teacher organises class like a family and treats pupils like his/her own children
55. Teacher encourages peer responsibility
56. Teacher realistically replaces felt emotional state with another emotional expression

57. Teacher's replacement of own emotional state with another emotional expression is unconvincing
58. Teacher uses own emotional states to regulate class emotional atmosphere
59. Teacher regulates students' emotion
60. Teacher respects students
61. Teacher soothes self (calms down) in emotionally loaded situations
62. Teacher takes time to talk with students and actively listen
63. Teacher is seen to be "good, but strict"
64. Teacher uses emotional situations to coach students' emotional competencies
65. Teacher uses negative emotion (e.g., shame) as punishment
66. Teacher uses rewards to regulate students' emotional states and behaviour
67. Teacher uses punishment to regulate student emotion
68. Teacher uses other students to regulate emotion of their peers
69. Teacher's expression of emotion is calm and low key but effective in regulating students' emotion
70. Teacher emotional expression is ineffectual and inadequate
71. Teacher emotional expression is intense and/or explosive
72. Teacher display of emotion is unfairly generalised to innocent students or whole class (instead of directing it at specific causal stressor)
73. Teachers' expressed emotion is unrelated to event(s) that triggered it
74. When student is experiencing emotional trouble, teacher calmly talks with them
75. In conflict situations, students' teacher brings them together to talk it through
76. Teacher has sense of humour

Appendix D: 88 Item list

1. **Addresses emotional situation immediately**
2. **Encourages us to build enjoyable friendships with other students**
3. **I care what this teacher thinks about me**
4. **Tells stories using examples of how others have responded emotionally**
5. **My behaviour is affected by what my teacher believes about me**
6. **I care what this teacher thinks about me**
7. **We can always tell how our teacher feels**
8. **Shows me how I took part in an emotional situation (e.g., started an argument or reacted to it)**
9. **Makes us aware of how we are managing emotion**
10. **Makes us aware of how others feel**
11. **Likeable**
12. **Makes our class a safe place to be**
13. **We mirror how our teacher feels**
14. **My self esteem is related to how this teacher feels about me**
15. **Is actively concerned with our learning**
16. **Takes our problems seriously**
17. **Tells us about themselves**
18. **Adapts his/her emotions to suit the situation (e.g. caring with a sad student)**
19. **Talks us through emotional situations that have affected us (e.g. student death/ bullying)**
20. **Has a good relationship with us**
21. **Believes in our potential**
22. **Believes in what they do as teachers**
23. **Encourages us to support each other**
24. **Helps me/us solve emotional problems**
25. **My teacher helps me to think before I act**
26. **His/her positive responses are appropriate to the situation**
27. **Controls their own negative reactions well**
28. **Encourages us to learn new things**
29. **Consistently enforces consequences**

30. The way this teacher responds makes me work better
31. I can talk to my teacher irrespective of his/her mood
32. Understands how we feel
33. Enjoys teaching
34. Explains the best way to respond to things
35. Clear and reasonable expectations of us
36. Positive
37. Helps us work together
38. Has clear class routines and structures
39. Has enjoyable teaching style
40. Is aware of the class mood
41. Is aware of my emotions
42. Enthusiastic
43. Is fair
44. Proud to be a teacher
45. Addresses our concerns
46. If a student is upset, my teacher lets them go and settle down
47. Knows which other students I work well with
48. Trustworthy
49. Understanding and caring
50. Is in control of the class
51. Maintains clear teacher-student boundaries with us
52. Expects us to behave
53. Makes us feel welcome
54. Treats us like his/her own children
55. Encourages us to be responsible
56. Acts as if they are feeling something different to what they are
57. Emotions are genuine
58. Uses own emotion to control the mood of the class
59. Prepares us to face upcoming events (e.g. exams)
60. Respects us
61. Remains composed in difficult situations
62. Takes time to talk

63. Good but strict
64. Uses emotional situations to teach us how to cope better
65. Doesn't use negative emotion (e.g., shame, guilt-trip) as punishment
66. Uses rewards to manage how we feel
67. Stated consequences for certain behaviours or emotion
68. Uses students to support other students (e.g., student mediators, class monitors)
69. Takes time to help us
70. My teacher's emotional responses settles the class down
71. Enjoys spending time with us
72. Accurately identifies the misbehaving student
73. Doesn't hold a grudge
74. Calmly talks with students having difficulties
75. In conflict situations between students, my teacher brings them together to talk it through
76. Has sense of humour
77. Motivates us to take on the task at hand
78. Uses creative techniques to teach
79. Genuinely cares about us
80. Has a calming influence
81. Allows us to freely express ourselves
82. Takes time to listen
83. Likes teaching
84. Disciplines fairly
85. Talks to us on a level we understand
86. Speaks warmly to us
87. Is accepting of our emotional responses
88. Teaches us how to express our emotions with words

Appendix D-1: Deck of 88 Cards

1. Addresses emotional situation immediately	2. Encourages us to build enjoyable friendships with other students
3. Rewards fairly	4. Tells stories using examples of how others have responded emotionally
5. My behaviour is affected by what my teacher believes about me	6. I care what this teacher thinks about me
7. We can always tell how our teacher feels	8. Shows me how I took part in an emotional situation (e.g., started an argument or reacted to it)
9. Makes us aware of how we are managing emotion	10. Makes us aware of how others feel
11. Likeable	12. Makes our class a safe place to be
13. We mirror how our teacher feels	14. My self esteem is related to how this teacher feels about me

15. Is actively concerned with our learning	16. Takes our problems seriously
17. Tells us about themselves	18. Adapts his/her emotions to suit the situation (e.g. caring with a sad student)
19. Talks us through emotional situations that have affected us (e.g. student death/ bullying)	20. Has a good relationship with us
21. Believes in our potential	22. Believes in what they do as teachers
23. Encourages us to support each other	24. Helps me/us solve emotional problems
25. My teacher helps me to think before I act	26. His/her positive responses are appropriate to the situation
27. Controls their own negative reactions well	28. Encourages us to learn new things

29. Consistently enforces consequences	30. The way this teacher responds makes me work better
31. I can talk to my teacher irrespective of his/her mood	32. Understands how we feel
33. Enjoys teaching	34. Explains the best way to respond to things
35. Clear and reasonable expectations of us	36. Positive
37. Helps us work together	38. Has clear class routines and structures
39. Has enjoyable teaching style	40. Is aware of the class mood
41. Is aware of my emotions	42. Enthusiastic

43. Is fair	44. Proud to be a teacher
45. Addresses our concerns	46. If a student is upset, my teacher lets them go and settle down
47. Knows which other students I work well with	48. Trustworthy
49. Understanding and caring	50. Is in control of the class
51. Maintains clear teacher-student boundaries with us	52. Expects us to behave
53. Makes us feel welcome	54. Treats us like his/her own children
55. Encourages us to be responsible	56. Acts as if they are feeling something different to what they are

57. Emotions are genuine	58. Uses own emotion to control the mood of the class
59. Prepares us to face upcoming events (e.g. exams)	60. Respects us
61. Remains composed in difficult situations	62. Takes time to talk
63. Good but strict	64. Uses emotional situations to teach us how to cope better
65. Doesn't use negative emotion (e.g., shame, guilt-trip) as punishment	66. Uses rewards to manage how we feel
67. Stated consequences for certain behaviours or emotion	68. Uses students to support other students (e.g., student mediators, class monitors)
69. Takes time to help us	70. My teacher's emotional responses settles the class down

71. Enjoys spending time with us	72. Accurately identifies the misbehaving student
73. Doesn't hold a grudge	74. Calmly talks with students having difficulties
75. In conflict situations between students, my teacher brings them together to talk it through	76. Has sense of humour
77. Motivates us to take on the task at hand	78. Uses creative techniques to teach
79. Genuinely cares about us	80. Has a calming influence
81. Allows us to freely express ourselves	82. Takes time to listen
83. Likes teaching	84. Disciplines fairly

85. Talks to us on a level we understand	86. Speaks warmly to us
87. Is accepting of our emotional responses	88. Teaches us how to express our emotions with words

Appendix E: GOPA Participant Packet

MASSEY UNIVERSITY
INSTITUTE OF EDUCATION
TE KURA O TE MATĀURANGA

Student Mapping of the Classroom Emotional Environment

Information Sheet

My name is Nicole Chia and I'm currently working on my Masters in Educational Psychology at Massey University. My thesis supervisors are Dr. Shane Harvey (Clinic Director and Clinical Psychologist at the Turitea Psychology Clinic at Massey University) and Dr. David Bimler (Researcher/ Statistician at College of Education, Massey University).

Some Background

In this study, items containing students' perceptions of teacher emotional interactions will be compared in order to develop a model based on similarity. The aim will be to develop an inter-item map of relatedness, from which we will be able to conduct further research to identify key behaviours of teachers and develop social-emotional practice profiles.

This helps to find out what specific skills teachers require to create a positive climate in the classroom. This study will be carried out in Singapore and New Zealand. It will be based on a model developed by Harvey & Evans (2012).

I would appreciate your input in understanding what this may look like and invite you to take part in this project.

The Next Step

If you choose to participate, you will get an instruction sheet and a deck of cards each listing a type of behaviour. You will be asked to sort these cards by similarity. The task will take about 60 min. Snacks and drinks will be provided for those who participate.

I am looking for 30 adult participants to help out. This is the minimum number required for the type of statistical analysis I'm using.

When I receive everybody's responses, the data will be analyzed to create a map of how closely these behaviours relate. The concept is the same as a geographical map that shows in physical space how close two towns are.

Information gathered

All information gathered (e.g. consent forms and raw response sheets) will be kept confidential. Only you, my supervisors and I will have access and these will be stored in

a locked cabinet in Dr. Shane Harvey's office and retained for review purposes. After five years, this information will be destroyed.

When the study is complete, I will distribute a summary of the research findings. I will be available to discuss these results with you if you wish.

Your rights

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:
- Ask any questions about the study at any time during participation
- Provide information on the understanding that your name will not be used unless you give permission to the researcher

- Be given access to a summary of the project findings when it is concluded

Who to contact

If you would like to know more, please do not hesitate to contact me directly, or you can reach my supervisors with any queries or concerns:

Nicole Chia

Nicole.chia29@gmail.com

9109 9383

Dr. Shane Harvey

S.T.Harvey@Massey.ac.nz

06 356 9099, x 81742

Dr. David Bimler

D.Bimler@massey.ac.nz

"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor John O'Neill, Director, Research Ethics, telephone 06 350 5249, email humanethics@massey.ac.nz".

MASSEY UNIVERSITY
INSTITUTE OF EDUCATION
TE KURA O TE MATĀURANGA

Student Mapping of the Classroom Emotional Climate

PARTICIPANT CONSENT FORM - INDIVIDUAL

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

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

Age: _____

Gender: Male/ Female (please circle one)

Ethnicity: Chinese/ Malay/ Indian/ Other _____(please state)

Signature: _____

Full Name – printed: _____

Date: _____

MASSEY UNIVERSITY
INSTITUTE OF EDUCATION
TE KURA O TE MATĀURANGA

Student Mapping of the Classroom Emotional Environment

Instruction Sheet for Card Sort

In front of you, you have a deck of 88 cards. Each card has a specific behaviour listed on it along with an identification number (for ease of transcribing). The purpose of this exercise is to use your own judgment in determining how alike or different each of these items is. You may use whatever strategy makes the most sense to you.

This project involves four steps. Please complete each one before moving on. Before moving to the next step, please record your groupings on the enclosed record sheet.

1) Sort all of the cards into 8 (and up to 16) different groups based on similarities of the items. Use your own judgment on what similarities should unite each grouping. The piles do not have to be equal and a pile can be any number of items.

2) Starting with any of the piles created in (1), choose which of the remaining piles has the most *opposite* meaning. Continue until all piles have been linked to their opposite.

3) Using the piles created in step (1), divide each pile into (#) subgroups.

4) Again beginning with your step (1) piles, combine these piles into larger groupings according to similarity.

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TE KURA O TE MATĀURANGA

GOPA Response Sheet

Phase **one** – grouping	Phase **three** – partition
Make up **at least 8 (and up to 16)** different groups of similar items. A group may have a single item. Keep each group's item numbers together. **Please print neatly**. Do NOT number groups.	Copy all numbers from Phase 1 onto the same li but this time put item numbers within bracke These brackets will show sub groups; that is how t most similar items go together. A sub group m have a single item within brackets.
Example: 7 22 1 43 78 12	(12 43 22) (1 7) (78)

Phase **two** – opposites

Look over the phase 1 groups to see which are the most different. Record these "opposites" by entering any one item number from each group on the spaces below. Try to find at least two sets of opposites. Use your own judgment. Leave the item groups intact, do NOT move items around.

Opposite set 1: ____, ____# Opposite set 2: ____, ____# Opposite set 3: ____, ____#

Phase **four** – adding

This time join together the most similar groups in phase 1. Physically place these similar Phase 1 item groups together and enter any one item number from each joining group onto the spaces below. Only some groups will join up, many will not. Try to make at least two merges. If there are more than three, continue showing item pairs.

merger a) _____, _____# merger b) _____, _____# merger c) _____, _____#

Appendix F: Participant Packet for MOSS Card-Sorting

MASSEY UNIVERSITY
INSTITUTE OF EDUCATION
TE KURA O TE MATĀURANGA

Student Mapping of the Classroom Emotional Environment

INFORMATION SHEET: Student

Who is the researcher and where can she be contacted?

Nicole Chia is conducting this research. Her phone number and e-mail address for correspondence are 9109 9383 and Nicole.chia29@gmail.com. Questions or enquiries should be directed to Nicole in the first instance.

What is the purpose of the research?

This research has the purpose of investigating common patterns of teachers' emotional interactions in the classroom. This will lead into measurement of patterns of emotional interactions and used to develop teacher emotional profiles.

What will I be asked to do?

You will be given a deck of 88 cards. Each card contains a number and a statement that describes different interactions in the classroom that might have emotional consequences. Think of a tutor you had in the previous semester (Oct 2013 to Feb 2014). You will need to reflect on the profile of that tutor and think of which emotional interactions apply to this tutor. There is no need to name the tutor.

Please remember that there are no right or wrong answers.

You will be given an instruction sheet, response sheet, card-sorting template and 88 cards. Please take the cards out of the bag and shuffle them in your hand. The sorting of the cards should be made directly on the boxes indicated on the instruction sheet. On each card is a description of an interaction or philosophy about teaching.

1. Sort all cards into three piles of types of interactions ***according to the interactions experienced with your most recent tutor***. The three piles relate to "seen more", my tutor does this in class (Pile 1), to "not sure" my tutor does this in class (Pile 2), to "done less", my tutor doesn't do this (Pile 3). Again, please keep in mind that these judgments are ***based on your experience of the interactions with your tutor.***
2. Then pick up all cards in Pile 1 and split them into two further piles of "clearly seen in class" and "seen, but less often" (Pile 1b).
3. Afterwards, please pick up Pile 2 and check if you want to shift any of the cards into either side piles. Note that cards can be shifted between piles at any time during this task.
4. Finally, split Pile 3 into two further pile of interactions "possibly seen in class" (Pile 3a) and interactions "not seen at all" (Pile 3b).

Please record your final five piles (1a, 1b, 2, 3a, and 3b) in the response sheet provided. Write down the item numbers in the response sheet. Please note that no personal information is collected and that the answers cannot be traced back to you.

How much time will be involved?

The entire procedure should take less than 30 minutes, including time to understand the instructions.

What will happen to the information and data sheets?

Information from the data sheets will be entered onto the computer and analyzed. In this case only group data is relevant. The original data sheets will be put into safe storage with the researcher. This way any data entry errors may be corrected.

What will happen to the data on the completion of the research?

The raw data sheet will be kept in a safe location for five years and secured from unauthorized access. After this time all data sheets will be destroyed. No personal identifying information is noted on these data sheets. As it is not possible to link the data sheets to participants anonymity is assured.

What can I expect from the researcher?

Massey University Human Ethics Committee has prepared a statement of participant's right, which include:

- decline to participate
- withdraw from the study at any time
- confidentiality
- accessibility to results summary (as per consent form request)

Research will only be used for the purposes of this research topic and publications arising from it. There are no known potential harm or risk effects for participants, the researcher or for Massey University.

"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.
If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor John O'Neill, Director, Research Ethics, telephone 06 350 5249, email humanethics@massey.ac.nz".

Thank you very much for your co-operation,

Nicole Chia

MASSEY UNIVERSITY
INSTITUTE OF EDUCATION
TE KURA O TE MATĀURANGA

Student Mapping of the Classroom Emotional Environment

Instruction Sheet for Card Sort

You will be given a deck of 88 cards. Each card contains a number and a statement that describes different teacher interactions or behaviours in the classroom. We want you to make a judgement about which interactions apply to your teacher. Think of a tutor you had in the previous semester (Oct 2013 to Feb 2014). You will need to reflect on the profile of that tutor and think of which emotional interactions apply to this tutor. There is no need to name the tutor.
Please remember that there are no right or wrong answers.

You will be given an instruction sheet and a stack of cards. Please take the cards out and shuffle them in your hand. The sorting of the cards should be made directly on the boxes indicated on the instruction sheet. On each card is a description of a teacher's interaction or behaviour. Please sort these cards out to describe your most recent tutor.

1. Sort all cards into three piles of types of interactions ***according to behaviours your teacher displays***. The three piles relate to "seen more" - my teacher does this in class (Pile 1), to "not sure" my teacher does this in class (Pile 2), to "done less"- my teacher doesn't do this (Pile 3). Again, please keep in mind that these judgments are ***based on your point of view.***

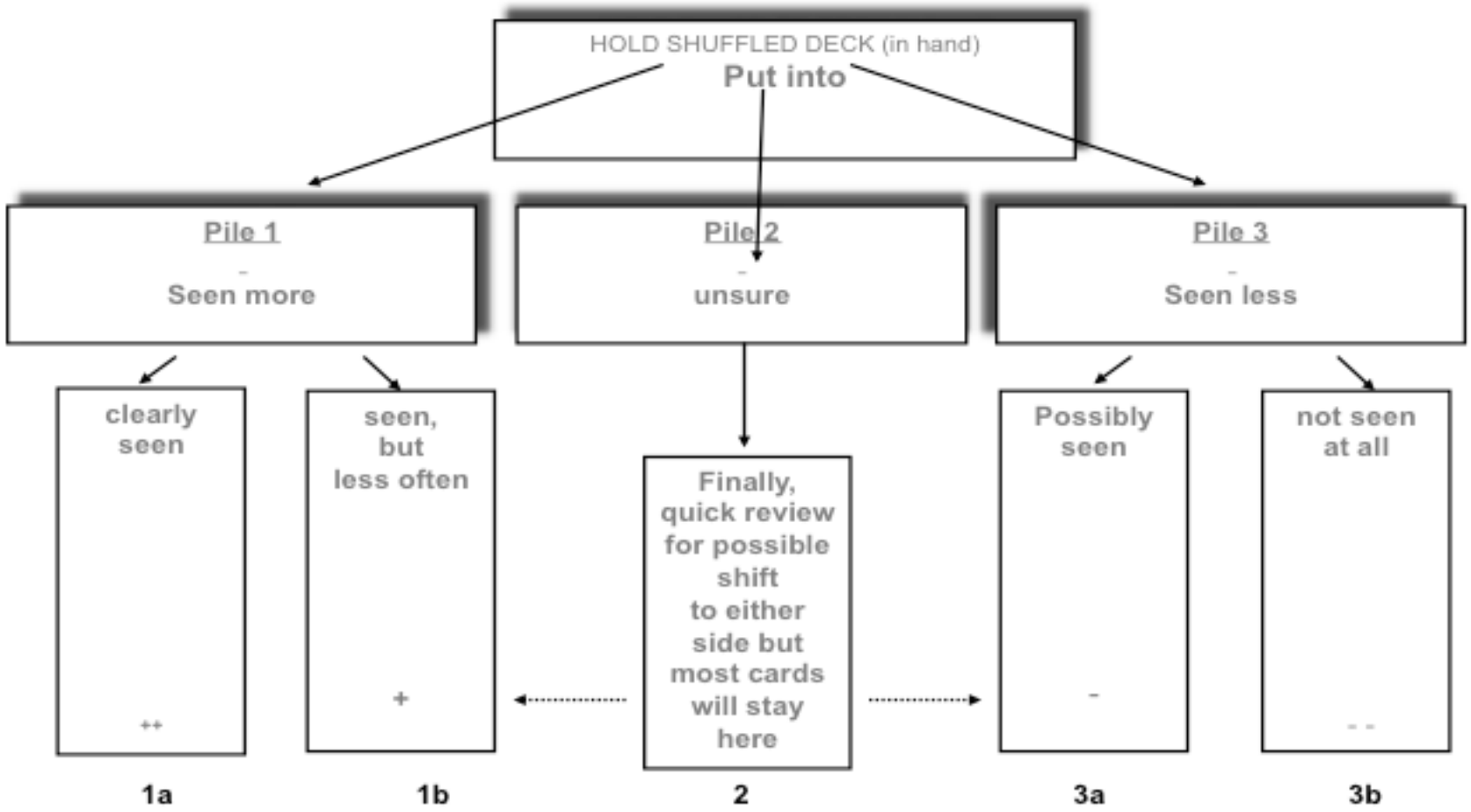
2. Then pick up all cards in Pile 1 and split them into two further piles of "clearly seen in class" and "seen, but less often" (Pile 1b).

3. Afterwards, please pick up Pile 2 and check if you want to shift any of the cards into either side piles. Note that cards can be shifted between piles at any time during this task.

4. Finally, split Pile 3 into two further piles of interactions "possibly seen in class" (Pile 3a) and interactions "not seen at all" (Pile 3b).

Please record your final five piles (1a, 1b, 2, 3a, and 3b) in the response sheet provided. Write down the item numbers in the response sheet. Please note that no personal information is collected and that the answers cannot be traced back to you.

This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.
If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor John O'Neill, Director, Research Ethics, telephone 06 350 5249, email humanethics@massey.ac.nz



When making the first three piles, put the cards into Pile 1, 2, and 3.
Cards may be shifted between piles at any time.
Final 5 piles may have an uneven number of cards in them.

MASSEY UNIVERSITY
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TE KURA O TE MATĀURANGA

Student Mapping of the Classroom Emotional Climate

PARTICIPANT CONSENT FORM – INDIVIDUAL

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

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

Info about participant:

Age: _____

Gender: Male/ Female (please circle one)

Ethnicity: Chinese/ Malay/ Indian/ Other _____(please state)

Subject: _____

How well are you doing in this subject? _____ (Out of 1-10)

(*1: not doing well at all. 10: doing very well.)*

How much do you like this subject? _____ (Out of 1-10)

(*1: do not like it at all. 10: like it a lot.)*

How much do you like this tutor? _____ (Out of 1-10) 1: not at all. 10: very much.

Participant's signature: _____

Full Name – printed: _____

Date: _____

Info about the tutor in mind:

Gender: Male/ Female (please circle one)

Ethnicity: Chinese/ Malay/ Indian/ Other _____(please state)

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Student Mapping of the Classroom Emotional Climate

Reponse Sheet for Card Sort

Please write down item numbers in each of the 5 groups below.
Put a comma after each item number e.g. 42, 33, 24, 27…

Group 1a: *Clearly seen*

Group 1b: *Seen but less often*

Group 2: *Still unsure*

Group 3a: *Possibly seen*

Group 3b: *Not seen at all*

Appendix F-1: Participant Packet for Rating-procedure

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Student Mapping of the Classroom Emotional Environment

INFORMATION SHEET: Student

Who is the researcher and where can she be contacted?

Nicole Chia is conducting this research. Her phone number and e-mail address for correspondence are 9109 9383 and Nicole.chia29@gmail.com. Questions or enquiries should be directed to Nicole in the first instance.

What is the purpose of the research?

This research has the purpose of investigating common patterns of teachers' emotional interactions in the classroom. This will lead into measurement of patterns of emotional interactions and used to develop teacher emotional profiles.

What will I be asked to do?

You will be shown a set of 88 items. Each card contains a number and a statement that describes different interactions in the classroom that might have emotional consequences. Think of a tutor you had in the previous semester (Oct 2013 to Feb 2014). You will need to reflect on the profile of that tutor and think of which emotional interactions apply to this tutor. There is no need to name the tutor.

Please remember that there are no right or wrong answers.

You will be given a response sheet and consent form and be shown 88 items on the projector. On each item is a description of an interaction or philosophy about teaching.

5. Write down the descriptions onto 5 categories ***according to the interactions experienced with your most recent tutor***.
6. The five piles relate to behaviour in your tutor that is "clearly seen in class" (Box 1), and behaviour that is "seen, but less often" (Box 2).
7. Box 3 relates to behaviour that you are "unsure" whether your tutor displays in class (Box 3).
8. In Box 4, there is behaviour that is "possibly seen" in class, and descriptions of behaviour that are "not seen at all" in your tutor.
9. Again, please keep in mind that these judgments are ***based on your experience of the interactions with your tutor.***

Please record your final five groups in the response sheet provided. Write down the item numbers in the response sheet. Please note that no personal information is collected and that the answers cannot be traced back to you.

How much time will be involved?

The entire procedure should take less than 30 minutes, including time to understand the instructions.

What will happen to the information and data sheets?

Information from the data sheets will be entered onto the computer and analyzed. In this case only group data is relevant. The original data sheets will be put into safe storage with the researcher. This way any data entry errors may be corrected.

What will happen to the data on the completion of the research?

The raw data sheet will be kept in a safe location for five years and secured from unauthorized access. After this time all data sheets will be destroyed. No personal identifying information is noted on these data sheets. As it is not possible to link the data sheets to participants anonymity is assured.

What can I expect from the researcher?

Massey University Human Ethics Committee has prepared a statement of participant's right, which include:

- decline to participate
- withdraw from the study at any time
- confidentiality
- accessibility to results summary (as per consent form request)

Research will only be used for the purposes of this research topic and publications arising from it. There are no known potential harm or risk effects for participants, the researcher or for Massey University.

"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.
If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor John O'Neill, Director, Research Ethics, telephone 06 350 5249, email humanethics@massey.ac.nz".

Thank you very much for your co-operation,

Nicole Chia

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Student Mapping of the Classroom Emotional Environment

Instruction Sheet for Rating Items

You will be shown a set of 88 items. Each card contains a number and a statement that describes different teacher interactions or behaviours in the classroom. We want you to make a judgement about which interactions apply to your teacher. Think of a tutor you had in the previous semester (Oct 2013 to Feb 2014). You will need to reflect on the profile of that tutor and think of which emotional interactions apply to this tutor. There is no need to name the tutor.

Please remember that there are no right or wrong answers.

Using the 88 items shown, please separate them into 5 different piles, depending on how frequently your teacher displays these behaviours/ traits. Please record your five piles in the response sheet provided. Write down the item numbers in the response sheet. Please note that no personal information is collected and that the answers cannot be traced back to you.

This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.
If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor John O'Neill, Director, Research Ethics, telephone 06 350 5249, email humanethics@massey.ac.nz

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PARTICIPANT CONSENT FORM – INDIVIDUAL

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

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

Info about participant:

Age: _____

Gender: Male/ Female (please circle one)

Ethnicity: Chinese/ Malay/ Indian/ Other _____(please state)

Subject: _____

How well are you doing in this subject? _____ (Out of 1-10)

(*1: not doing well at all. 10: doing very well.)*

How much do you like this subject? _____ (Out of 1-10)

(*1: do not like it at all. 10: like it a lot.)*

How much do you like this tutor? _____ (Out of 1-10) 1: not at all. 10: very much.

Participant's signature: _____

Full Name – printed: _____

Date: _____

Info about the tutor in mind:

Gender: Male/ Female (please circle one)

Ethnicity: Chinese/ Malay/ Indian/ Other _____(please state)

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Student Mapping of the Classroom Emotional Climate

Reponse Sheet for Rating Items

Please write down item numbers in each of the 5 groups below.
Put a comma after each item number e.g. 42, 33, 24, 27…

Group 1: *Clearly seen*

Group 2: *Seen but less often*

Group 3: *Unsure*

Group 4: *Possibly seen*

Group 5: *Not seen at all*

Appendix F-2: Study 2 Debriefing Letter

Study Debriefing

Thank you for participating in this study.

In this study, students' perceptions on teacher emotional interactions in the classroom were researched, in order to develop teacher profiles. The purpose of the study was to find out what specific skills teachers require in order to create a positive climate in the classroom. This study is based mainly on a model developed by Harvey & Evans (2012), which compared teacher profiles in Germany and New Zealand. This study replicates Harvey & Evan's previous research, but was done with students instead of teachers, and includes a cross-cultural aspect.

How was this tested?

In this study, you were asked to sort out 88 sets of cards containing descriptions of emotional interactions or teaching philosophies. You were asked to sort these out into 5 different groups, according to how frequently your teacher displayed certain behaviours. These items will then be organised into clusters to compare students' perceptions of teachers' interactions, using a technique called Method of Successive Sorts (MOSS).

Hypotheses and main questions:

We were interested in finding out how students viewed their teachers' emotional interactions and behaviours in the classroom. It was expected that students who were doing well in the subject they chose also would also like the subject and were more likely to like their teacher.
For those teachers that students liked a lot (8-10), it was interesting to see what social-emotional behaviours these teachers displayed, compared to those teachers that students did not like (1-3/ 10).

Why is this important to study?

Previous studies have researched the importance of having a positive emotional climate in the classroom and its effects on both students and teachers. Having a positive emotional climate in the classroom can improve both teaching and learning, and the development of social and emotional skills. Given that interactions in the classroom involve students and teachers, it was important to investigate these emotional interactions from the perspective of students.

The information gathered from this study will be used to find out what specific skills teachers require in order to create a positive climate in the classroom. This information will be use to create teacher profiles.

What if I want to know more?

If you are interested in learning more about the importance of the classroom emotional environment and teacher-student interactions:

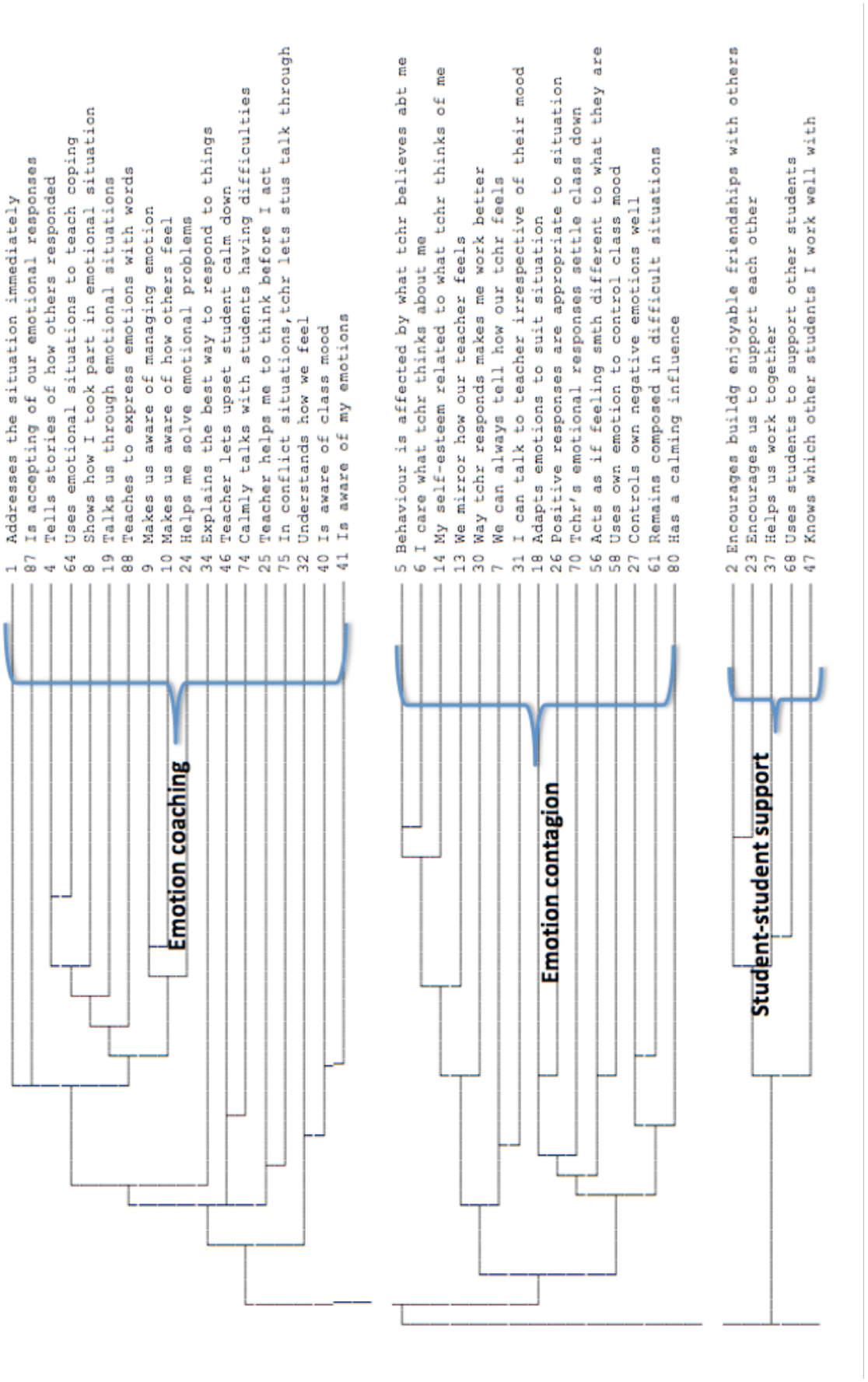
> Harvey, S. T., Bimler, D., Evans, I. M., Kirkland, J., & Pechtel, P. (2012). Mapping the classroom emotional environment. *Teaching and Teacher Education*, *28*(4), 628-640.

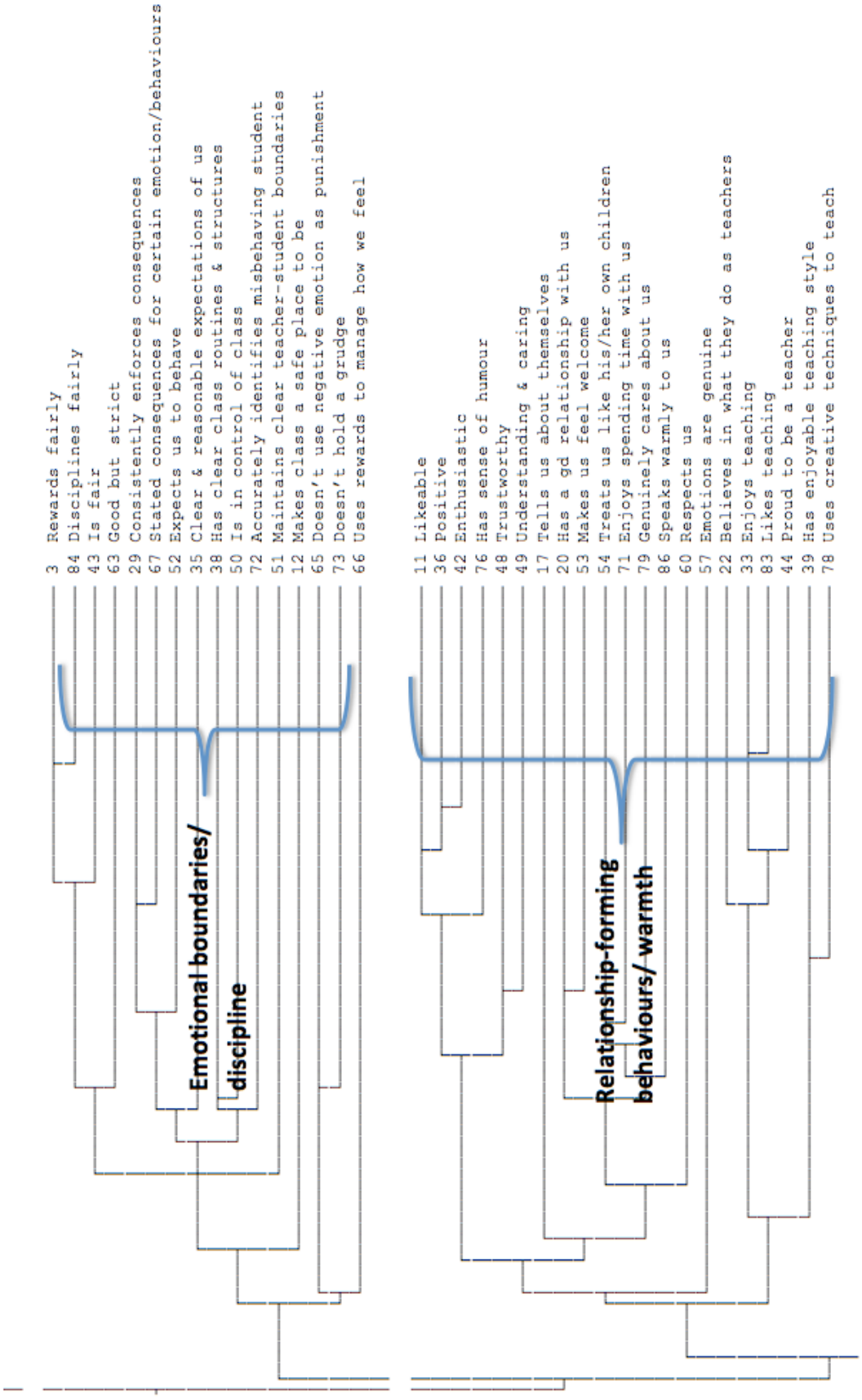
If you would like to receive a report of this research when it is completed (or a summary of the findings), please contact Nicole Chia at 9109 9383 and nicole.chia29@gmail.com.

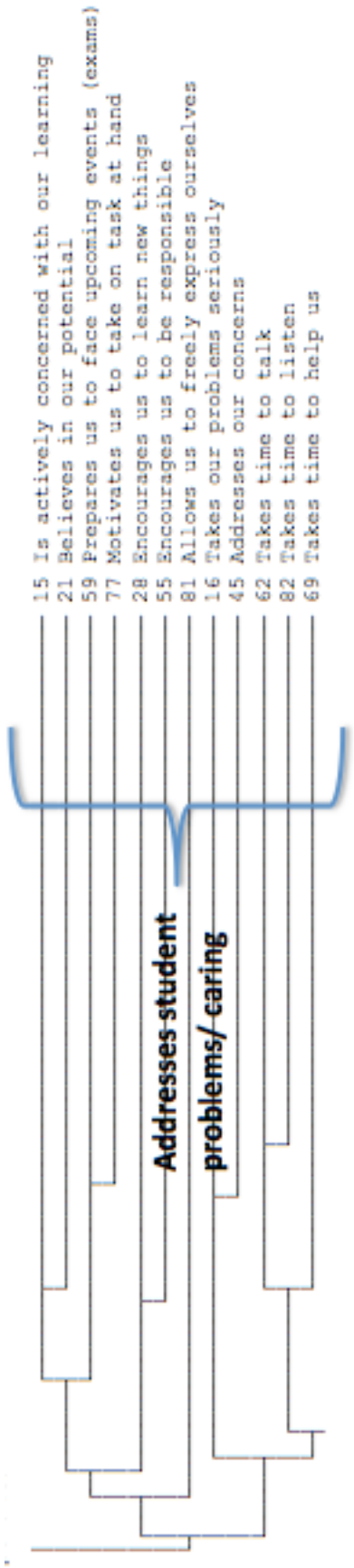
If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor John O'Neill, Director, Research Ethics, telephone 06 350 5249, email humanethics@massey.ac.nz.

Thank you again for your participation.

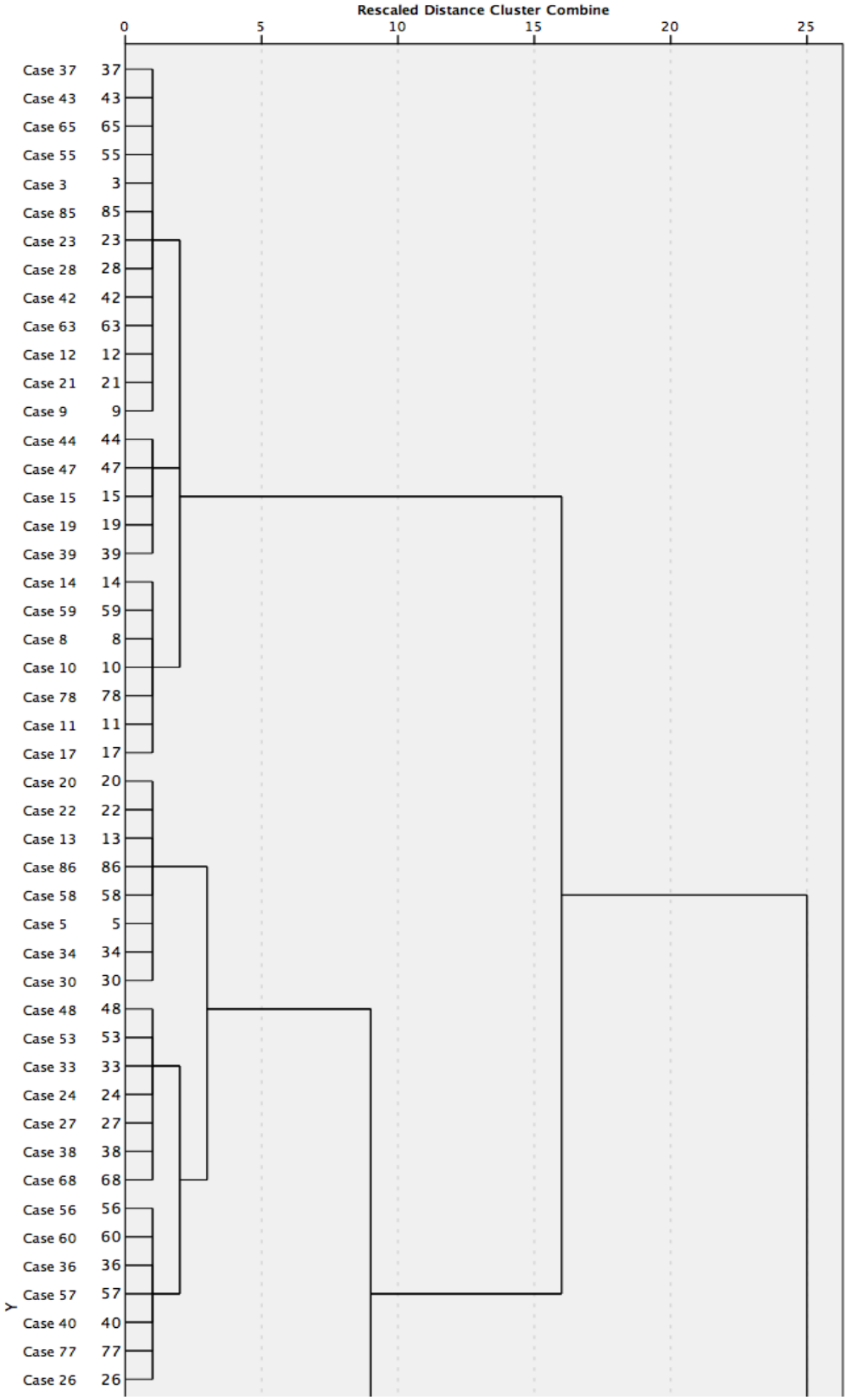
Appendix G: GOPA Sample Dendrogram

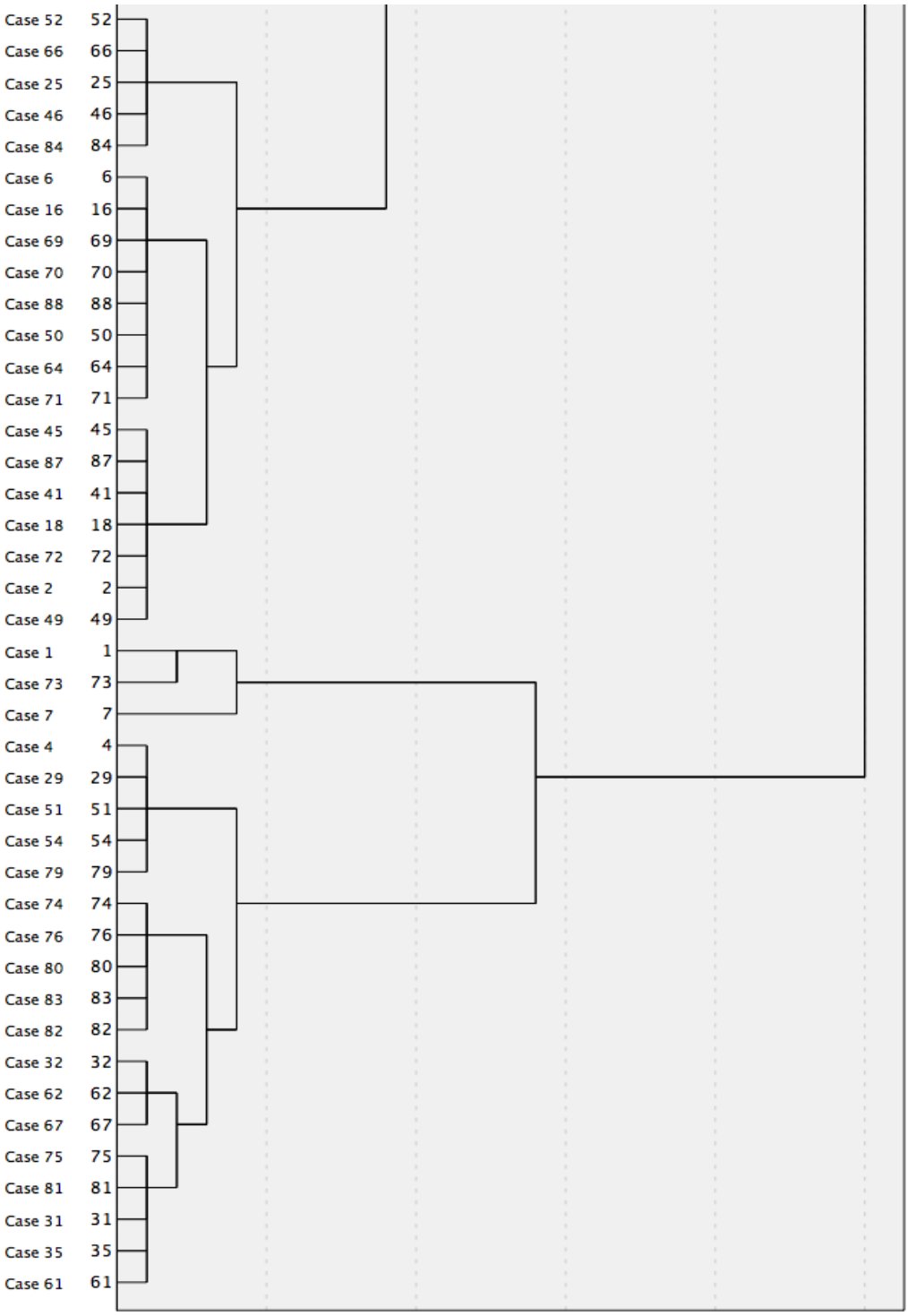



3 Rewards fairly
84 Disciplines fairly
43 Is fair
63 Good but strict
29 Consistently enforces consequences
67 Stated consequences for certain emotion/behaviours
52 Expects us to behave
35 Clear & reasonable expectations of us
38 Has clear class routines & structures
50 Is in control of class
72 Accurately identifies misbehaving student
51 Maintains clear teacher-student boundaries
12 Makes class a safe place to be
65 Doesn't use negative emotion as punishment
73 Doesn't hold a grudge
66 Uses rewards to manage how we feel
Emotional boundaries/
discipline
11 Likeable
36 Positive
42 Enthusiastic
76 Has sense of humour
48 Trustworthy
49 Understanding & caring
17 Tells us about themselves
20 Has a gd relationship with us
53 Makes us feel welcome
54 Treats us like his/her own children
71 Enjoys spending time with us
79 Genuinely cares about us
86 Speaks warmly to us
60 Respects us
57 Emotions are genuine
22 Believes in what they do as teachers
33 Enjoys teaching
83 Likes teaching
44 Proud to be a teacher
39 Has enjoyable teaching style
78 Uses creative techniques to teach
Relationship-forming
behaviours/warmth


15 Is actively concerned with our learning
21 Believes in our potential
59 Prepares us to face upcoming events (exams)
77 Motivates us to take on task at hand
28 Encourages us to learn new things
55 Encourages us to be responsible
81 Allows us to freely express ourselves
16 Takes our problems seriously
45 Addresses our concerns
62 Takes time to talk
82 Takes time to listen
69 Takes time to help us
Addresses student problems/ caring

Appendix H: Ward Linkage Dendrogram




Case 52 52
Case 66 66
Case 25 25
Case 46 46
Case 84 84
Case 6 6
Case 16 16
Case 69 69
Case 70 70
Case 88 88
Case 50 50
Case 64 64
Case 71 71
Case 45 45
Case 87 87
Case 41 41
Case 18 18
Case 72 72
Case 2 2
Case 49 49
Case 1 1
Case 73 73
Case 7 7
Case 4 4
Case 29 29
Case 51 51
Case 54 54
Case 79 79
Case 74 74
Case 76 76
Case 80 80
Case 83 83
Case 82 82
Case 32 32
Case 62 62
Case 67 67
Case 75 75
Case 81 81
Case 31 31
Case 35 35
Case 61 61

Appendix H-1: Ward's Agglomeration Schedule

Stage	Cluster Combined		Coefficients	Stage Cluster First Appears		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	37	43	.687	0	0	16
2	56	60	1.947	0	0	47
3	3	85	3.399	0	0	32
4	10	78	4.913	0	0	19
5	14	59	6.634	0	0	39
6	28	42	8.391	0	0	10
7	18	72	10.225	0	0	44
8	52	66	12.152	0	0	60
9	24	27	14.185	0	0	48
10	28	63	16.353	6	0	43
11	13	86	18.586	0	0	31
12	15	19	20.894	0	0	30
13	50	64	23.206	0	0	51
14	6	16	25.568	0	0	15
15	6	69	28.033	14	0	64
16	37	65	30.536	1	0	20
17	38	68	33.074	0	0	48
18	70	88	35.676	0	0	62
19	10	11	38.308	4	0	41
20	37	55	41.041	16	0	61
21	44	47	43.803	0	0	55
22	20	22	46.835	0	0	54
23	74	76	49.975	0	0	72
24	75	81	53.180	0	0	66
25	48	53	56.399	0	0	40
26	32	62	59.653	0	0	50
27	12	21	63.070	0	0	43
28	4	29	66.685	0	0	33
29	31	35	70.434	0	0	35
30	15	39	74.552	12	0	55
31	13	58	78.948	11	0	54
32	3	23	83.540	3	0	61
33	4	51	88.138	28	0	57
34	36	57	92.799	0	0	47
35	31	61	97.581	29	0	66
36	40	77	102.434	0	0	52
37	25	46	107.536	0	0	60
38	80	83	112.791	0	0	67
39	8	14	118.146	0	5	56
40	33	48	123.526	0	25	59
41	10	17	129.027	19	0	56
42	45	87	134.532	0	0	46
43	12	28	140.388	27	10	65
44	2	18	146.317	0	7	53
45	5	34	152.507	0	0	58
46	41	45	158.752	0	42	71
47	36	56	165.890	34	2	69
48	24	38	173.903	9	17	59
49	54	79	181.959	0	0	57
50	32	67	190.042	26	0	75
51	50	71	198.151	13	0	62
52	26	40	206.728	0	36	69
53	2	49	215.344	44	0	71

54	13	20	224.557	31	22	68
55	15	44	233.916	30	21	74
56	8	10	243.335	39	41	77
57	4	54	252.774	33	49	83
58	5	30	262.760	45	0	68
59	24	33	273.091	48	40	73
60	25	52	283.600	37	8	63
61	3	37	294.471	32	20	70
62	50	70	305.605	51	18	64
63	25	84	318.393	60	0	82
64	6	50	332.843	15	62	78
65	9	12	347.454	0	43	70
66	31	75	364.767	35	24	75
67	80	82	382.241	38	0	72
68	5	13	400.041	58	54	80
69	26	36	419.012	52	47	73
70	3	9	437.986	61	65	74
71	2	41	458.754	53	46	78
72	74	80	479.798	23	67	79
73	24	26	503.797	59	69	80
74	3	15	534.670	70	55	77
75	31	32	566.718	66	50	79
76	1	73	603.580	0	0	81
77	3	8	647.771	74	56	86
78	2	6	697.813	71	64	82
79	31	74	750.434	75	72	83
80	5	24	813.521	68	73	84
81	1	7	883.386	76	0	85
82	2	25	953.714	78	63	84
83	4	31	1027.063	57	79	85
84	2	5	1217.675	82	80	86
85	1	4	1536.040	81	83	87
86	2	3	1894.798	84	77	87
87	1	2	2464.127	85	86	0