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A Scientific Review of the Links between Socioeconomic Background, Inequality, School Climate, and Academic Achievement

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Abstract

Gaps in academic achievement are globally present among students of different ethnic and socioeconomic status (SES) backgrounds. Studies show that these gaps have far-reaching, negative implications for individuals and society.

Researchers have pointed to the various ways in which schools can be successful in effectively improve the academic achievement of students from lower SES backgrounds. Often discussed factors that increase student academic outcomes in low SES schools are positive *school climate* and *classroom climate.*

Supportive school and classroom climates positively influence academic outcomes of students, particularly in schools serving lower SES populations. However, scientific evidence establishing directional links and how mechanisms work between these variables is inconclusive.

The primary purpose of this paper is to methodically review the scientific literature applicable to the relationships between SES, school and classroom climates, and students' academic achievement. This review addresses whether climate can successfully disrupt the negative associations reported in earlier literatures between SES and achievement, among students of different SES backgrounds.

*Chapter 1*serves as the foundation for this review. This chapter examines the aspects and variables included in the various definitions of school climate and classroom climate. *Chapter 2* presents a systematic literature review of 81 peer reviewed articles conducted between 2000-2015 that tested links between SES, school climate and classroom climate, and academic achievement. Additionally, this chapter briefly reviews the central terms relevant to climate within preschool age, and presents key findings indicating correlations between climate and achievement in children of this age group. *Chapter 3* addresses intervention programs designed to improve school and classroom climate. *Chapter 4* addresses the Israeli context, providing current data, studies conducted on this topic, and presenting possible avenues for future development of knowledge and research in Israel.

Main findings

Chapter 1: Definitions of school and classroom climate and their measurements

- There are significant differences in the definitions and measurements used by researchers in the study of school and classroom climate. These differences reflect the confusion and uncertainty regarding what "climate" entails, and the tangible need to facilitate definition and measurement that may be used extensively to better support school improvement efforts.
- Later definitions of climate are broader than previous definitions. Although having the advantage of greater inclusiveness, later definitions tend to be overly exhaustive. This tendency reflects the need to agree on climate definition that contains only those central areas that may be observed, quantified and measured to be used extensively.
- We identify most central components that recur in the majority of definitions. These are: student-teacher relationships, sense of school safety, and school/classroom engagement/connectedness.
- The dimension of a supportive caring approach from teachers is a core central component of climate, and therefore should be included in future research and practice definitions and measurements of "climate".

Chapter 2: Climate as an intervening factor between SES and achievement

The relationship between SES background and academic achievement (achievement gaps and inequality)

- There are significant differences in the ways in which SES is defined and measured.
- Better socioeconomic or personal backgrounds correlate to higher grades.
- Findings with regards to the reduction (or increase) of achievement gaps in students of stronger and weaker backgrounds at different grade levels are inconsistent.

The relationship between SES background and school climate

- Findings regarding the relationship between SES background and the school climate quality are inconsistent, with some research demonstrating a significant correlation

between lower SES background and less positive school climate, while other research indicating insignificant relations between SES background and school climate.

School climate as an intervening factor in the relationship between SES background and academic achievements

- The vast majority of studies are correlational. They indicate significant correlations between positive climate and higher academic achievement. However they do not provide a basis for deducing a directional influence and causal relations between climate and achievement.
- The classroom context is most significant setting related to academic achievement, suggesting that the majority of climate improvement efforts should be invested in the classroom context. Additional research is needed to establish a multifaceted body of knowledge regarding the multi-level climate dimensions related to academic achievement.
- The vast majority of the studies were based solely on student reports on climate. Future research should explore the entire school community's perceptions of school climate to allow more successful implementation of school reform programs that develop holistically with the school community.
- The scarcity of studies examining the impact of classroom-level variables on academic achievement, and the paucity of studies measuring variables of more than two measurement levels, suggests that additional research is needed to establish a multifaceted body of knowledge regarding the multi-level climate dimensions related to academic achievement.

- A few studies using a quasi-experimental design indicate that positive climate *improves* academic outcomes. Further experimental research should be conducted to establish the nature of *impact* positive climate has on academic achievement.

- The majority of studies report that positive climate has a positive *compensating* contribution to academic achievement, providing an additive value to achievement beyond the impact of SES. These compensatory relationships stress the importance of investing resources to promote a positive school climate among all schools, but

especially in those serving communities living in poverty, as it could improve students' proficiency.

- Climate has a *moderating* effect on the link between SES and academic achievement, meaning that classrooms and schools characterized by positive climates successfully "level the playing field" for students of lower SES. This has the potential to narrow achievement gaps between students and schools of different backgrounds.

Classroom climate in preschool ages

- The term *quality* is used to describe class-level variables that ostensibly impact preschool-age development of children. Quality is comprised of two central dimensions that may be equated to social climate and pedagogical climate: emotional support and educational support, respectively.
- The pedagogical components of the classroom quality *are not* associated with children's academic outcomes. Conversely, teachers' ability to establish emotionally-supportive **interactions** within a well-organized classroom has great impact on future academic outcomes.

Chapter 3: Interventions that improve school climate, and their potential impact on academic achievement

- No documentation of intervention programs of high scientific standards aimed at addressing "school climate" were found. Despite this, there are many other interventions associated with the school climate literature, or aimed at improving an aspect of climate. These interventions are associated mainly with social emotional learning or character education.
- There is a tangible need to develop intervention guidelines based on accurate monitoring and assessment processes, and to document and evaluate efforts to change school climate.
- Positive school climate increases the likelihood of success of other intervention programs not currently associated with the school climate literature such as youth leadership and engagement or social and emotional learning.

- Locally developed programs that are designed to specifically address school needs and executed by the school community demonstrate better outcomes. We therefore recommend a strategy whereby school communities design their own programs, tailor-made to their requirements and social-organizational characteristics.

Chapter 4: The Israeli context

- Databases gathered in Israel provide fertile ground to study the influences and correlations between SES, school climate and academic achievements of students.
- Data bases systematically gathered in Israel: the Growth and Efficiency Measures of Schools (in Hebrew, *Meitzav*) tests are conducted each year in a nationally representative sample of school principals, teachers and students. These monitor academic achievements in four core subjects. The tests also include numerous variables measuring perceptions of school climate. Additionally, the Social Deprivation Index (SDI), computed by the Ministry of Education indicates SES of student families, from which school parameters are derived.
- It is recommended that additional research be conducted to promote specific knowledge in the field, establishing a knowledge base that will facilitate school climate and academic outcomes improvement. There is particular need to conduct studies that would allow examining causal influences between SES, school climate and achievement.
- The systematic data collection in Israel establishes the foundation for designing policy and interventions to improve school climate.
- The Psychological and Counseling Services Division (*SHEFI*) offers a numerous intervention programs for improving certain aspects of school climate, the most prominent and extensive being the national program for promoting optimal school climate and violence reduction (IN Hebrew- *ACHAM*). It would be both interesting and worthwhile to provide empirical support for this program, and anchor it in an evaluation study that will evaluate how implementation of the program relates to academic achievements of students in Israel.

A Scientific Review of the Links between Socioeconomic Background, Inequality, School Climate, and Academic Achievement

Introduction

Social inequality may be manifested in achievement gaps among groups of students from different ethnic and socioeconomic status (SES). Achievement gaps do not necessarily stem from deficits in students' natural abilities, varying degrees of student motivation, or differential efforts in studying. Within the extant literatures, the term "achievement gap" most commonly infers that there are systemic and cultural *opportunity gaps* faced by students of various SES backgrounds that act as social and contextual barriers to academic success. Achievement gaps are often discussed as a problem for ethnic groups, or as a cultural, regional phenomena but also have far-reaching negative implications for individuals (Butler, Beach, & Winfree, 2008; Harris & Herrington, 2006), and for society as a whole (Ladson- Billings, 2006; Wolfe & Haveman, 2001).

One of the strongest predictors of academic achievement is the SES of students and schools (Sirin, 2005). Achievement gaps between students of higher and lower SES have been documented in countries throughout the world, including in the USA (Fan, 2012; National Center for Education Statistics, 2013), and in Europe (Mullis, Martin, Foy, & Arora, 2012). Research conducted in Israel also reveals gaps in academic achievements among students of greater and lesser affluence, between Hebrew and Arabic speaking students, and between religious and nonreligious educational school systems (Glickman, 2014; Zussman & Tsur, 2008).

Even though these Achievement and SES gaps exist in many countries, researchers have discussed ways that schools can increase academic proficiency in low SES schools (Ladd & Walsh, 2002). Students in these schools perform academically beyond what they would otherwise have achieved on the basis of SES background (Osher, Spier, Kendziora, & Cai, 2009).

An important, often-discussed factor that increases student academic outcomes in low SES schools is a focus on positive *school* and *classroom climate*. School climate refers to patterns of academic experiences in view of the relationships, lifestyles, norms, values, teaching, learning,

school leadership, and school organizational structure (National School Climate Center [NSCC], 2008).

The generally accepted view is that positive school and classroom climates have positive impact on academic outcomes, especially in high-poverty schools (Berliner, 2008; Bryk & Schneider, 2002; Ladd & Dinella, 2009; Noguera, 2010; Sherblom, Marshall, & Sherblom, 2006). However, scientific evidence establishing links between these variables is inconclusive. Inconsistency and disagreement within the relevant literatures on methods, instruments, definition of variables, and design of studies are reasons for the lack of empirical clarity. There is little research about the theoretical nature of the relationships between SES, climate, and academic performance, as the scientific literature provides diverse, often confusing, descriptions of the mechanisms by which positive school climate contributes to student achievement. Furthermore, there are numerous studies exploring these types of questions using different methods and assumptions. Some authors argued that a positive climate may have an additive contribution to student achievement, above the negative influence of low SES (for example: Brand, Felner, Shim, Seitsinger, & Dumas, 2003; McEvoy & Welker, 2000; Schagen & Hutchison, 2003). These authors suggested an explanation describing school climate as *compensating* for low SES, adding value independently and thus contributing to academic achievements beyond the expected outcomes based on SES background.

By contrast, others have argued that a school's SES influences its social climate, which in turn influences academic achievement. Thus, schools affected by high poverty, high crime, low SES, and additional risk related social issues, often fail to establish a safe and supportive school climate due to the multiplicity of inflowing family, SES, and community related stressors placed on the school setting and staff. Subsequently the ability of students' attending such schools to attain better academic outcomes is compromised (Sebring, Allensworth, Bryk, Easton, & Luppescu, 2006). However, if such schools were able to alter their climate to be more supportive, this could theoretically also influence the negative effects of low SES, crime, and negative community or family influences. This explanation describes school climate as *mediating* the relationship between SES background and academic achievements through factors such as students' connectedness and engagement with school (Wang & Holcombe, 2010),

students' feeling of safety (Benbenishty & Astor, 2005), and school violence (Benbenishty, Khoury-Kassabri, Roziner, & Astor, 2005).

Finally, other researchers have shown that the relationship between SES background and academic achievements changes across schools of different climate. For example, in a school with a positive climate, the relationship between SES background and achievement would be weaker compared to schools with a less positive climate (e.g., Cheema & Kitsantas, 2014). In other words, this explanation suggests that the relationship between student and school SES and academic achievement can be *moderated* by school climate.

Considering the uncertainty that exists regarding the interrelations between SES, school and classroom climate, and academic achievements, the primary purpose of this paper is to systematically review the scientific evidence currently available and applicable to the relationships between these variables. This review attempts to address whether positive climate mitigates the relationship between SES and academic achievement, so that more positive climates improve academic performance and reduce achievement gaps between students and schools of different SES backgrounds.

Unit of analysis

Some researchers maintain that it is necessary to understand students' personal experiences within school, as these are subject to changes of personal perceptions, processes and traits (Mok & McDonald, 1994). Researchers studying climate by this standard of measurement examine whether students' personal experiences in school influence their ability to study and achieve. For example, when students are victims of bullying their ability to attain greater academic achievements may decrease due to their concern for personal safety. The focus of these researchers is primarily on the individual in context and transactional between the students, behaviors, and school climate.

By contrast, many researchers refer to climate as a dimension that reflects the collective experience of school students, adults, and parents (Modin & Östberg, 2009 Haynes, Emmons & Ben-Avie 1997). The work of these researchers frames the education system as essentially a

hierarchical system, comprised of various interlinked and nested frameworks: students are assigned to classes, classes are assigned to schools, schools are assigned to neighborhoods, and so forth (Mohammadpour, 2013). However, this empirical approach is limited because it does not examine carefully the variances in climate perceptions that exist among individuals within schools or classrooms (Van Horn, 2003).

In recent years, there has been growing support for an approach that incorporates multiple measurement levels, examining the impact of climate perception *both* on the individual and classroom/school levels. Thus, the multiple nested contexts that impact the individual experience of students, staff, or parents are addressed, along the partitioning of variance and covariance components among levels (Griffith, 1999; Koth, Bradshaw, & Leaf, 2008; McNeely, Nonnemaker, & Blum, 2002). This insight is concurrent to the development of analytic techniques for studying data organized hierarchically in multiple levels, such as students nested within schools (Raudenbush & Bryk, 2002). Describing how studies use these units of analyses and various levels to explore the relationships between climate, SES, and academic performance is an important aim of this review.

Chapter 1: Definitions of school and classroom climate and their measurements

Main findings

- There are significant differences in the definitions and measurements used by researchers in the study of school and classroom climate. These differences reflect the confusion and uncertainty regarding “climate” and the tangible need to agree on definition and measurement that may be used extensively while facilitating better understanding of what "climate" entails to better support school improvement efforts.
- Later definitions of climate are broader than previous definitions. Although having the advantage of greater inclusiveness, by including more and more elements under “climate”, later definitions may contribute to uncertainty regarding what climate is. This tendency reflects the need to agree on a on an exhaustive yet exclusive definition for climate to be used extensively.

- We identify most central components that recur in the majority of definitions. These are: student-teacher relationships, sense of school safety, and school/classroom engagement/connectedness.
- The dimension of a supportive caring approach from teachers is a core central component of climate, and therefore should be included in future research and practice definitions and measurements of "climate".
- The variability in definitions and measurements of climate is also apparent in following chapters reviewing research findings, and intervention programs.

In this chapter we review the most widely accepted definitions of leading researchers in the field; the definitions frequently used in professional and research literatures; and those found that most definitively describe the term exhaustively yet exclusively. This review includes tables that concentrate key elements of school climate (Table 1) and classroom climate (Table 2) definitions and measurements.

School Climate

Halpin and Croft (1963) were pioneers in the research of school climate. They maintained that climate is the "personality" of the school and seen along a continuum from open climates to closed climates. Climate expresses the collective perception of teachers of school routine, thereby influencing their attitudes and behaviors. Their definition was based on the measure of school's *openness*, and assumes six prototypes of school climate on a continuum ranging from *open* to *closed.* This research pair developed the Climate Description Questionnaire (CDQ) to describe the organizational climate of elementary schools and would be used as a research tool for decades. This tool focused on social interactions among teachers, and between teachers and principals, as well as their behavior in school. It has several different versions ranging from 34 (Hoy & Tarter, 1997) to 64 (Halpin & Croft, 1963) Likert items addressing the measure of *openness* and *authenticity* in relations among staff.

Health is another metaphor for school climate (Hoy & Hannum, 1997). A healthy school demonstrates harmony between the technical (teaching and learning), managerial (the internal coordination of the school), and institutional levels (connections between the school and the

community) and successfully manages external factors while remaining goal oriented. The school's climate is the property of the school environment that is experienced by its members, affects their behavior, and is based on their collective perceptions of behavior on schools. In healthy schools, the students, teachers, administrative staff and community work together, constructively, and in full cooperation (Hoy & Hannum, 1997).

Subsequent research into school climate broadened terminology usage, concepts and measurement parameters used to define and measure climate. Thus, later definitions emphasized student perspectives including relationships within schools and fairness of school rules. Within this framework it is assumed that the ways in which students experience their social support network has a decisive impact on academic achievement. The *support of teachers* may provide students the necessary personal resources and social capital to succeed in their studies and tackle academic challenges (Osher, Dwyer, Jimerson & Brown, 2012). Furthermore, students' perceptions of *fairness* and *clarity* of school rules, expectations of appropriate behavior, and the degree to which such rules are *consistently* enforced, without undue sanctioning of overly harsh *punishments*, impacts emotional and academic outcomes of students (Haynes et al., 1993; Kitsantas, Ware & Martinez-Arias, 2004). For instance, Simons-Morton and Crump (2003) extending previous research of Pyper and his associates measured climate from student perspectives, and focused particularly on teacher support, clarity and enforcement of school rules, and the measure of respectful relations among students (Pyper, Freiberg, Ginsburg, Spuck, 1987).

The Inventory of School Climate-Student (ISC-S) developed by Brand et al. (2003) was another important survey instrument that incorporated parameters pertaining to relationships, and fairness of rules and punishments. This group of researchers later developed an additional teacher perspective tool to evaluate school climate, the Inventory of School Climate- Teacher (ISC-T) (Brand, Felner, Seitsinger, Burns, & Bolton, 2008).

Bear and his associates developed their evaluation of school climate to include elements of social support and school social structure. They founded their work on human ecology theory, describing human development in terms of relations to all the systems with which an individual interacts (Bronfenbrenner, 1979). Acknowledging the importance of how all members of the school community perceive climate, Bear et al. developed several versions of the Delaware

School Climate Survey (DSCS). One was developed for students (Bear, Gaskin, Blank, & Chen, 2011; Bear, Yang, Mantz, & Pasipanodya, 2014; DSCS-C), another for teachers (Bear, Yang, Pell, & Gaskins, 2014; DSCS-T), and a third for parents (Bear, Yang, & Pasipanodya, 2014; 2014 a; DSCS-H). These three versions measure interpersonal relations between teachers and students, relations among students, respect for diversity, fairness of rules, clarity of expectations, and school safety. Additionally, these researchers also addressed school *bullying*, a parameter not included in earlier definitions of climate (for example, Hoy & Hannum, 1997). Lastly, parents and teachers surveys both address the relationships between the school and home, and the teacher survey also measures degree of students' *engagement* in the school. The significant advantage to this series of measurements lies in the similarity between these evaluations, allowing schools to compare the different perspectives of students, teachers and parents using relatively simple, short questionnaires compared to much longer and complex questionnaires.

It is noteworthy that, although teachers tend to rate climate more positively than students (Fraser, 2012), teacher perception of climate is particularly important due to its impact on student outcomes (Cohen, McCabe, Michelli, & Pickeral, 2009). Furthermore, correlations were found between teacher reports on climate and their job satisfaction, a fact that later influenced student grades (Cohen, McCabe, Michelli, & Pickeral, 2009). For several reasons, perceptions of students' parents regarding school climate is also important, including their impact on academic motivation (Eccles, 2007) and student grades (Hill & Taylor, 2004; Hill & Tyson, 2009; Reynolds & Gill, 1994).

Several additional dimensions of climate can be identified within the context of student-school relations: Measure of *connection/connectedness*, *engagement*, *attachment/bonding*, and students' sense of *belonging* (Libbey, 2004). These parameters describe the link between students and their schools, and are greatly influenced by *order*, *safety*, and *discipline*.

A group of senior researchers, policy makers, and representatives of the US Department of Education proposed a conclusive model for school climate evaluation termed the "Safe and Supportive Schools Model". A positive school climate is the product of a school's attention to fostering safety, to promoting a supportive academic, disciplinary, and physical environment, and to encouraging and maintaining respectful, trusting, and caring relationships throughout the school community (http://safesupportiveschools.ed.gov).

Finally, another accepted model in contemporary research literature, also describing climate in its broadest and most comprehensive sense, is that proposed by the US National School Climate Council. According to this model, school climate includes five central dimensions: Security (rules and norms, sense of physical safety, sense of social-emotional security); Teaching and Learning (support for learning, Social and Civic Learning); Interpersonal relationships (Respect for Diversity, social support of adults, and social support of peers among students); Institutional Environment (School Connectedness/Engagement, Physical Surroundings), and Professional Relationships in school (retrieved from the National School Climate Council website: http://www.schoolclimate.org/programs/documents/dimensions_chart_pagebars.pdf).

It is noteworthy that some also distinguish between social climate and pedagogical climate, often termed "pedagogical environment." The pedagogical environment is comprised of a series of aspects pertaining less to social-emotional dimensions and more to the teaching field, such as curriculum, (Barton, 2003), teacher education level and training (Clotfelter, Ladd & Vigdor, 2004; Akiba, LeTendre & Scribner, 2007), teachers' professional development in schools (Mayer, Mullens & Moore, 2000), teacher burnout (Goddard, O'Brien, & Goddard, 2006), classroom characteristics (Hedges, Laine & Greenwald, 1994; Greenwald, Hedges & Laine, 1996), and more. Although the boundary between these two fields exists, the difference between the two is blurred and indistinct. For example, instruction is considered as a pedagogical aspect of climate, but also includes social elements and focuses on teacher-student relationships.

Classroom Climate

Social climate also exists on a classroom level, as the classroom is the central context of which learning, student-to-student interactions, and teacher-student interactions occur. The quality of social interactions in a classroom forms its *classroom emotional climate* (CEC), considered an important component of teacher-student relationships (Reyes, Brackett, Rivers, White, & Salovey, 2012). A classroom typified by positive emotional climate has: (a) teachers attentive to student needs, (b) warm, caring, nurturing, and friendly teacher-student relationships, (c) teachers considerate of student needs, (d) teachers that avoid sarcasm and harsh disciplinary measures. Furthermore, in a positive classroom climate the teacher fosters a sense of ease and

enjoyment by demonstrating positive regard and warmth in interactions with students. The teacher is sensitive and tuned in to the child and manifests awareness of the child's needs, moods, interests, and capabilities, and allows this awareness to guide his or her behavior with the child (Hamre & Pianta, 2005).

An example for a tool aimed at examining the climate within the classroom context is the Classroom Environment Scale (CES) (Trickett & Moos, 1973), designed for high school students and including 9 dimensions of classroom climate measuring relationships in the classroom (students involvement, students affiliation to each other, teacher support) , students' academic goal orientation (student task orientation, competition between students), and the classroom system maintenance and change dimension (order and organization in the classroom, rule clarity, teacher control, and academic innovation).

Another tool which was widely used is the Learning Environment Inventory (LEI) (Fraser, Anderson, & Walberg, 1982), designed for middle and high school students, and including 15 dimensions of classroom climate: Cohesiveness (the extent to which students know, help and are friendly toward each other); Diversity (the extent to which difference in student's interests exist and are provided for); Formality (the extent to which behavior within the class is guided by formal rules); Speed (the extent to which class work is covered quickly); Material Environment-availability of adequate books, equipment, space and lightning; Friction (the amount of tension and quarrelling among students); Goal orientation (the degree of goal clarity in class); Favoritism (the extent to which the teacher treats certain students more favorably than others); Difficulty (The extent to which students find difficulty with the work of the class); Apathy (the extent to which students feel no affinity with the class activities); Democracy (the extent to which students share equality in decision-making related to the class); Cliqueness (the extent to which students refuse to mix with the rest of the class); Satisfaction (the extent of enjoyment of class work); Disorganization (the extent to which classroom activities are confusing and poorly organized); and Competitiveness (emphasis on students competing with each other).

A more current tool is the Inventory Classroom Environment (ICE) (Sinclair & Fraiser, 2002) for elementary and middle school students and including 5 dimensions, some of which parallel the CES dimensions: Cooperation (e.g.: I work well with other students in class), teacher support (e.g.: My teacher wants me to do well in class), task orientation (e.g.: I pay attention during

class), and involvement (e.g.: I answer questions during class). Another variable included in this tool addresses equity (e.g.: My teacher is fair to all the students in class).

Teachers are known to have a central role in establishing positive classroom climate (Hopson, & Lawson, 2011; Zullig, Koopman, Patton, & Ubbes, 2010). Teacher's teaching styles has a significant impact on the classroom climate. Peters (2013) posit that classroom climate is a social-emotional dimension of learning environments created by teachers through their teaching styles, either teacher-centered or learner-centered. The Teacher-Centered style emphasizes pedagogical aspects and assessment of student behavior, while providing only secondary priority to the personal needs of students. In contrast, the Learner-Centered style stresses student needs and the learning process at the heart of which is the student. The Learner-Centered style offers students *support* and *guidance*, *positive feedback* and *reinforcement*, *empathy*, *mutual trust* and *respect*.

Review of the literature reveals that the line demarcating social-emotional climate and pedagogical climate blurs even further when addressing the classroom unit as compared to the school, as evaluation of classroom climate usually refers to aspects of teaching, such as academic emphasis. Certain researchers even use the term "pedagogical caring" to describe the combination of pedagogical and social-emotional elements. Pedagogical caring is defined as learner-centered teaching that combines caring and concern by teachers with instruction. It is assumed that students that perceive their teacher to be supportive and empathetic will have greater motivation and subsequently do better in school (Wentzel, 1997).

Furthermore, we find fairly significant differences in the methods employed by various researchers in their measurements of classroom climate and school climate. Despite this, we identify several central components that recur in the majority of definitions. These are: positive teacher-student relationships, sense of safety, and student connectedness and engagement to school.

This review also exposes a tendency in recent years to include more and more elements in climate definitions that were not previously considered elements of classroom and school climate. For example, elements of Social Emotional Learning (SEL), a field based on the

premise that learning is best accomplished within the framework of supportive, challenging and significant relationships – are frequently evident in climate definitions and measurement tools (Collaboration for Academic, Social and Emotional Learning- CASEL http://www.casel.org/social-and-emotional-learning /). Other elements that can currently be found within the accepted bounds of climate are characteristics of Character Education (CE) (Schwartz, Betty, & Dachnowicz, 2006), such as caring and empathy, and tolerance of others, and characteristics of Supportive Learning Environment or Positive Behavior frameworks (Dunlap, Sailor, Horner & Sugai, 2009). Furthermore, school bullying (Swearer, Espelage, Vaillancourt, & Hymel, 2010) is included in later school climate definitions, such as those of Bear et al., as well as comprehensive school dissemination of changes, behavioral-social learning, or cooperation with the school community, all of which are common in the Positive Behavior Support approach (PBIS; Bradshaw, Koth, Bevans, Ialongo, & Leaf, 2008). Moreover, climate definitions that include pedagogical aspects, such as that of the NSCC and the NCLC also include elements of Instructional Quality (Carroll, 1963).

The differences in definitions and measurements of climate described in this chapter are also apparent in the following chapters reviewing research findings, and intervention programs.

Chapter 2: Climate as an intervening factor between SES and academic achievements

Main findings

- Stronger SES is associated with higher academic achievements.
- Findings with regards to the link between SES and school/classroom climates are inconsistent, with some research indicating a significant correlation between low SES and poor climate, and others indicating no such correlation.
- The great majority of studies are of a correlational research design. Although these do indicate significant correlations between positive climate and higher academic achievement, they do not provide a basis for deducing influence and causal relations between climate and achievements.
- The classroom context was found as the most significant setting related to academic achievement.

- The very few studies of quasi-experimental design indicated that positive climate *improves* academic outcomes.
- The majority of studies found that positive climate has a positive *compensating* contribution to academic achievements, providing an additive value to achievements beyond the impact of SES.
- Climate has a *moderating* effect on the link between SES and academic achievements. Meaning, classrooms and schools characterized by positive climates successfully "level the playing field" for students of weaker SES, thus narrowing achievement gaps between students and schools of different backgrounds.

This chapter presents a systematic review of scientific evidence regarding the associations between SES, school and classroom climate, and students' academic achievements. Prior to reviewing research on the relationships between these variables, we will describe the bivariate correlations between SES and grades, and between SES and climate.

Associations between SES and academic achievement (achievement gaps and inequality)

Data collected from around the world indicates a correlation between SES and academic achievement, to the detriment of students and schools with lower SES backgrounds. Children living in poverty are at greater risk for school failure due to poor home environment, lack of learning opportunities, poor parental skills, poor quality child-parent interactions, lack of educational resources, lower levels of cognitive developmental stimuli and poor preparation for school prior to kindergarten (Yoshikawa, Aber, & Beardslee, 2012). Moreover, poverty is associated with other risk factors such as single-parent family structures, neighborhood crime, or distress and pressure of parents (Roy & Raver, 2014). These ecological factors can diminish the natural ability of children to learn and perform academically at high levels.

Correlation between SES and school/classroom climates

Previous studies pointed to the relationship between community or neighborhood, and family characteristics and school climate. For example, schools in communities of low SES, or schools

with large student populations from weaker family backgrounds, demonstrated a high degree of victimization to severe violent acts (Khoury-Kassabri et al., 2004). Conversely, children of more affluent families report lower involvement in violence (Stewart, 2003; Gottfredson, Gottfredson, Payne & Gottfredson, 2005). However, another study that examined differences of student climate perceptions on the school level found no correlation between percentage of students receiving free or reduced price lunches and school climate perception (Koth et al., 2008). Studies conducted in Israel also found no correlation between SES and students' school climate perceptions (Berkowitz et al., 2015). This may support the assumption that a lower SES background is not necessarily linked to negative school climate perceptions, and that climate can be improved and strengthened also in schools located in neighborhoods of lower SES backgrounds (Astor, Benbenishty, & Estrada, 2009).

Climate as an intervening factor between SES and academic achievement

A common argument in the scientific literature is that positive school and classroom climates contribute to higher grades, including those of students from lower SES backgrounds. The following presents a systematic review of scientific research findings linking SES, school and classroom climate, and student grades.

Methodology

The search for articles to review was conducted using the science/web of knowledge search engine. The search was restricted to articles that underwent peer review and were published in the past 15 years (2000-2015). The decision to focus on this period is based on the increasing interest in school climate characteristics, schools' added value (Ladd & Walsh, 2002; Schagen & Hutchison, 2003), and in school effectiveness (Teddlie & Reynolds, 2000) evident during these years.

Keywords used for the search were "school climate," "classroom climate," or "classroom emotional climate" and "academic achievement," "academic," or "test scores." This search generated 283 results, of which 31 were selected as relevant.

Some studies focus on variables that we identify as central components of climate, but do not explicitly reference the term "climate". As such we conducted an additional search to pinpoint

research that measured correlations between central climate dimensions and academic performance, as specified in the following:

- **Student-teacher relationships:** Generated 147 results, of which 12 were selected as relevant.
- **School safety:** Generated 25 results, of which 7 were selected as relevant.
- **School/classroom engagement/connectedness:** Generated 532 results, of which 31 were selected as relevant.

Selection process: Only research in English was reviewed. The majority of excluded papers focused on pedagogical rather than social aspects of climate, which are the primary focus of this review. Also excluded were studies investigated measurements similar to academic achievement, such as academic effort, academic self-efficacy, or engagement in learning. Although these variables are related to learnings processes or motivation, and thus may impact grades, they do not constitute actual evidence of academic achievement. Moreover, studies that did examine relevant variables, but without investigating the correlations between them (such as conditions in which climate and schools are dependent on a third variable) were also omitted.

In total, 81 studies were selected. Findings are presented in summary in Table 1. Table 1 is divided into 5 sections, one for each term used on the search: School Climate, Classroom climate, Student- Teacher Relationships, Safety, and Engagement/ Connectedness. The first column displays the *reference*. Next is a *method* column describing the study design (e.g. cross-sectional, longitudinal), the unit/level of analysis (e.g. students, schools), whether the sample is representative or not, and climate and academic achievement measures. Finally, the last column presents the study's *main findings*. The next section discusses findings from Table 1.

Findings

Climate measurements: As with previously mentioned differences (Chapter 1), here also we found significant differences in climate definitions and measurements. These differences reflect the confusion and uncertainty in the world of research regarding "climate" as well as the tangible need to agree on an exhaustive yet exclusive measurement that may be used extensively while facilitating better understanding of what "climate" entails. It is important to

note that, with a few exceptions, most studies examining "climate" included *quality of student-teacher relationships*, as well as various measurements of *emotional support and caring* (primarily from teachers). It seems the dimension of a supportive caring approach from teachers is a core central component of climate, and therefore should be included in future research and practice definitions and measurements of "climate".

Measurement perspective of climate: Despite agreement among many researchers in this field on the importance of evaluating climate based on perspectives of the entire school community, near half the studies (47%) were based solely on student reports, 6% solely on teacher reports, 5% on a combination of student and teacher reports, and only 3% solely on parent reports.

It is interesting that in the early days of climate research, researchers focused mainly on teacher and staff reports (Halpin & Croft, 1963; Hoy & Tarter, 1997). However, over the years there has been an increasing tendency to measure students' perceptions, neglect teacher and additional staff perspectives, and dismiss parent and students' family perspectives. Future research should explore the entire school community's perceptions of school climate. This would allow more successful implementation of school reform programs that develop holistically with the school community (Thappa et al., 2013).

In this review we do note recent publications by the Israel National Authority for Measurement and Evaluation in Education (RAMA) presenting survey data of parent views regarding the education system. This survey includes, among other things, parents' perceptions of the tension between schools' emphasis on academic achievement on the one hand and values on the other hand, school violence, teacher-student relationships, and more (RAMA, 2015). The importance of parents' survey responses on school climate is made clear in light of this systematic literature review, and such surveys should be used more extensively in the future.

Finally, 4% of studies measured climate using external measurements, such as observation (Dotterer, & Lowe, 2011; Hamre, & Pianta, 2005; López, 2012; Reuland, & Mikami, 2014), or climate parameters such as police database reports on school violence (Burdick-Will, 2013). Although climate is usually considered experience-dependent and measured subjectively

(Friedman, 1995), it would be appropriate to further examine the reliability and validity of more objective climate measurements to predict academic achievement.

Unit of analysis: About one third of the studies (33.2%) measured climate and achievement only on the student level. These studies examined whether students who report a more positive school climate reach higher levels of personal academic achievements. An additional 3% only examined school-level measurements. This second group of studies investigated whether schools typified by more positive school climate also demonstrate better school achievements. The fact that one third of the studies focused solely on one measurement level (structural or individual) is surprising as these studies fail to consider the hierarchical-nested nature of school climate. Although each student experiences climate individually, as members of a classroom and school, individual students also share a collective climate experience (such as a general sense of safety or support from teachers). This restricted focus on only one research level is not conducive to examining to what degree academic achievement is rooted in student-level variables (differences within classrooms or schools), classroom-level variables (differences among classrooms), and school-level variables (differences among schools).

Approximately a third of the studies incorporated several measurement levels, as follows: A fifth (18.2%) focused on student and school, a tenth (9%) focused on student and classroom, and only three measured variables on three levels (student and classroom and school/student and school and region). Findings from these very few studies may significantly promote climate improvement interventions, as they point to a specific context with the greatest potential to contribute to academic achievement. Mohammadpour (2013), for example, reports that while student-level and school-level climate variables account for only a fifth of academic variance, classroom-level variables contribute significantly by accounting for over half of the variance in academic achievement among students. This means that student academic achievement may significantly vary from one classroom to another within the same school. This suggests that the majority of climate improvement efforts should be invested in the classroom context by improving student-teacher relations during classes. The scarcity of studies examining the impact of classroom-level variables on academic achievement, and the paucity of studies measuring variables of more than two measurement levels, suggests that additional research is needed to

establish a multifaceted body of knowledge regarding the multi-level climate dimensions related to academic achievement.

Research design and the relationship/ contribution of positive climate to academic achievement: Over one third of the studies (36%) were based on correlational research that does not provide a basis for deducing the influence and causal relations between climate and achievement. Nevertheless, the vast majority of these studies indicated a positive correlation between positive climate and higher academic achievement. An additional 25% were longitudinal studies. Research of such duration, bringing us closer to understanding causal relations, provides a clear message: positive climate (particularly those elements relating to positive teacher-student relationships, such as warmth, acceptance and teacher support) constitutes a positive contribution to higher academic achievement. Nevertheless, four studies did indicate reciprocal/two-way relations between climate and academic achievement. For example, it was found that students reporting a high measure of support from teachers early in the year achieved better at the end of the year, and conversely, students with higher performance early in the year reported greater support from teachers at the end of the year (Košir & Tement, 2014). Other longitudinal studies present similar findings regarding a two-way relationship between sense of safety (McCoy, Roy, & Sirkman, 2013) and school engagement and academic achievement (Chase et al., 2014; Motti-Stefanidi & Masten, 2013).

Experimental or quasi-experimental research may clarify directionality of influences of climate and achievement, as these provide control over variable precedence and alternative explanations for variance in academic achievements. Only three studies were of a quasi-experimental research design, and these all found that positive climate, or positive climate aspects, contribute to higher academic achievement (Catalano, Haggerty, Oesterle, Fleming, & Hawkins, 2004; Reuland, M. M., & Mikami, 2014; Rimm-Kaufman, Fan, Chiu & You, 2007). We therefore recommend conducting further experimental research to establish the nature of *impact* positive climate has on academic achievement.

The effect of climate on academic achievements: A large majority of studies (97%) found evidence of impact or correlation between climate and achievement. Over half of the studies

(55%) found that positive climate has a *compensatory* positive contribution to academic achievement, meaning that such climates provide an additive value to academic achievement beyond the negative contribution of poor SES background. It is interesting to note that several studies found this *compensatory* quality of climate is predominantly influential for students from weaker SES backgrounds (Brand et al., 2003). For instance, a study conducted in Israel based on a nationally representative sample reveals that school climate had four times the impact on academic achievement in Arabic-speaking schools as compared to Hebrew-speaking schools (Berkowitz et al., 2015). Such findings indicate that positive climate *compensates* for weaker background, and thus narrows, to some extent, achievement gaps between students from different ethnic and SES backgrounds.

Several studies point to climate as a *mediating* the relationship between SES background and academic achievement. Some of these show that the relationships between SES and student achievement are *mediated* by the nature of the relationship between members of the school community (Hughes & Kwok, 2007; Swanson, Valiente, & Lemery-Chalfant, 2012). Further, other studies indicate that the correlation between climate aspects (teacher-student relations, or violence victimization) and academic achievements is *mediated* by students' engagement in the classroom and school (Benner, Graham, & Mistry, 2008; Borofsky, Kellerman, Baucom, Oliver, & Margolin, 2013; Dotterer & Lowe, 2011; Fall & Roberts, 2012; Iyer, Kochenderfer-Ladd, Eisenberg, & Thompson, 2010; Nakamoto & Schwartz, 2011; Perry, Liu, & Pabian, 2010; Reyes et al., 2012; Upadyaya & Salmela-Aro, 2015; Zimmer-Gembeck, Chipuer, Hanisch, Creed, & McGregor, 2006). These studies indicate that teacher-student relationships and violence victimization are factors that affect student engagement, and consequently academic achievement.

One tenth of the studies found climate to have a *moderating* influence on the relationship between SES background and academic achievement. For example, some found that positive climate decreases the correlation between these two factors, while negative school climate increases it, primarily among student populations of lower SES backgrounds (Berkowitz et al., 2015; Brand et al., 2008; Cheema & Kitsantas, 2015; Crosnoe, Johnson, & Elder, 2004; O'Malley, Voight, Renshaw, & Eklund, 2015), students with learning difficulties (Liew, Chen, & Hughes, 2010), and students with low self-esteem (Berger, Alcalay, Torretti, & Milicic, 2011).

Such findings indicate that classrooms and schools characterized by positive climates successfully "level the playing field" for students of weaker backgrounds, narrowing down achievement gaps between students of different SES.

Finally, one encouraging finding is that no significant correlation between SES and perceptions of school climate was found (Hopson & Lee, 2011; Berkowitz et al., 2015). This means positive classroom and school climate may be established and nurtured also among populations with lower SES backgrounds.

In summary, review findings clearly reveal that the classroom and school are important contexts in and of themselves for predicting academic achievement, even after controlling for SES background. Schools, and particularly classrooms, do matter and may have a profound impact on students' academic achievement, and, therefore, on the social mobility of students of low SES.

Classroom Climate in Preschool

One term that keeps reoccurring in relation to preschool climate is *quality*. This term describes class-level variables that presumably impact child development (Mashburn et al., 2008). Quality is comprised of two dimensions that may be equated to social climate and pedagogical climate. *Emotional support* – a term similar to social climate, including teacher sensitivity, control of students and their managing their conduct, and emotional classroom climate (a vague term referring to the general atmosphere in class). *Educational support* – a term similar to pedagogical climate, including efficiency, perception development, class curriculum, and quality of feedback to students (Domitrovich et al., 2009; Pianta, La Paro, Payne, Cox, & Bradley, 2002).

Our review indicates that the pedagogical elements of the quality *do not* correlate to children academic outcomes (Early et al., 2007). Conversely, teachers' ability to create emotionally supportive *interactions* within a well-organized classroom is far more impactful on academic outcomes (Curby et al., 2009; Williford, Maier, Downer, Pianta, Howes, 2013). Various studies have shown the quality of teacher-student interactions in preschool years is correlated to, even clearly impacts, the development of skills and higher academic outcomes in later years (Burchinal et al., 2008; Grimm, Steele, Burchinal, Mashburn &, Pianta, 2010; Guo, Piasta, Justice, & Kaderavek, 2010; Howes et al., 2008). Similarly to school age level, the quality of

teacher-student interactions in preschool years (a parameter found to be indicative of better outcomes in children) is typified by warmth and sensitivity (Connor et al., 2005; McCartney, Dearing, Taylor, & Bub, 2007), consistent and clear expectations (Emmer & Stough, 2001), and provides students with feedback (Taylor, Pearson, Peterson, & Rodriguez, 2003).

Table 1: Compensating, Mediating, and Moderating Effects of School and Classroom Climate on Academic Achievements

Main author (year)	**Methods**	**Main study findings**
School Climate and Academic Achievements		
Areepattamannil (2014)	Design: Cross-sectional Unit/level of analysis: Student and school Sample: Nationally representative Climate: Student: Disciplinary climate in the classroom, teacher–student relations, attitudes toward school Achievement: PISA scales	**Com:** Positive attitudes toward school and positive perception of classroom environment correlated with significantly higher scores.
Barile (2012)	Design: longitudinal Unit/level of analysis: Student and school Sample: Nationally representative Climate: Student: Teacher-student Relationship Achievement: State achievement test scores	**No Com**: Controlling for sophomore-year math grades, and SES, no significant associations were found between positive climate and achievement by students' senior year.
Berkowitz (2015).	Design: Cross-sectional Unit/level of analysis: Student and school Sample: Nationally representative Climate: Student: Student-teacher relationships, risky peer behavior, school violence (MEITZAV). Achievement: State achievement test scores	**Com**: School climate positively contributes to student achievement beyond their SES status. **Mod**: Achievement gaps between students of different SES in the same school decreased in schools characterized by positive climate.
Brand (2003).	Design: Longitudinal (3 years cohorts) Unit/level of analysis: Student and school Sample: Nationally representative Climate: Student: Inventory of School Climate- Students (ISC-S) Achievement: Self-reported GPA and state standardized test scores	**Com:** The most consistent and powerful predictor of school-level differences in students' performance is the climate dimension of Student Commitment to Academic Achievement**.**
Brand (2008).	Research design: Longitudinal survey with replication. Unit of analysis: School (climate) and student (scores). Sample: Nationally representative Climate: Inventory of School Climate-Teacher (ISC-T), and Inventory of School Climate- Student (ISC-S).	**Com**: School climate significantly contributed to the explanation of disparity in scores between schools. **Mod**: School climate had a disparate impact on the scores of pupils who came from different ethnic backgrounds.

Main author (year)	**Methods**	**Main study findings**
	Achievement: GPA and state achievements test scores.	
Cheema (2014).	Research design: Cross-sectional Unit of analysis: Student Sample: Nationally representative Climate: Student: Students' disturbances and discipline problems. Achievement: PISA scores (2003)	**Com**: An improvement in disciplinary climate in the classroom correlates to an increase in achievements.
Crosnoe (2004).	Design: Longitudinal (panel design) Unit/level of analysis: Student and schools Sample: Nationally representative Climate: Student: Student-teacher-bonding Achievement: Self-reported grades	**Com**: Students bonding with teachers was positively related to later achievement Mod: Hispanic American girls made better grades when they had more positive views of teachers, compared with most boys and whites.
Davis (2006).	Design: One year case study Unit/level of analysis: Student Sample: Non representative	**Com:** One means of improving achievement in schools is to improve the quality of teacher-student relationships.
Elias (2008).	Design: Longitudinal (2 measurements) Unit/level of analysis: Student and schools. Sample: Non representative Climate: Student: Social support social-emotional competence. Achievement: GPA	**Com:** Considerable variance in end-of-year academic outcomes was predicted by perceived teacher support over the course of the year.
Hopson (2011).	Design: Cross-sectional Unit/level of analysis: Student Sample: Non representative Climate: Student: School quality, connection and relationships with adults. Achievement: Self-reported grades	**Com**: Positive perspectives of school climate significantly correlate with higher grades.
Hopson (2014).	Design: Cross- Sectional Unit/level of analysis: Student and school Sample: Non representative Climate: Student: School Success Profile (SSP) Achievement: Self-reported grades	**Com:** Safe and supportive school, home, peer group, and neighborhood environments are associated with positive academic outcomes Students in more racially segregated schools have worse academic outcomes than students in other school Mod**:** Improved school safety, does not increase the likelihood of better grades for students attending segregated schools. Yet, school safety is related to better grades in schools that are less

Main author (year)	**Methods**	**Main study findings**
		segregated.
Hughes (2008).	Design: Longitudinal (3 years) Unit/level of analysis: Student Sample: Non representative Climate: Student: Teacher–student relationship quality Achievement: State mandated test scores	**Med:** The effect of first-grade teacher–student relationship on reading and math achievement 2 years later was completely mediated by Year 2 effortful engagement.
Jia (2009).	Design: Cross-sectional Unit/level of analysis: Student Sample: Non representative Climate: Student: Support from teachers and friends, autonomy in the classroom Achievement: School grades	**Com**: Support from teachers and peers strongly correlate with higher grades.
Košir (2014).	Design: Longitudinal (2 measurements) Unit/level of analysis: Student Sample: Non representative Climate: Student: Teacher Personal Support Achievement:	**Com**: Higher perceptions of teacher support at the beginning of the school year have better achievements at the end of the school year. The reverse direction was also established.
Liew (2010).	Design: Longitudinal (2 years cohorts) Unit/level of analysis: Student Sample: Non representative Climate: Student: Teacher-student relationships Achievement: State mandated test scores	**Mod**: Children with low task accuracy performed just as well as those with high task accuracy if they were paired with a positive and supportive teacher.
McCoy (2013).	Research design: 3 years panel research. Unit of analysis: School Sample: Nationally representative Climate: Student: Safe Respectful Climate; Socio-emotional learning environment; Academic rigor	**Com**: Negative school climate predicted a decline in achievement.
Mohammadpour, (2013).	Design: Cross-sectional Unit/level of analysis: Student , classroom and school Sample: Nationally representative Climate: Student, teacher, principle: TIMSS' questionnaires Achievement: TIMSS achievement test scores	**Com:** An increase in classroom climate scale predicted an increase in the classroom average test scores.
Morin (2014).	Design: Longitudinal Unit/level of analysis: Student and classroom Sample: Nationally representative	**Com:** Classroom level climate significantly predict classroom levels of achievement. **Med**: Classroom climate perceptions influence math self-

Main author (year)	**Methods**	**Main study findings**
	Climate: Student: Motivation, classroom challenge and teacher caring Achievement: State mandated test scores	efficacy which influences math achievement.
O'Malley (2015).	Research design: Cross-sectional Unit of analysis: Student and school Sample: Nationally representative Climate: Student: CHKS school climate questionnaires Achievement: Self-reported GPA	**Com**: Pupils from schools with a more positive climate reported high achievements. **Mod**: A positive school climate moderates the connection between family structure and GPA, particularly for single-parent families or homeless students.
Rimm-Kaufman (2007).	Design: Quasi-experimental longitudinal Unit/level of analysis: Student and Schools Sample: Non representative Climate: Student: Well managed and caring learning environment Achievement: State mandated standardized test scores	**Com:** Students at Responsive Classrooms schools show greater increase in reading and math performance.
Shin (2009).	Research design: Cross-sectional Unit of analysis: Student and school. Sample: Nationally representative Climate: Student: School disciplinary climate, teacher-pupil relations Achievement: PISA test scores (2003)	**Com**: Disciplinary climate contributed significantly to disparity in scores.
Sweetland (2000).	Research design: Cross-sectional Unit of analysis: School Sample: Nationally representative Climate: Teacher: The Organizational Climate Description Questionnaire, Revised Middle (OCDQ-RM) Achievement: State mandated test scores	**Com**: Correlations of low to medium strength between climate and scores.
Wang (2014).	Design: Cross-Sectional Unit/level of analysis: Student and school Sample: Nationally representative Climate: Student: Sense of School as a Community Scale (SSCS) Achievement: GPA	**Com:** An increase in school climate is significantly related to an increase in grades.
Classroom Climate and Academic Achievements		
Allen (2013).	Design: Longitudinal Unit/level of analysis: Student and classroom	**Com:** Positive emotional climate and sensitivity associated with higher achievements.

Main author (year)	**Methods**	**Main study findings**
	Sample: Nationally representative Climate: Observed: The CLASS-S Achievement: State mandated test scores	
Berger (2011).	Design: Cross- Sectional Unit/level of analysis: Student and classroom Sample: Non representative Climate: Student: School Climate Scale (Escala de Clima Social [ECLIS] Achievement: GPA	**Mod**: Self-esteem predicted academic achievements more strongly in classes with poorer climate.
Cheema (2014).	Design: Cross- Sectional Unit/level of analysis: Student and classroom Sample: Nationally representative Climate: Student: Disciplinary Climate Achievement: PISA test scores (2003)	**Com:** Better disciplinary climate associated with higher achievement. **Mod**: Achievements of Black students, followed by, Hispanic and White students, raised as climate improved.
López (2012).	Design: Cross- Sectional Unit/level of analysis: Student and classroom Sample: Nationally representative Climate: Student: Classroom Assessment Scoring System (CLASS) Achievement: Standardized test scores	**Mod**: Emotional warmth was particularly salient for academic achievements students' at risk for school failure.
Reuland (2014).	Design: Semi-experimental. Unit/level of analysis: Student and classroom Sample: Non representative Climate: Observed: classroom victimization Achievement: PALS and SOL test scores	**Com:** Students in low victimization classrooms had higher achievement scores compared to those in high victimization classrooms **Mod:** In high victimization classrooms, the ranking of children at the beginning of the year is more similar to the end of year ranking.
Reyes (2012).	Design: Cross-sectional Unit/level of analysis: Student and classroom Sample: Non representative Climate: Student and classroom observation: The elementary school version of the CLASS. Academic Achievement: GPA	**Med:** Students' engagement mediated the relationship between classroom emotional climate and grades.
Teodorović (2011).	Design: Cross- Sectional Unit/level of analysis: Student , classroom, school Sample: Nationally representative	**Com:** An orderly, disciplined classroom climate positively associated with student achievement.

Main author (year)	**Methods**	**Main study findings**
	Climate: Student: classroom orderly climate; Teacher: order and discipline in school, relationships between school staff, principal's dedication to teacher's professional improvement, principal's availability and appreciation, teachers' support for principal's decisions). Academic Achievement: State mandated test scores.	
Willms (2001).	Design: Cross- Sectional Unit/level of analysis: Student , school, country Sample: Nationally representative (13 countries) Climate: Student: students' disturbances, fights, friendship. Achievement: State mandated test scores	**Com:** Positive classroom climate was one of the most significant factors contributing to better academic achievements.
Student- Teacher Relationships and Academic Achievements		
Chiu (2010).	Design: Cross- Sectional. Unit/level of analysis: Students and school Sample: Nationally representative Climate: Student: Teacher-students' relationship Achievement: Self-reported grades	**Com:** Students whose perceived relationships with their teacher were 10 percent higher than their respective means, scored significantly higher.
DiLalla (2004).	Design: longitudinal Unit/level of analysis: Student Sample: Non representative Climate: Parent: Behavioral Style Questionnaire [BSQ]; Child Behavior Checklist [CBCL]. Achievement: GPA; The Teacher Report Form (TRF)	**Com:** Children who have dependent or conflictual relationships with their teachers are more likely to receive lower grades. **Med:** Relationships with teachers who are dependent or conflicting **mediate** the relation between gender and school grades.
Dotterer (2011).	Design: Cross-sectional Unit/level of analysis: Student and classroom Sample: Non representative Climate: Student: Positive Social/Emotional Classroom Climate Composite; Classroom Observation System-5th Grade; Instructional Quality Measures- the Classroom Observation System-5th Grade (NICHD ECCRN); Teacher–Student Conflict Measures: Student–Teacher Relationship Scale. Achievement: State mandated test scores	**Med:** The link between classroom context and academic achievements were mediated by engagement.
Fan (2012).	Design: Cross- Sectional Unit/level of analysis: Schools	**Com:** There was a significant relationship between teacher–students' interpersonal relationship and students' academic

Main author (year)	**Methods**	**Main study findings**
	Sample: Non representative Climate: Teacher: Teacher-students' relationship questionnaire Achievement: Test scores	achievements.
Hamre (2005).	Design: longitudinal Unit/level of analysis: Student and classroom Sample: 910 children from NICHD Study of Early Child Care Climate: Teacher: Student-Teacher Relationship Scale (STRS) Achievement: Standardized test score	**Mod:** The main effect for the prevalence of high functional risk on achievement was moderated by the level of emotional support in the first-grade classroom.
Hughes (2007).	Design: Cross-sectional Unit/level of analysis: Student Sample: Non representative Climate: Teacher: Big Five Inventory (BFI); Teacher Student relationship (TRI) Achievement: Test scores	**Med:** Classroom engagement mediates the associations between student-teacher and parent-teacher relatedness and child achievement the following year
Joseph (2013).	Design: Cross- Sectional Unit/level of analysis: Student and classroom Sample: Nationally representative Climate: Observed: The Classroom Learning Assessment Scoring System—Secondary (CLASS-S) Achievement: State mandated test scores	**Com:** Teacher–student interaction predicted of higher student achievement, after controlling for baseline scores, gender, and family poverty status.
Kodzi (2014).	Design: Cross- Sectional Unit/level of analysis: Student, teachers and school. Sample: Nationally representative Climate: Student: Students hurt each other, teacher hurts students, teacher corrects homework Achievement: GPA, state mandated test scores, standardized test scores	**Com:** Having a supportive and caring teacher positively related to academic performance, controlling for other school characteristics.
Roorda (2011).	Design: Meta-analysis. Unit/level of analysis: Studies Sample: 99 studies from 1990 to 2011.	**Com:** The associations between both positive relationships and achievement and negative relationships and achievement were small to medium.
Spilt (2012).	Design: longitudinal	**Com:** Growth patterns of Teacher-Student Relationship

Main author (year)	**Methods**	**Main study findings**
	Unit/level of analysis: Student Sample: Non representative Climate: Teacher: Teacher-student relationship quality: (Network of Relationship -NRI) Achievement: The **WJ-III Tests of Achievement**	Quality predicted gains in academic achievements
Swanson (2012).	Design: Cross- Sectional Unit/level of analysis: Student Sample: Non representative Climate: Teacher and student: Student-teacher relationships Achievement: Grades	**Med**: Student-teacher relationships significantly mediated the relation between cumulative home risk and achievement.
Zimmer-Gembeck (2006).	Design: Cross- Sectional Unit/level of analysis: Student Sample: Non representative Climate: Student: Teacher–student relationships (teacher autonomy support, involvement and structure), peer relationships, fit with the general school environment. Achievement: Self-reported grades	**Com**: Correlations between grades and relationships with teachers' relationships with peers, and engagement were all positive and significant. **Med**: The association between teacher–student relationships and achievement was mediated by students' engagement.
Safety and Academic Achievements		
Burdick-Will (2013).	Design: Longitudinal Unit/level of analysis: Student and school Sample: -- Climate: Student: Consortium on Chicago School Research (CCSR). Achievement: GPA; and PSAE test score	**Com:** High violent crime rates at school lead to a reduction in students' learning. Positive school climate did not moderate the reduction I students' scores.
Glew (2005).	Design: Cross-sectional Unit/level of analysis: Student Sample: Nationally representative Climate: Student: safety at school Achievement: State mandated test scores	**Com:** Victims and bully-victims were more likely to have low achievement than bystanders.
Glew (2008).	Design: Cross- Sectional Unit/level of analysis: School and district Sample: Non representative Climate: Student: Role in school bullying; Surveys: School safety by perceived acceptability of carrying guns. Achievement: GPA	**Com:** Higher grades were associated with decreased odds of bullying involvement

Main author (year)	**Methods**	**Main study findings**
Lacey (2013).	Research design: Cross-sectional Unit of analysis: School Sample: Nationally representative Climate: Student: personal victimization ; Students and teachers: General prevalence of teasing and bullying (PBT) in the school; assessment of the severity of the problem, frequency of pupils suffering teasing based on origin, sexual orientation or external appearance Achievement: Average GPA	**Com**: Percentage of minority pupils in the school, and reports about PTB contributed significantly to explaining the disparity in scores. In schools with a low frequency of bullying and teasing, a high percentage of pupils succeeded on the tests. As the frequency of bullying and teasing increased, fewer pupils in the school succeeded in passing the tests.
Lucio (2012).	Design: Cross- Sectional Unit/level of analysis: Student and school Sample: Nationally representative Climate: Student: school safety, gangs and fighting within the school. Achievement: GPA	**Com**: Sense of safety significantly related to achievements. School safety was uniquely related to GPA, controlling for SES and other background characteristics, and other risk factors for school failure.
Patton (2012).	Design: Cross-sectional Unit/level of analysis: Student Sample: 612 African American male ninth graders Climate: Student: School Success Profile (SSP Achievement: Test scores and grades	**Com:** Feeling safe in the neighborhood was directly linked to being afraid and indirectly linked with grades
Rumberger (2005).	Design: Longitudinal Unit/level of analysis: Student and school Sample: Nationally representative Climate: Student: Proportion of students who report they feel unsafe at school Achievement: State mandated standardized test scores	**Com**: School characteristics account for more of the differences in student learning than student background characteristics, and this is especially true for students attending high-SES schools. Feeling unsafe was significantly and negatively related to achievements.
Engagement/ Connectedness and Academic Achievements		
Abbott-Chapman (2014).	Design: Longitudinal Unit/level of analysis: Student Sample: Nationally representative Climate: Student :ASHFS and SEI questionnaire Achievement: Highest level of education and current occupation of students as adults.	**Com**: The odds of having high level of completed education in adulthood were greater for those with higher childhood school engagement.
Archambault (2013).	Design: Longitudinal Unit/level of analysis: Student	**Com:** A warm teacher–student relationship in first grade predicted fourth grade engagement over the contribution of

Main author (year)	**Methods**	**Main study findings**
	Sample: Provincial representative. Climate: Teachers: Classroom engagement; Teacher Student–Teacher Relationship Inventory. Achievement: Grade point	kindergarten skills and second grade achievement
Basch (2011).	Design: Literature review Unit/level of analysis: Studies	**Med:** Exposure to community violence influences academic failure via two causal pathways: (1) symptoms of depression (2) disruptive behavior. A link between violence exposure and academic difficulty was postulated to be caused by depressive symptoms and by low self-regulation abilities.
Benner (2008).	Design: Cross- Sectional Unit/level of analysis: Student Sample: Non representative Climate: Teacher: students' engagement; Student: self-reported engagement Achievement: GPA	**Com:** Greater school engagement in the beginning of the year were associated with higher grades in the end of the year.
Bonny (2000).	Design: Cross- Sectional. Unit/level of analysis: Student Sample: Nationally representative Climate: Student: SCS (school connectedness score) Achievement: Self-reported grades	**Com:** Higher school connectedness associated with better academic performance.
Borofsky (2013).	Design: Longitudinal (2 time points- .5 years apart) Unit/level of analysis: Student Sample: Non representative Climate: Student: school engagement Achievement: high school GPA	**Med:** School engagement mediated the association between community violence exposure and school GPA.
Bryan (2012).	Design: Cross- Sectional Unit/level of analysis: Student Sample: Nationally representative Climate: Student: attachment to school and to teachers, school commitment, school involvement Achievement: National mandated test scores	**Com:** School bonding significantly predicted academic achievement. Students who did not like school at all had significantly lower academic achievement scores than did students who liked school a great deal.
Catalano (2004).	Design: longitudinal semi-experiment Unit/level of analysis: Student Sample: Non representative	**Study 1- Com:** A measure of school bonding, attachment and commitment to school when children were in 3rd grade had a positive association with academic test scored in 7th grade.

Main author (year)	**Methods**	**Main study findings**
	Climate: Parents, teachers and students: students' connectedness Achievement: Test scores	**Study 2- Com:** Students in the experimental schools had increased academic performance.
Chase (2014).	Design: Longitudinal Unit/level of analysis: Student Sample: Non representative Climate: Student: School connectedness (BEC-SES) Achievement: Self-reported GPA	**Com:** Bidirectional relationships between school engagement and GPA.
Eisenberg (2003).	Design: Cross-sectional Unit/level of analysis: Student Sample: Nationally representative Climate: Student: School connectedness (from Eating Among Teens Survey) Achievement: Self-reported grades	**Com:** Moderate positive correlation between liking school and grades .
Fall (2012).	Design: Longitudinal Unit/level of analysis: Student Sample: Nationally representative Climate: Student: Education Longitudinal Study of 2002–2004 (ELS). Achievement: Test scores and students drop out at 12^{th} grade	**Com:** Academic and behavioral engagement positively influenced students' achievement
Faulkner (2009).	Design: Cross- Sectional Unit/level of analysis: Student Sample: Nationally representative Climate: Student: school connectedness questionnaire Achievement: Self- reported grades	**Com:** School connectedness given its consistent association with academic performance.
Forrest (2013).	Design: Cross- Sectional. Unit/level of analysis: Student and school Sample: Nationally representative Climate: Student; bullying, bullying victimization, peer connectedness, teacher connection, engagement Achievement: GPA and state achievement test score.	**Com:** Low aggression was positively related to GPA ` Low bully-victim was positively related to state test scores.
Galla (2014).	Design: Longitudinal Unit/level of analysis: Student Sample: Non representative	**Com:** High effortful engagement was associated with above average test scores.

Main author (year)	**Methods**	**Main study findings**
	Climate: Teacher: CBQ-VSF questionnaire Achievement: SAT test scores	
Hazel (2012).	Design: Cross-sectional Unit/level of analysis: Student Sample: Non representative Climate: Student :School engagement measurement (SSEM); presence of a safe adult at school; presence of a gay-straight alliance, feeling unsafe or afraid at school Academic Achievement: GPA	**Com**: School engagement is a significant predictor of GPA, and this relationship is strongest in the presence of a gay–straight alliance
Iyer (2010).	Design: Longitudinal Unit/level of analysis: Student Sample: Demographically representative Climate: Teacher: students' independent and enthusiastic participation as indicators of children's school engagement; Student: school avoidance attitudes Achievement: Teachers ratings of students' performance	**Med:** School engagement mediated the link between peer victimization and academic achievement
Ladd (2009).	Design: longitudinal Unit/level of analysis: Student Sample: Non representative Climate: Parents : P-SLAQ; Teachers: T-SLAQ Achievement: State test scores	**Com**: Students with higher level of engagement had attained an average level of achievement that was significantly higher than student with lower level of engagement.
Liem (2011).	Design: Cross-sectional Unit/level of analysis: Student Sample: Non representative Climate: Student: The Motivation and Engagement Scale-High School (MES-HS) Achievement: Wide Range Achievement Test 3	**Med:** School engagement partially mediates the link between same-sex peer relationships and academic performance
McMahon (2011).	Design: Longitudinal Unit/level of analysis: Student Sample: Non representative Climate: Student: Psychological Sense of School Membership Scale; the Comprehensive Assessment of School Environments, Student Satisfaction Survey Academic Achievement: GPA	**Com:** More frequent school inclusion practices significantly predicted higher GPA across time. More school belonging and less aggression were the strongest predictors of higher GPA.
Motti-Stefanidi	Design: Cross- Sectional	**Com:** A decreases in GPA is associated by an increases in

Main author (year)	**Methods**	**Main study findings**
(2014).	Unit/level of analysis: Student Sample: Non representative Climate: School records: Absenteeism; Teachers: behavioral engagement questionnaire Academic achievement: GPA	absenteeism.
Nakamoto (2011).	Design: Cross- Sectional Unit/level of analysis: Student Sample: Non representative Climate: Students: Academically engaged behaviors Achievement: GPA	**Com:** The effect of school engagement on GPA is significant and positive. **Med:** School engagement mediates the association between peer victimization and GPA.
Niehaus (2012).	Design: Longitudinal Unit/level of analysis: Student Sample: Non representative Climate: Student: NELS, Needs-satisfaction scale, Caring adult relationships in school scale. Achievement: GPA	**Com:** The more decline that students perceived in School Support across the year, the lower their GPAs were at the end of the year.
Perry (2010). School	Design: Cross-sectional Unit/level of analysis: Student Sample: Non representative Climate: Student: The Identification With School Questionnaire (IWS), School Engagement Questionnaire (SEQ) Achievement: School records GPA and self-reported GPA	**Med:** The effect of career preparation on grades was mediated by school engagement.
Pustjens (2009).	Design: Longitudinal (6 annual waves) Unit/level of analysis: Student Sample: Nationally representative Climate: Student: school engagement (interest in learning tasks, relationship with teachers, and attitude toward homework). Achievement: Test scores	**Com:** Students who showed less decline in school engagement have higher learning rates in language.
Roorda (2011).	Design: Meta-analysis Unit/level of analysis: Student Sample: 99 studies Climate: Student: school engagement measurement (SSEM), presence of a safe adult at school, presence of a	**Com:** Positive associations between positive Teacher Student relationships and both engagement and achievement, and negative associations between negative relationships and both engagement and achievement were found in the meta-analysis

Main author (year)	**Methods**	**Main study findings**
	GSA at school and feeling unsafe or afraid at school Academic Achievement: GPA	
Sirin (2004).	Design: Cross- Sectional Unit/level of analysis: Student Sample: Non representative Climate: Students: school engagement and sense of belonging, behaviors in school and activities in the classroom. Achievement: School grades	**Com:** There was a positive and significant relationship between academic performance and school engagement.
Upadyaya (2015).	Design: Systematic review Unit/level of analysis: Studies	**Med:** Students with high academic performance typically exhibit high behavioral, emotional and overall schoolwork engagement which, in turn, supports one's future academic achievement. Students' engagement with school mediates the positive influence of classroom context on academic achievement.
Véronneau (2010).	Design: Longitudinal (3 waves) Unit/level of analysis: Student Sample: Non representative Climate: Student: SSRS questionnaire measuring behavioral engagement. Achievement: GPA	**Com:** Peers' school engagement was a significant predictor of a positive change in academic achievements.
Wang (2012).	Design: Longitudinal (3 waves) Unit/level of analysis: student Sample: Nationally representative Climate: Student: behavioral emotional and cognitive school engagement Achievement: GPA scores from school records.	**Com:** Declines in school participation and self-regulated learning were associated with within-person declines in GPA.
Wang (2013).	Design: Longitudinal Unit/level of analysis: Student Sample: Non representative Climate: Student: behavioral, emotional and cognitive engagement. Achievement: GPA	**Com:** Adolescents from the profile groups of Highly Engaged had GPAs notably higher than the GPAs of adolescents in the other groups (Moderately Engaged, Cognitively Disengaged, and Minimally Engaged.

Main author (year)	**Methods**	**Main study findings**
Weiss (2009).	Design: Cross- Sectional Unit/level of analysis: Student Sample: Nationally representative Climate: Student: school engagement through psychological and behavioral connections with the values and aims of the school. Achievement: ELS mathematics assessments.	**Com:** Student engagement is positively related to achievement. **Mod:** The effects of engagement on achievements vary by the size of the 10^{th} grade class size, when the magnitude of engagement's effect is greatest in cohorts of the largest size.

Note: SES: Socioeconomic status;
Com: Compensatory effect; **Mod**: Moderation effect; **Med**: Mediation effect

Chapter 3: Interventions that improve school climate, and their potential impact on academic achievement

Main findings

- No documentation of intervention programs of high scientific standards aimed at addressing "school climate" were found. Despite this, there are many other interventions aimed at improving one aspect or another of climate. These interventions are usually associated with Social Emotional Learning (SEL) or Character Education (CE).
- Positive school climate increases the likelihood of success of other intervention programs, such as SEL, as positive school climate plays a vital role in promoting commitment of staff and students to interventions.
- Although the trend indicates a positive correlation between improved school climate and achievements, the majority of studies did not examine the directionality of this correlation, and therefore deducing whether school climate instigates better grades (or the reverse) is difficult.

The currently approach to school improvement and change processes is grounded in a systematic-ecological theory that recognizes how characteristics of the individual, family, school, and other layers of the environment impact individual learning and behavior (e.g. Benbenishty & Astor, 2005; Bronfenbrenner, 1979). Evidence suggests that systematic, school-wide changes implemented in all school levels produce better outcomes for students (Bryk, Sebring, Allensworth, Luppesco & Easton, 2009; Dary & Pickeral, 2013; Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Felner, et al., 2001; Schapps, 2003).

Oftentimes we review documentation of intervention programs with high scientific standards (i.e. having undergone peer review prior to publication), which are centered on one or more aspects of school climate, such as safety and violence/bullying prevention (Espelage, Gutgsell, & Swearer, 2004; Merrell, Gueldner, Ross, & Isava, 2008), social and emotional learning (Durlak et al., 2011), development of social skills, or relationships in the school (Linares et al, 2005).

However, the lack of empirical evidence supporting recommended intervention strategies aimed at addressing "school climate" as a whole is painfully apparent. This situation may stem from the absence of a clear definition for "climate," without which it is difficult to develop interventions that may then be evaluated for efficacy. Also lacking are studies documenting processes of change in school climate, meaning research demonstrating that climate is a changeable factor. Leading NSCC researchers maintain that climate inherently encompasses social, emotional, ethical, academic and environmental elements of school life. Therefore, climate improvement requires improving the social, emotional and ethical abilities and tendencies of students and adults in school. However, practice leaders and school professionals have no comprehensive intervention program or guidelines to provide direction on how changes in such areas may be implemented, and which are based on the best knowledge available. When such a program is developed, it may serve as the prototype for education professionals to improve their school climate (Cohen et al., 2009). These researchers recommend that the following actions be taken to establish guidelines to facilitate effective evidence-based interventions for climate improvement:

- Support the development of a growing “bank” of case studies written by and/or with school leaders that have successfully implemented significant school climate improvements. This knowledge may serve as a foundation for systematic improvement guidelines detailing recommended school actions for climate improvement.
- Establish a learning support forum with leading experts in the field for schools and principals in the midst of climate changing processes.
- Create a network of field and research professionals committed to measuring and improving school climate to develop “centers of excellence” that others can learn from (for additional information on this, see Cohen et al., 2009; NSCC, CSEE & NCLC, 2008).

This review highlights the need to establish a concrete, clear definition of climate to serve as a foundation for measuring and evaluating school climate and developing climate improvement interventions. Such a definition should not be overly exhaustive and contain only those central areas that may be observed, quantified and measured, and used for gradual and directed improvement. It is also important to develop intervention guidelines based on accurate

monitoring and assessment processes, and to document and evaluate efforts to change school climate.

These recommendations are also supported by the view that positive school climate is considered a necessary means to implementing changes of any kind in schools. The more positive a school's climate is, the more successful the implementation of change, as positive climate generally enhances commitment of staff and students to processes of improvement and change (McEvoy & Welker, 2000). For example, positive climate facilitates the development of youth leadership and engagement (Williams, 2009), promotes social and emotional learning (Durlak et al., 2011), promotes the inclusion of disabled adults and students (Coulston & Smith, 2013), and reduces dropout rates (Dropout prevention: Hammond, Linton, Smink & Drew, 2007).

In summary, we note that the contribution of intervention programs to students' ability to attain better academic achievement is significantly dependent on the quality of program implementation (Durlaket al., 2011; Schapps, 2003). Locally developed programs that are designed to specifically address school needs and executed by the school community demonstrate better outcomes (Marachi, Astor, & Benbenishty, 2013). We therefore recommend a strategy whereby school communities design their own programs, tailor-made to their requirements and social-organizational characteristics, rather than only import external models proved effective elsewhere. Certainly it is the principal, teachers, parents and students of a school who know it best.

These recommendations are in keeping with the "optimal educational climate" model conceptualized and designed by the Israel Education Ministry's Psychological and Counseling Services Department (*SHEFI*). The approach is based on the assumption that each school and kindergarten functions within its own unique context, and therefore no single intervention model or off-the-rack program could possibly suit all education frameworks (Erharad & Brosh, 2008).

We note the recent publication of the *Mosaic* (in Hebrew- *Psifas)* - Outline for Enhancing Psycho-pedagogical Knowledge and its Implementation in Education and Teaching (Israel Ministry of Education, 2014). This program focuses on improving emotional aspects of learning processes, subsequently improving sense of self-efficacy, and finally also ability of students to achieve higher grades. In view of arguments presented in the beginning of this chapter, it is both

interesting and extremely important to assess the impact of this program on student academic achievements, or at least assess changes in climate dimensions after implementing inventions in schools.

Chapter 4: The Israeli Context

- Databases gathered in Israel provide fertile ground to study the influences and correlations between SES, school climate and academic achievements of students.
- Data bases systematically gathered in Israel: the Growth and Efficiency Measures of Schools (in Hebrew, *Meitzav*) tests are conducted each year in a nationally representative sample of school principals, teachers and students. These monitor academic achievements in four core subjects. The tests also include numerous variables measuring perceptions of school climate. Additionally, the Social Deprivation Index (SDI), computed by the Ministry of Education indicates SES of student families, from which school parameters are derived.
- It is recommended that additional research be conducted to promote specific knowledge in the field, establishing a knowledge base that will facilitate school climate and academic outcomes improvement. There is particular need to conduct studies that would allow examining causal influences between SES, school climate and achievement.
- The systematic data collection in Israel establishes the foundation for designing policy and interventions to improve school climate.
- The Psychological and Counseling Services Division (*SHEFI*) offers a numerous intervention programs for improving certain aspects of school climate, the most prominent and extensive being the national program for promoting optimal school climate and violence reduction (IN Hebrew- *ACHAM*). It would be both interesting and worthwhile to provide empirical support for this program, and anchor it in an evaluation study that will evaluate how implementation of the program relates to academic achievements of students in Israel.

Databases gathered in Israel provide an excellent foundation for studying the links and influences between SES, school climate and students' academic achievement.
The importance of school climate has been recognized by the National Authority for Measurement & Evaluation in Education (in Hebrew- *RAMA*). The RAMA is responsible for regularly conducting the School Efficiency and Growth Index (in Hebrew- *Meitzav*) testing in Israel. The MITZAV includes achievement tests designed to examine the degree to which elementary and middle school students meet the requirements of four core subject curriculums: language (Hebrew/Arabic), Mathematics, English, and Science/Technology. Additionally, Meitzav includes social and pedagogical climate surveys; these provide information regarding numerous aspects of social climate and pedagogical processes in school (RAMA, 2015). Questionnaires are handed out each year to a nationally representative sample of principles, teachers and students of elementary and middle schools in Israel. These deal in a wide range of school-related issues, including: interpersonal relations among students, relations between school and parents, sense of safety and security, discipline and conduct, school infrastructure and physical environment, and promotion of healthy lifestyle. Additionally, in 2008, 2010, and 2012 RAMA also conducted a comprehensive violence monitoring survey on a nationally representative sample of 4^{th}-to-11^{th} grade students. The questionnaires examined a wide range of violent and risky behaviors among students.
The ministry of Education computed the Social Deprivation Index (SDI) which indicates the relative personal SES of the students' families based on parental education, periphery neighborhood of residence, income, home country, and immigration from poor countries. It is noteworthy that personal SES data are uncommon in global research, as most studies rely almost completely on school-level statistics (such as percentage of students eligible for reduced price or subsidized lunches), or on student ethnic backgrounds (indicating economic status). Current personal SES data in Israel provides an opportunity to examine gaps between students of different backgrounds studying in the *same* school, and subsequently review school climates that promote equality and advancement of students from weaker SES backgrounds.

This singular database, unprecedented in the world in terms of scope of climate data, and the systematic gathering process, is an important source for investigating school processes that

may influence the relation between students' personal SES, school background, and academic achievement. A first-of-its-kind study was conducted by a group of researchers from academia and RAMA (Berkowitz et al., 2015). This collaboration produced a wide-ranging study on ways in which positive school climate constitutes an intervening factor between SES and academic achievement, and described processes in which positive climate may mediate, mitigate or compensate the negative contribution of SES on achievement, respective of different education stages, and differentiating between Hebrew-speaking and Arabic-speaking students.

Further research should be conducted, based on the rich array of data gathered annually in Israel, in order to sponsor specific knowledge in the field, and to improve school climate and students' academic achievements. Additional study can focus on examining gender differences correlating to climate and achievement, differences of climate contribution to core subject grades, in identifying trends and changes in Israeli school climate over the years, in tracking schools with particularly good climates, and study of their characteristics. Furthermore, the current survey findings indicate a conspicuous lack of research that would provide some foundation for deducing environmental influences tying SES, climate and achievement. These findings also emphasize the need to conduct research based on data gathered at various points in time, thus promoting the understanding of the *impact* school climate has on academic outcomes. One recent study was conducted on the basis of data gathered at different time points in the US; this attempted to review the *causal* relations between school climate, violence and achievements (Benbenishty, Astor, Roziner, & Wrabel, 2015). The Israeli *Meitzav* database provides fertile ground for implementing a similar causal study in Israel as well.

Thankfully, the Israeli case is not merely an excellent example of data collecting and school climate monitoring, but also because the unique monitoring system serves to establish policy and interventions for improving school climate.

Beginning in the '90s, the Education Ministry has continued to invest resources to advance long-term operative goals intended to lead substantive changes in schools, an approach in keeping with the ecological view in which problems, and the effective interventions designed

to resolve them, touch on the entirety of the life areas relevant to students: to their families, education institutions, communities, and society as a whole (Erharad & Brosh, 2008). These goals include setting forth clear policies, continuously enforcing regulations, promoting teaching-learning processes, expanding the range of teaching methods, adjusting study content to various learning communities, nurturing a democratic lifestyle, maintaining physical learning environments, developing life skills, mutual respect, social engagement, and more. One tool developed for implementing this policy was the extended diagnostic Optimal Educational Climate (in Hebrew- *ACHAM*) questionnaire, providing school principals and staff a comprehensive view of the extent to which students believe their school addresses their basic needs, and regarding students risky behaviors (Erharad & Brosh, 2008).

The Psychological and Counseling Services Division (*SHEFI*) offers a range of programs to improve various aspects of school climates, the most prominent and extensive being the National Program for Promoting Optimal School Climate and Violence Reduction. This program was developed and is implemented by SHEFI in collaboration with certain Education Ministry departments, academians, additional ministries, and certain national programs ("City without Violence" and the "National Program for Reducing Excessive Alcohol Consumption"). The SHEFI program aims to promote a sense of belonging, optimal school climate, and significant positive relationships between teachers and students, and to develop a set of "life skills" for students to enhance growth and development (SHEFI, 2015). It would be interesting and important to base the program on evidence, and anchor it to evaluation research that examines how its implementation correlates to academic achievements of Israeli students.

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