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Emily Wolf McMane
(Berkeley Independent
School, Berkeley, CA),
Growing Empathy: An
Exploratory Study on the
Effects of School Gardens on
Children's Social and
Emotional Development

ABSTRACT

The purpose of this research study was to explore the effects of school garden programs on children's social and emotional development, specifically the development of empathy as measured by prosocial behaviors. This exploratory study employed qualitative research methods to interview six children, three parents, and two teachers involved in the Berkeley Independent Study (BIS) garden in Berkeley, California, gathering data regarding the participants' observations and experiences of the garden program.

The findings suggest that there are many aspects of school garden programs that may positively influence children's social and emotional development. The significance of community, attachment, teaching respect for life, encouraging openness, the impact of the natural world, and creating opportunities for mastery were major themes identified and discussed at length by participants from all three sample populations. The adult participants spoke specifically to the impact of the garden activities on the children's social behavior, emotional regulation skills, and capacity for empathy. Additionally, the potential for school garden programs to contribute to better food security among students and their families is significantly linked to overall wellness, including mental health stability in individuals.

GROWING EMPATHY:
AN EXPLORATORY STUDY ON THE EFFECTS OF SCHOOL GARDENS ON
CHILDREN'S SOCIAL AND EMOTIONAL DEVELOPMENT

A project based upon an investigation at Berkeley
Independent Study, Berkeley, California, submitted
in partial fulfillment of the requirements
for the degree of Master of Social Work.

Emily Wolf McMane

Smith College School for Social Work
Northampton, Massachusetts 01063

2012

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CHAPTER I

Introduction

"When the world wearies and society ceases to satisfy, there is always the garden."

-- Minnie Aumonier, poet

The cabbages are ready. Large lime-colored mustard leaves shade the family of proud-headed Brassicas nestled in a blanket of clover and the occasional crimson sprout of amaranth. There are no weeds in this garden, though some plants may have more use than others. All sprouting life here is given recognition. At times, certain plants may ultimately be removed so that others may thrive. The head gardener here gives meaning to this practice when she tells the children collected around her, "All living things have value, just because we may not eat a certain plant in our culture or find it attractive doesn't mean that it's not useful or important to something or someone else." She shows the children how to carefully harvest the leaves of the cabbage, methodically picking one at a time in a clockwise fashion, so as not to harm the plants "core" and allow for growth to continue, yielding several more harvests throughout the winter.

A few boys work together in another bed to clear and mulch a new area for planting. The boys, of varying size and age, work side by side with tools much larger than some small hands can easily maneuver. An older teen bends down to show a younger classmate how to hold the shears in a way that will allow him to move more

easily. On the other side of the garden, two elementary-aged children explore the jalapeno plants from the last of the summer harvest. Upon finding a prize pepper, the largest one yet, one student turns to her classmate and promises, “The next one I find, I’ll be sure to give to you.” The boy smiles as they continue on their scavenger hunt for the spicy green peppers hidden beneath the shiny forest of leaves that surrounds them.

Something is happening for these children amidst the soil and greenery around them. They turn to one another for support, work together on tasks too daunting for one individual to complete, and they gather quickly and excitedly around their teacher to spot a tiny basil plant sprouting against all odds in the cool temperatures of late autumn. Many garden practitioners and participants across the globe will eagerly describe the calming, healing, and often transformative effects of gardening on those who partake in these practices (Rossiter, 2006; Schimmel, 2004; Simson & Strauss, 1998). The testimony is promising, but how does one even begin to explore the various influences that gardens may have on their “subjects”? Could it be possible that just as we are cultivating and nurturing plants to full potential growth, that they are returning the favor and simultaneously cultivating us, in yet another example of nature’s supreme symbiosis?

The study of relationships between plants and people is literally ancient history. The idea that humans benefit from direct and consistent contact with nature is hardly a new idea, and there is historical evidence to suggest that many cultures have revered the healing aspects of human interaction with plants and nature for centuries (Lohr & Relf, 2000). With rapid rates of urbanization, deforestation, and the advancement of technologies that further distance human beings from the natural world the need for study around the effects of this disconnection, as well as the possibility for restorative and more

sustainable interventions among youth, is of growing concern. Blair (2009) writes, “today’s children lack experience with natural ecosystem complexity” (p. 17). According to the US Department of Agriculture (2006), 83% of the US population now lives in metropolitan areas (Blair, 2009). This has significance for the average young person’s basic understanding and experience of nature. And many psychologists and mental health professionals would argue that this lack of experience has detrimental affects for the health and well being of individuals, communities, and society as a whole (Rossiter, 2006; Schimmel, 2004; Simson & Strauss, 1998).

A recent study at the University of Michigan Institute for Social Research suggests that today’s college students are 40% less empathic than their counterparts were 20-30 years ago (Konrath, O’Brien, & Hsing, 2011). In this mixed-method study, students were evaluated with the Interpersonal Reactivity Index. This tool is designed to measure various subscales such as the demonstration of empathic concern for others and the ability to take another’s perspective. Though the data collected is limited in its ability to provide explanation for this dramatic shift in contemporary culture, the researchers do suggest that an increase in the use of technology and social media have most likely contributed to this decline in empathy. Though connection to nature and horticultural practices were not examined directly in relationship to the findings of this study, Konrath (2011) and her colleagues conclude, “Just as we speculate that certain situations lead empathy to decrease, other situations can increase people’s empathy...experimental work finds that empathy is teachable in children and young adults through a variety of methods” (191). It is my hope that my research will reflect the significant potential for

the use of horticultural practices in school garden environments to be considered among such methods.

Though the mental health benefits of exposure to plants and horticultural practices may be widely accepted and understood within certain contexts, it is often necessary to quantify and prove such inherent beliefs in the scientific world. Academic research on the effects of horticultural practices on mental health is still in its infancy. Though there has been a growing body of research on the academic and behavioral benefits of public school garden programs (Blair, 2009; Ozer, 2007; Waliczek, Zajicek, & Bradley, 2001), there remains an absence of studies that specifically focus on the socio-emotional attributes of these projects. My hope is to begin to bridge this gap between anecdotal experience and empirical research regarding the study of people-plant connections by examining the effects of school garden programs on children's mental health. Specifically, I am most interested in the role that horticultural practices may have on encouraging the development of empathy in young people. My research focuses on the impact and influence that school garden programs have (if any) on the socio-emotional development of participants, with special focus paid to the question, "How are school gardens being used to foster and encourage the development of empathy in children?"

This topic is relevant to both social work practice and theory. The implications for increased and continued use of gardening practices as a form of alternative therapy for clients would be of clinical significance and supportive of existing theoretical perspectives regarding the therapeutic use of horticultural methods with a wide variety of mental health consumers (Simson & Strauss, 1998). Further research is needed not only to legitimize the practices of horticultural therapy within a modern context, but to also

observe, record, and further improve the methods used so that these valuable practices may continue (Alexander, North, & Hendren, 1995; Blair, 2009; Ozer, 2007). Research that examines the socio-emotional benefits of school gardens and horticultural therapy will hopefully create more opportunity for economic and institutional support for programs that are often overlooked.

Alternative forms of therapy that implement horticultural techniques may also be more effective with clients who have limited verbal capacities or who are less responsive to traditional talk therapy methods. Horticultural practices have been successfully used with a wide variety of populations and contexts. Whether the objective is recovery, education, rehabilitation or simple exposure to the natural world, the strength and resonance of this treatment modality is evident in the growing popularity of these programs among a diverse array of treatment providers and agencies.

School gardens specifically have the potential to be used as a form of preventative intervention in working with youth that may be more at-risk for developing mental health problems due to socio-economic factors fueled by institutionalized racism. With collaboration and support between educators and school-based mental health professionals, garden programs can be used as catalysts for community development and empowerment, providing food security, skills training, and possibly even income. Community garden projects such as The Prison Garden Project in San Francisco and Detroit Black Community Food Security Network in Detroit, Michigan empower individuals from disadvantaged positions in society to engage in practices that lead to increased levels of self-determinism (Pudup, 2008; White, 2011). In regards to her research with Detroit Black Community Food Security Network, an organization engaged

in urban gardening practices as part of its mission to establish improved access to healthy food for residents, White (2011) asserts, “When members of the community face harsh economic realities, gardening becomes an exercise of political agency and empowerment” (p. 19). Organized garden projects, whether school or community-based, have the potential to act as tools of resistance in the collective effort for social justice, which is undeniably relevant to the field of social work, particularly within the context of providing school-based and community mental health services.

In the following literary review section I will more thoroughly describe existing theories and research regarding the use of horticultural practices in educational settings. Drawing from the basic tenets of horticultural therapy, as well as contemporary theories regarding empathy development and the growing field of humane education, I hope to provide a thorough outline of contemporary research and theory regarding the various applications and influences of school garden programs on children’s social and emotional development. This rapidly growing field is still in the early stages of development. With the intention of promoting the relevancy and importance of school garden programs among educators and mental health workers alike, I will discuss the use of horticultural practices from a developmental and social psychology framework, specifically in regards to the experience and development of empathy. We live in a society today that has largely forgotten the importance of communion with the natural world. It is my great hope that the examination of the garden in its role as teacher, therapist and community organizer will lead to further exploration of how and what we teach to our youth. In the words of writer and poet Robert Brault (2011), “Why try to explain miracles to your kids when you can just have them plant a garden?”

CHAPTER II

Literature Review

To effectively embark on an investigation around the influences of horticultural practices on children's empathy development, I must first turn to the literature in review of these initial concepts. In the process of my review three foundational areas of inquiry emerged and are subsequently addressed in the following paragraphs. 1) What attributes define the therapeutic benefits of horticultural practices? 2) How do children develop empathy and is it possible to strengthen or influence this development? 3) Are there helpful guiding principles of research that can be gleaned from examining the similarities between humane education (i.e. animal assisted learning) and garden education?

My literature review is divided into three subsections of research: each subsection will contain two parts outlining both current theory and research on that specific area of focus. The first subsection will examine current theories and approaches in horticultural therapy (HT) as related to the promotion of healthy socio-emotional development in participants. This section will further explore the theoretical basis of support for horticultural therapy and education as a modality that is useful and appropriate for working with children.

The second subsection will explore the development of empathy in humans from both evolutionary and constructivist perspectives. Theory of Mind (ToM) (Eisenberg, Eggum, & Edwards, 2010; Hoffman, 2000) and the correlation between empathy and moral development (Batson, 2010; Eisenberg et al., 2010) will be discussed as widely accepted theories within empathy development literature and proposed as key concepts relevant to understanding the potential influence of horticultural education on children's empathic development. Current research examining the role of "perspective-taking" abilities and the correlation between empathy and prosocial behavior in young children will be included in this section (Cutting & Dunn, 1999; Eisenberg et al., 2010; Howe, Pit-ten, Brown, & Hadwin, 2008).

The third subsection of the review will include literature that examines the influences of humane education on children's socio-emotional development. In providing a theoretical review of the approaches supported by researchers regarding animal-assisted therapy and education, I hope to specifically draw parallels to similar potential for empathic growth and encouragement in participants of school garden projects (Daly & Suggs, 2010; Thompson & Gullone, 2003).

Horticultural Therapy

Davis defines horticultural therapy (HT) as "a process through which plants and gardening activities are used as vehicles in professionally conducted programs of therapy and rehabilitation" (as cited in Simson & Strauss, 1998, p. 3). Though most school garden programs are not designed with therapeutic intention, the use of horticultural methods with children has a long history of success in teaching basic life skills of patience, self-

discipline, and mastery-control (Montessori, 1964; Schimmel, 2004). The theory behind integrating horticultural methods into therapy is that the process of working cooperatively with plants, animals, and humans in a supportive ecological environment can encourage and teach important developmental skills as well as promote a general sense of health and well-being through stress reduction and increased self-esteem (Simson & Strauss, 1998).

It must be noted that the majority of school garden programs are implemented primarily to encourage academic achievement and healthy food behavior among students. Often, any social and emotional effects that may come from active engagement in horticultural activities are viewed as secondary benefits. However in examining these more qualitative and affective benefits of school garden programs such as increased self-esteem, researchers have begun to cite the inextricable link between children's positive experiences of their learning environment and the effectiveness of school garden programs as teaching tools (Bowker & Tearle, 2007; Hoffman, Trepagnier, Cruz, & Thompson, 2004.). In the Bowker & Tearle study (2007), the researchers interviewed children from 67 schools across 3 countries and found that, "many of the specific examples given...indicated a direct association between the gardening activities, self-esteem, and improved learning" (p. 97). These findings reflect the early foundational principles of school gardening in modern Western culture, dating back to the early 1900s when Maria Montessori (founder of the Montessori educational philosophy) first began to write about the potential of children's gardens to be used "beyond the standard curriculum to help to develop patience, enhance moral education, increase responsibility and improve appreciation for nature and relationship skills" (Bowker & Tearle, 2007, p. 84).

It would be remiss to define most school gardens as professional HT programs. However, the main principles of HT, which maintains that therapeutic effects are derived from engaging in horticultural activities and that the garden itself is an inherently therapeutic environment, would still apply (Stigsdotter & Grahn, 2002). Granted, there will be distinct differences between garden programs with intended therapeutic benefits and programs that view these benefits as supplemental to other objectives. By further examining the ancillary socio-emotional benefits of school garden programs, it is my hope to further the incorporation of more intentionally therapeutic activities into existing school garden curriculum.

There is much potential for the integration of HT within the school garden framework. For instance, empathy is often addressed in HT, specifically in working with individuals who have experienced trauma. Given the widely accepted belief that children benefit developmentally from HT intervention (Rossiter, 2006; Schimmel, 2004; Simson & Strauss, 1998) it seems that examining empathy development in children receiving horticultural education through school garden projects would be an important area for future research.

As previously stated, research regarding the benefits of people-plant relationships and the effectiveness of using horticultural practices as therapeutic intervention is still in a period of infancy which means researchers are approaching the topic from a wide variety of angles and with tools of measurement that are equally varied. For the purposes of this review, I strived to find studies that had focused specifically on school garden projects and some aspect of mental health. Generally the methodologies used by researchers in the field included qualitative, cross-sectional or single subject designs

(Alexander, North, & Hendren, 1995; Schimmel, 2004). The objective of research tended to be descriptive and exploratory. Qualitative research findings supported anecdotal testimony in reporting significant impact on children's mental health including but not limited to: self-esteem, control/mastery, stress relief, increased language skills, including the ability to articulate emotion, and increases in prosocial behavior (Alexander et al., 1995; Rossiter, 2006; Schimmel, 2004; Simon & Strauss, 1998).

Most qualitative studies tended to examine school garden projects in or near large urban areas where sample populations tend to be ethnically, racially, and socio-economically diverse (Alexander et al., 1995; Blair, 2009; Schimmel, 2004). Observation of children in the garden seemed to be the most commonly used term of measurement in these studies, however interviews with children, parents, teachers, garden staff, and school administrators were conducted in some cases as well (Alexander et al., 1995). While the vast majority of research focuses on what the implications of school gardening mean for children involved in these practices, very few studies incorporated the perceptions of the children themselves. Researchers such as Bowker & Tearle (2007) noted the importance of not only incorporating, but also featuring the voice of the youth in their research design.

The unique design of the Bowker & Tearle (2007) study gave unprecedented recognition to the primary experience of the children studied, as measured by self-report. Often observations of children by caretakers and/or teachers serve as primary data in research concerning children, while the self-reported experience of the children themselves is held as secondary, if included at all. While there are developmental factors that complicate the collection of this type of information from minors of varying ages, it

is impossible to deny the importance of incorporating the first hand experience of any population studied, particularly those considered to be more vulnerable and disenfranchised by the dominant culture, as minors often are. The strength of using multiple perspectives in a research design such as the Alexander et al. (2005) study is that researchers may then compare and contrast the accounts of individuals with varying developmental abilities and life experience to complete a more fully developed and holistic understanding of what changes, if any, have transpired from interactions in the garden.

Due to the highly subjective nature of this topic, it has been very difficult to locate quantitative studies that examined the effects of school garden programs on aspects of participants' socio-emotional health. Often quantitative findings proved to be either inconclusive or ineffective in improving specific socio-emotional skill areas (Blair, 2009; Waliczek, Bradley, and Zajicek, 2001). For example, Waliczek et al. (2001) conducted a short-term quantitative study in which a population of school children from several districts were given a pre- and post-garden program questionnaire using the Behavior Assessment System for Children (BASC) to "test" possible correlations between participation in the school garden and attitudes towards school as well as interpersonal relationship skills. A control group was accounted for by a group of children who did not participate in gardening activities throughout the school year. The researchers reported no significant differences between the pre- and post-test results or the control and experimental groups (Waliczek et al., 2001, p. 466). Interestingly, the researchers concluded that the quantitative data in this case was not able to substantiate the positive claims of most qualitative results. These inconclusive results highlight the difficulty in

objectively collecting quantifiable data on a topic that is inherently based on subjective experience. Additionally, one must question the reliability of such a short-term study (roughly six months), the validity of the terms of measurement, as well as the difficulty in isolating the effects of specific influences on a developmental population.

Because horticultural therapy is viewed as a relatively new topic of research, the objectives and methodologies of researchers appear to be scattered and inconsistent. After reviewing the research it is clear there is a need for more empirical data, but the difficulties of developing reliable and valid methodologies remain (Blair, 2009; Ozer, 2011). At this time, qualitative and exploratory methods of research may be the most effective way to identify the multiplicity of diverse factors contributing to the beneficial outcomes of school garden programs.

Empathy Development

Due to the shortage of peer-reviewed research on my topic of interest, I have chosen to incorporate theory and research in the field of empathy development to provide scaffolding and support for my hypothesis that school gardens encourage empathy development in youth. There is a considerable amount of debate within the field as to the exact definition of the term ‘empathy’ (Batson, 2010; Eisenberg et al., 2010; Hoffman, 2000). For the purposes of this literature review I have chosen to adopt Eisenberg et al.’s (2010) definition of empathy as “an affective response directly caused by apprehension or comprehension of another’s emotional experience” (p. 115). In exploring popular theories regarding empathy development in children, there is strong evidence to suggest that the

capacity for empathy in an individual depends on a complex interplay between biological predisposition and learned behavior (Cutting & Dunn, 1999; Eisenberg et al., 2010).

Though there are many valid and varied philosophical frameworks in the field of empathy research, for the purposes of this study, I have chosen to apply Hoffman's Theory of Mind and Batson's altruism hypothesis. I have chosen to use these particular theoretical lenses, not only for their wide recognition in the field, but because both theories give due recognition to the importance of learned behavior and contextual environment in examining empathy development. The capacity for empathy is not fixed biologically or genetically by these accounts, but is rather a constantly evolving "capacity for care" effected by a complex interplay of both internal and external factors (Batson, 2010; Hoffman, 2000).

The term "Theory of Mind" (ToM) is used to describe the ability that a child has to understand and respond to others' perspectives. This developmental perspective of empathy leaves room for encouragement and intervention along the way (Eisenberg et al., 2010; Hoffman, 2000). In research, ToM is often measured through story-telling techniques that ask children to identify certain emotional attributes in the characters of the story (Cutting & Dunn, 1999). In some cases, the researchers also used video cameras to capture and analyze participants' facial expressions throughout the exercise so as to determine the affective nature of empathic response (Cutting & Dunn, 1999; Howe et al., 2008). Validated forms of measurement for empathy based on ToM principles also involve the "false-belief" task in which children are "tested" on their ability to assume another person's point of view (Howe et al., 2008).

Some of the ethical concerns raised in reviewing this research are the possible biases of the researchers and the bias of the tools of measurement. Empathy is a very subjective experience, and though typical forms of measurement often involve some form of self-reporting from children, the results must still be interpreted and analyzed by adults, which adds another lens of subjectivity to the findings. The stories and examples used in most cases by researchers may also be subject to cultural bias. For example, Cutting and Dunn (1999) report that most research on empathy development has been conducted on White middle class populations by White middle class researchers. When Cutting & Dunn intentionally used the same measurements in a study on empathy development of urban preschoolers from diverse and multi-cultural backgrounds, the children studied scored significantly lower than the normative with the same measures used. This may imply that the tools of measurement used are culturally biased and based on White middle class norms of development. It may also give important information as to the role that risk and protective factors play in empathy development.

Current social psychology suggests that there is a strong correlation between empathy development and the internalization of moral values (Eisenberg et al., 2010; Roe, 1980). Batson's (2010) "empathy-altruism" hypothesis, which has been tested through extensive empirical research within the last thirty years, further purports that altruistic behavior is a result of empathic concern for others. Other studies also report positive correlations between empathy and moral development. (Eisenberg et al., 2010; Roe, 1980; Spinrad & Eisenberg, 2009). Measures for increases in moral development range greatly from interviews of subjects to observations of increased prosocial behaviors (Roe, 1980; Spinrad & Eisenberg, 2009).

In one study the researcher, Roe (1980), used an exploratory, quantitative approach and longitudinal design to examine the correlation between high levels of empathy and a high level of internalization of morals later in life in a sample of 42 rural Greek children. The findings determined that there was a high positive correlation between early empathy and subsequent internalization of values. In critically reviewing the study, one must question the validity of both measurements used, specifically on the basis of cultural bias. The generalization of the findings to a wider variety of populations should also be carefully examined given the homogeneity of the sample used.

In another study Solomon and colleagues, (Solomon, Battisich, Watson, Schaps, & Lewis, 2000) used an experimental approach to test the correlations of a school-based empathy-promoting curriculum and prosocial behavior in a research sample of elementary students from diverse backgrounds. The study was conducted in six school districts over a three-year period and showed significant increase in prosocial behaviors among the students enrolled in the program as compared to those in the control group. The findings in this study are backed by similar results from researchers in the field of social psychology (Batson, 2010; Spinrad & Eisenberg, 2009). One ethical implication to consider is whether or not students are given equal access to empathy-building programs initiated by researchers. In applying the theoretical precepts of both ToM and the “empathy-altruism” hypothesis to school garden research it was important to consider the sample population designated for this study.

Though a vast variety of scientific tools have been developed over time to measure empathy in research participants, from self-reported questionnaires to complex video interviews analyzed by experts in the field, our understanding of empathy remains

largely subjective. It is for this reason, as well as time constraints and feasibility, that I have chosen to use both self-reporting as well as observations of parents and staff in collecting data on the effects of school garden programs on children's empathy development.

Humane Education

The general consensus from researchers and theorists on the understanding of empathy development, as explained in the previous section, is that although there are biological predispositions to understanding other's emotions, a significant part of one's capacity to empathize is due to learned behavior (Batson, 2010; Eisenberg et al., 2010; Hoffman, 2000). This theoretical perspective lends itself to support of further research on the effectiveness of school-based efforts to "teach" empathy. School garden programs, as cited by the existing research, offer a myriad of mental health benefits to participants, but the effects on empathy development from these programs have yet to be widely explored (Blair, 2009; Ozer, 2007; Schimmel, 2004). One growing area of research that examines the implications for this type of empathy encouragement among young people is the field of humane education, often referred to as animal-assisted learning. Thompson and Gullone (2003) argue that Western industrialized society is not conducive to the promotion of empathy development in children, and therefore the integration of animal companions and animal-human relationships early in life can have profound effects on children's sense of self-esteem, nurturing capacities, and cooperation, all of which are thought to contribute to empathy.

Examining the research available in the field of humane education may offer considerable insight for the application of horticultural methods on empathy development. Researchers in support of humane education and its positive influence on children's empathic and moral development claim that fostering strong relationships with animals at a young age promotes nurturing behavior, sensitivity, and a sense of respect for all living things. (Ascione, 1996; Thompson & Gullone, 2003). There is evidence to support the belief that encouraging a sense of animal-directed empathy through the process of caring for and bonding with animals will translate to empathy for other humans (Ascione, 1996; Spinrad & Eisenberg, 2009), though some researchers question this correlation (Thompson & Gullone, 2003). There are several core similarities between horticultural education and animal-assisted learning that may indicate similar impacts on children's empathic development. Both horticultural and animal-assisted education methods encourage mindfulness, appreciation of other life forms, and immersion in the natural environment.

“Forget Me Not” farm, located in Santa Rosa, CA implements this very structure and philosophy by “teaching gentleness, empathy, and non-violence to at-risk children and families through gardening and animal care in a safe, non-threatening environment” (Rossiter, 2006, p. 31). This unique therapeutic farm project places emphasis not only on interacting with animals on the farm, but with forming relationships with these animals, and thus strengthening relationships between human participants involved in the maintenance and care of the farm. Forming a bond with a rabbit or caring for a baby chick can encourage important social skills that may serve as a blueprint for future human relationships, especially if the child learning through animal assisted methods has

experienced trauma or neglect (Rossiter, 2006). The incorporation of animals into school garden programs is often very common and cited by many garden educators as an additional way to generate interest and compassion from young gardeners (Montessori, 1964; Rossiter, 2006; Schimmel, 2004). These findings may indicate the need for further study on the potential differences between garden programs with animals and those with only plants.

Current research in the field of humane education appears to employ a combination of qualitative and quantitative methods mostly gathered from interviews and surveys conducted with teachers and other classroom professionals about their observations of children's prosocial behaviors, though some studies included children's self-measurement as well (Ascione, 1996; Daly & Suggs, 2010; Spinrad & Eisenberg, 2009; Thompson & Gullone, 2003). When measuring children's responses to humane education, longitudinal studies reflect increases in children's prosocial behaviors as compared to control groups in experimental designs (Ascione, 1997; Thompson & Gullone, 2003). The limitations of these studies are considerable due to the often homogenous samples surveyed (mostly Caucasian children and teachers). The limits of subjectivity and potential bias in using teacher's observations of children's prosocial behaviors as a marker for empathy development must be taken into consideration as well. Still the results generally reflect highly positive correlations between children's exposure to humane educational programs and empathy development as measured by perspective taking abilities and prosocial behavior (Ascione, 1996; Daly & Suggs, 2010; Thompson & Gullone, 2003) .

According to Ascione (1996) the affective and behavioral components of humane education based programs teach children attentiveness and kindness toward animals, which translates to kindness toward one another. Interestingly, Alice Waters, founder of Edible Schoolyards in Berkeley, CA (a school-based garden education program) has been quoted similarly in saying, “from the garden and the kitchen, and the table, you learn empathy- for each other and for all of creation...” (as cited in “Edible Schoolyard, n.d., p. 2). The similarities in theoretical orientation toward the usefulness of teaching compassion, whether through animal-human or plant-people connections is important to note.

In the San Francisco Bay Area, school gardens have become a way of life. Sunflowers and Swiss chard sprout through the sidewalk cracks of urban playgrounds and local favorites such as artichokes and kale have become standard fare for elementary school children across the bay. The combination of a year-round growing season and progressive, health conscious politics has made the Bay Area a “Super-Mecca” of school garden initiatives. With that said, some programs receive much more funding and notoriety than others. Even within single school districts, the resources and attention dedicated to a garden program may vary significantly.

Within the city of Berkeley, Alice Waters’s Edible Schoolyards has been championed greatly for its impressive design. Martin Luther King Middle School, where the first Edible Schoolyards garden was implemented, is located in North Berkeley and the majority of students who attend there come from the most economically privileged geographic regions of the city. The student body is diverse, as is the city itself, but King Middle arguably has more White, upper middle- class students than any other middle

school in the city. It is also the only garden program in the city with a multiple member garden staff, complete with a garden program chef and cooking facilities. Meanwhile, on the other side of town, Berkeley Independent Study (BIS) harbors a much more modest, yet equally beloved garden site, run by one part-time hourly paid staff member who routinely works over her allotted hours without compensation.

I chose to locate my research at BIS because the school environment reflects in many ways a much more realistic environment for most urban school gardeners. The lack of resources and support for the garden are chronic issues, as is the constant threat of removal. (There has been talk of the city building a \$65,000 baseball field on top of BIS land for years). BIS is located in South Berkeley, a low-income area with higher rates of crime, that poses some risk to the garden (vandalism has been a concern for the garden in the past). These combined stressors of limited resources, issues of safety, and the pervasive threat of removal mirror the daily life experience of many of the students that attend BIS, who often come from underprivileged and marginalized communities. Despite the presence of these stressful environmental factors at BIS, the garden thrives, and in many ways serves as a hopeful reminder that even from the tiniest seed, beauty and bounty may come forth. The suggested transformative power of organized garden projects relies not just on the principles of people-plant connections and the inherently therapeutic nature of immersion in the natural environment itself, but in the possibility of gardens as tools for social change, as well (Pudup, 2008). As Catherine Sneed, founder of The Prison Garden Project in South San Francisco, reports, the act of gardening for the prisoners involved in the horticultural program came to be about much more than vocational training, nutritional education, or even therapy. Sneed writes, “the reason the

prisoners were so enthusiastic about it was because for the first time they were able to do something. They were able to give of themselves, the only thing they had...” (as cited in Pudup, 2008, p. 1234). The vegetables and flowers grown by the prisoners are donated to local food banks and charities in the Bay Area. Through this design the prisoner participants, some of the most disadvantaged and marginalized members of society, are empowered both individually and collectively by the opportunity to act empathically toward others. The garden project itself grew out of a strain of empathy that the founder held for the prisoners she worked with. She saw the garden as an antidote to the pervasive sense of hopelessness that many of the inmates experienced.

Similarly, the BIS garden project, however small and overlooked in the shadow of Berkeley’s star state of the art garden on the other side of town, offers a thread of hope, a seed for change; suggesting to the students and to the community that surrounds them that school gardens are growing much more than sunflowers and Swiss chard, they are growing more thoughtful, empathic human beings. They are growing hopefulness and the opportunity for social change. And, I have been greatly privileged for the opportunity to bear witness and attempt to measure this type of growth. In the following chapter, I will describe the methodology and design of my research study at BIS.

CHAPTER III

Methodology

The purpose of this research study is to explore the effects of school garden programs on children's social and emotional development, specifically the development of empathy as measured by prosocial behaviors. The primary research question is "How are school gardens being used to foster and encourage the development of empathy in children?" Additional queries include the following questions: "What are the general effects of the garden on the children?", "How does participation in the garden program influence social and emotional development among child participants?", and "In what ways do the children and/or adults observe change in the children's behavior in response to the garden program?" From this study, I hope to highlight the many ways that school garden programs can benefit children outside of the traditional academic framework. I hope to draw awareness to the potential of using horticultural techniques to teach empathy and other socio-emotionally based curriculum and to ultimately highlight the importance of maintaining and expanding school garden programs for youth of all ages.

Design

Though most researchers who examine the benefits of school gardens point to the need for more quantifiable data and empirical research to support qualitative findings (Rossiter, 2006; Waliczek et. al, 2001), there is also prevalent need for more qualitative

research which specifically focuses on well-established school garden programs and what benefits they offer (Blair, 2009; Ozer, 2011). Based on the limited number of studies examining my specific area of interest, I decided to conduct an exploratory and descriptive study using qualitative research methods to further investigate the effects of school garden programs on participant's mental health. The study aims to focus specifically on empathy development and prosocial behaviors as measured through observations of students from parents and staff that supervise the children in the garden, as well as self-reports from student participants who take part in the school garden program themselves. Qualitative research methods were chosen for this particular study in the hopes of generating theory and expounding upon the small body of existing research in this growing field. Additionally, as Rubin and Babbie (2008) suggest, "qualitative research is especially appropriate to the study of those topics for which attitudes and behaviors can best be understood within their natural setting." (p. 417).

The study is essentially designed as a case study of one particularly successful and unique school garden program in the San Francisco Bay Area. While the selection of this particular school garden program was somewhat intentional, the particular site was chosen based on accessibility and availability of participants, as well. I utilized non-probability sample gathering techniques to collect data from teachers, parents, and students about their experiences with the school garden program. Research participants were self-selected, meaning they could choose whether or not to participate in the study, which may indicate some level of bias in the sample population. Additionally, the study maintained a cross-sectional design due to the lack of time necessary to utilize a longitudinal approach. The data was collected from January to April 2012. Though

participants were asked to reflect on their own past behaviors and the past behaviors of the children involved in the garden program, the information gathered can only reflect a “snapshot” perspective of those participants interviewed within this relatively short period of time.

Demographic Considerations

In reviewing the existent literature and considering ethical obligations for my proposed research, it was imperative that the demographics of my sample population be diverse. The vast majority of research concerning children’s empathy development has been conducted with highly homogenized populations, usually white, middle class participants. The results are then often generalized and applied to children of all ethnic and racial backgrounds, when the factors that affect social and emotional development may be quite varied and unique for different populations. The need for diverse sampling and culturally-competent research methods is cited by researchers across the field of social work (Rubin & Babbie, 2008). It was for these reasons that my study population was composed of children, parents, and garden staff working at the Berkeley Independent Study (BIS) school garden.

The City of Berkeley has a population of approximately 110,000 and though small in size, it has a very culturally and racially diverse population. According to the 2008 census, the city is 50 % white, with a large Asian population of around 20%, and a declining African-American population of about 10%. Another 10% of individuals surveyed self-identified as Latino or Hispanic. And according to the city’s statistics, about 20% of the city’s population is “foreign born”, half of whom are not citizens and

therefore may be barred significantly from accessing services through the state or city governments. Of course, these statistics do not accurately represent the largely overlooked and under-represented population of undocumented immigrants (mostly Latino) who work, live, and attend schools in the community.

Though the median household income in 2008 was \$56,000, there is clearly a disparity of wealth and poverty among Berkeley residents. Almost 20% of the city's population falls below the poverty line. Residents who live in the "flatlands" of South Berkeley, which is where BIS is located, tend to be low-income African-American, Latino, and/or belong to other ethnic minorities who are physically as well as financially and socially separated as a community from those residents who dwell in the north Berkeley hills.

BIS is comprised of a racially and socio-economically diverse group of K-12 students who are primarily homeschooled and/or pursuing an independent course of study for various reasons. BIS is a publically funded program and enrollment is open to all residents of school age within the city of Berkeley. For the purposes of clarification I will describe the child and adult participants separately in more detail.

Sample

Child participants.

The child participants were comprised of a nonprobability sample of K-8 youth that currently attend BIS and are involved in weekly school garden program activities as part of their school curriculum. All participants were between the ages of 8 and 14 years and held conversational English skills. There were a total of six participants in this group.

Adult participants.

There were a total of five adult participants, which was comprised of three parents and two school staff members. These individuals represented a nonprobability sample of garden staff, teachers, and parents who supervise and work alongside children in the garden. The requirements for eligibility among participants were that they must have direct contact with the children in the garden and be able to comment on observations of children within the garden setting. This population sample excluded garden staff, teachers, and parents that do not supervise and/or work with children in the garden directly. All adult participants had conversational English skills.

Sample Recruitment

As a former garden teacher in the San Francisco Bay Area, I have maintained several contacts with garden practitioners at various school programs throughout the local area. In the fall, I began to email these contacts with the hope of establishing a potential connection for future study and participation in this research (see Appendix A). In my search for a suitable garden program to use as a research site, I became acquainted with the Berkeley Independent Study (BIS) garden program, and was introduced to the head garden teacher who expressed interest in my research concept. After obtaining permission from both the Berkeley Unified School District (BUSD) (see Appendix B) and Human Subjects Review Board at Smith School for Social Work (see Appendix C), I began to recruit adult and child participants for my research. With permission of the BIS director, I recruited participants on school grounds, just outside of the garden. Every effort was made throughout the recruitment process to extend equal opportunity to all students, staff,

and parents for participation in the study. My recruitment practices were adapted to the needs and regulations surrounding the different sample populations used in this study. The recruitment methods used for children and adult participants are described in detail separately in the following paragraphs.

Child participants.

To obtain permission to interview children for research purposes, I was required to first contact the parents of students enrolled at BIS who regularly participate in the school garden program. Many parents volunteer at BIS and/or pick up their children from the school. Due to my weekly commitment as a volunteer in the garden program, as per request of the head garden teacher, I quickly became a familiar presence on school grounds. I introduced myself to the parents of BIS students as both a volunteer of the BIS school garden program and as a graduate student interested in researching the beneficial effects of school gardens on children's social and emotional development. After explaining the group interview process and the parameters of informed consent, I obtained written parental consent from individuals interested in having their child/children participate in the study (see Appendix D). Once consent was obtained, I approached each potential child participant individually to describe the interview process, explain informed consent, and ask for his or her participation in the study. I obtained informed consent forms from each child participant before proceeding to schedule interviews (see Appendix E).

Adult participants.

As a weekly volunteer at the BIS school garden, I had the opportunity to talk with the garden staff and other parent volunteers to promote interest in the study. Parent volunteers and staff members were approached individually regarding their potential participation. The interview process and parameters of informed consent (see Appendix F) were explained in detail and all potential research participants were reminded that their participation in the study was purely voluntary and had no bearing on their child's enrollment or academic record.

Data Collection

I collected descriptive data about the experience of students, staff, and parents involved in the BIS garden program by recording live interviews. The following paragraphs describe the specific methods utilized for each population.

Group interviews with children.

I interviewed child participants in a group format, separating the participants into groups of 3 children accompanied by a familiar adult (teacher, staff member, or parent). The groups were segregated by age to allow for more fluidity and the opportunity to tailor the language of the questions to meet each age group's developmental needs. The group interviews took approximately 30 minutes each. The children were encouraged to answer the questions, "popcorn" style by speaking in random order and/or as they felt inclined. Most participants answered the majority of the questions posed and only a few chose to pass from replying to particular queries. The questions posed to the children during these formal group interviews were intentionally simple, open-ended, and focused on obtaining information about the children's experience of the school garden activities.

The interviews were conducted in groups within the natural environment and in the presence of familiar teachers and garden staff. The questions (see Appendix G) aimed to capture the descriptive experience of gardening for each child participant.

Formal interviews with garden teachers and staff.

I also conducted interviews with the school garden staff, teachers, and parent volunteers within the garden classroom environment. These interviews were conducted individually and in person. These individual interviews ran between 15-30 minutes. The majority of adult participants interviewed answered each question in complete detail and were able to give descriptive examples of their observations. The purpose of interviewing adult participants was to gather any observations and insights that the adults may have regarding the effects of the gardening on the children. Prosocial attitudes, behavior, and development in children are often measured by third party reports and observations in addition to self-reporting (Cutting & Dunn, 1999; Eisenberg et al., 2010). Given the early developmental stages of the child participants interviewed for the study, secondary sources are important to supplement and strengthen the self-reports given by the children themselves. The questions were intended to be open-ended and relatively simple in design, therefore encouraging the adult participants to speak to the aspects of the garden project that they view as most important. The specific questions asked are included in the appendices (See Appendix G).

Question Design and Operational Terms

The inspiration for some of the questions used in the interview process came from a qualitative study that was previously conducted in 1995 by several researchers at Our

Lady of the Lake University in San Antonio, Texas. (Alexander, North, & Hendren, 1995). The study was conducted with teachers, staff, and children who participated in a local school garden program. The methodologies used to gather data about the benefits of the garden program have influenced the formulation of my research design as well, specifically the decision to include multiple perspectives of students, staff, and parents.

As stated previously, the questions were intentionally designed to be open-ended and relatively simple, therefore encouraging the participants interviewed to speak to aspects of the garden experience that are most salient to them. The terms “social and emotional development” were used in interviewing parents and staff. These terms were cited during the formulation phase as considerably at risk for misinterpretation. Emotional and social developments are interrelated concepts, yet they are also distinct areas of research and may be measured quite differently. Since I was asking the participants to speak to their subjective observations of these developmental processes in the youth, it was helpful to employ the use of follow-up questions to better understand how the participants arrived at their own conclusions regarding the influence of garden activities on the children.

I chose not to explicitly define the terms emotional and social development or to give desirable examples of “positive growth” due to the fact that these examples might be leading and/or culturally biased. It was my hope that participants would feel comfortable in defining these terms on an individual and personal basis and would speak in detail to their observations by giving examples.

The study did not ask specifically about different demographic groups of children, nor did the questions outline distinctions between groups of children by gender, race,

socio-economic class or ethnicity. Due to the unstructured, open-ended format of the interviews there was an opportunity for participants to speak about observable disparities in children's behaviors, if any, due to cultural differences. Although considerations, as to the influence of culture, race, and gender on the experience of children involved in garden programs is a well-founded concern in this area of research, this potential contrast is not the objective of my particular study. I was not given permission to collect demographic data on participants involved in the study due to the school district's concern about the protection of confidentiality among participants. As I have previously stated, the sample population interviewed for the purposes of this research is racially, culturally and socio-economically diverse and reflects the demographic make-up of the geographic area where the school is located.

Biases

Due to logistical factors and the methods of research collection used, this study may contain several layers of bias. The case-study design used was implemented with the objective of offering an in-depth description of a "successful" public school garden program. The selection of this particular school garden program was chosen based on a combination of factors, as mentioned previously, some purposive and some based upon availability and nonprobability principles. The structure and design of Berkeley Independent Study (BIS) is atypical and unique in comparison to other public school programs, and the head garden teacher agreed to make the program accessible to this researcher based on a shared interest in the topic and objectives of the study. Thus, the results from this particular study may not necessarily be generalized to other school garden programs.

Participation in the interview process for the purposes of this research was also optional and purely voluntary, which may have resulted in a self-selected group of participants who have positive regard and appreciation for the garden. Additionally, at the request of the head garden teacher, I became a volunteer in the program, thereby immersing myself in the culture of the program and interacting directly with potential research participants on a weekly basis. The relative effects of these factors on the collected data and findings will be discussed more thoroughly in Chapter 5.

Data Analysis

All interviews were digitally recorded with the use of a personal digital assistant (PDA). I analyzed the responses through an “open coding” format by first transcribing the interviews then reviewing the data for recurrent themes. I used inductive reasoning to first begin with observations of patterns in the responses and then create categories based on the material presented. Once the themes had been identified, the concepts were organized by frequency and importance, then further explored within the subcategories created. The objective in the analysis of the data was to identify areas of significance related to children’s social and emotional development, with particular emphasis on themes related to demonstrations of empathic behavior. The results of this analysis will be discussed more thoroughly in the following chapter.

CHAPTER IV

Findings

The purpose of this research study is to explore the effects of school garden programs on children's general social and emotional development, with specific attention on empathy development as measured by observed and self-reported prosocial behaviors. This chapter will outline the findings from this exploratory, qualitative study and evaluate the results in light of the central queries of the research topic. The data collected from "live" interviews with students, parents, and teachers who have direct involvement with the Berkeley Independent Study (BIS) garden program was analyzed using an "open-coding" format, commonly utilized in exploratory and descriptive qualitative studies. Due to the unique and varying perspectives of each sample population interviewed, I have divided the results into two sections: results from child participants and results from adult participants. Overlapping themes, connections, and reflection between the samples will be discussed further in Chapter 5.

Sample Summary

The final number of participants interviewed in each sample population category was as follows: six children and five adults (three parents and two teachers), completing a total *n* of 11. Due to concerns voiced by the Berkeley Unified School District (BUSD) regarding the confidentiality of participants in this study, I was barred from collecting

and/or presenting the specific demographic information of participants. However, as stated previously in Chapter 3, my sample population was racially and socio-economically diverse, and is demographically reflective of the geographic location where the school garden program is based (which is predominantly comprised of minority and immigrant families with lower socio-economic status). Of the six children interviewed, all of them were of mixed race/ethnicity and many were bilingual. About a third of the children interviewed were 2nd generation immigrants. All of the children interviewed spoke English fluently. The majority of the students attending BIS at the time of this research were male; only one out of six of the children interviewed was female.

The three parents interviewed were both racially and ethnically diverse. Though all of the parents interviewed were either fluent or conversational in English, two of the participants were also bilingual. All parent participants were female, which may present as a bias in the findings. Accessibility to fathers who have direct interaction with the children in the garden program was limited due to the lack of male parent volunteers at this particular garden site.

The two teachers interviewed were both female, and also represented a racially/ethnically diverse sample. Access to gender diversity in this sample was limited due to the absence of male teachers involved at this particular school garden program. In future studies it may be beneficial to specifically recruit adult male participants from both parental and educational perspectives in order to more accurately represent gender diversity in the larger population of educators and caregivers that have contact with children in the school garden settings.

Findings of Interviews with Children

The following paragraphs describe the findings collected from interviews with the child participants who have direct experience of the school garden program. The participants, ages 8-14 years of age, varied greatly in terms of developmental level and their responses reflect a wide range of verbal, cognitive, and self-reflection capabilities. The themes gleaned from the group interviews are presented in order of importance, frequency, and relevance to the research question. The words given to each theme were chosen in an effort to simplify and mainstream all three sets of data collected. The words are representative of a concept identified by one or more of the sample populations. However, children often have their own simplified and concise way of describing their experiences and so the themes are supplemented by “child-like” phrases or words in parentheses to link the major theme highlighted to the tone and candor of the children’s collective voice.

Community (making friends).

One of the most predominant themes mentioned and highlighted by every child was the positive association between participation in the garden program and the opportunity to socialize and build relationships with both peers and adults. When asked what his favorite thing about the garden was, one young child stated without hesitation, “Well the goodest thing (about the garden) is that I made a lot of friends.” While children at other schools may have multiple opportunities throughout the day to interact socially, BIS is unique in its independently focused design. As one of the older boys pointed out,

“Independent study is really small, and you don’t get to always spend much time with the other students, like, garden gets you to meet other people.” Another younger student echoed this sentiment, saying, “It’s more social, except for art class, all of the other classes are one-on-one with the teacher. This one you’re planting and having fun.”

Several children credited the plants and garden directly for this positive experience of social engagement. One child, when asked about the plants and insects in the garden simply stated, “They’re friends.” This exemplifies the concept of social engagement and community to include the non-human participants of the garden as well. Among the younger children, this type of humanistic thinking was consistent when asked whether they saw any connections between their interactions with plants and insects and their interactions with people. All three children under the age of ten responded in affirmative terms to this inquiry and appeared to view these different types of relationships as quite comparable, often highlighting the positive social manner with which they attempted to treat all living things. One boy stated, “I be[sic] nice to both, because I’m not trampling the plants and I’m not trampling the people.” While another girl pointed out quite simply, “I treat kids very nice and I treat the plants nice.”

While, for the younger children this almost anthropomorphic conceptualization of other living things seemed self-evident, the older children demonstrated a more complex understanding of the distinctions between their engagement with plants and insects as compared to their engagement with other humans. One older boy, when asked if he saw connections between his interactions with plants and insects in the garden and his interactions with other people, responded by saying the following:

Not really, because bugs we leave them alone and they generally leave us alone. They don't bother us and same thing with plants, we just tend to them. They don't talk back or anything, but humans on the other hand are harder to take care of.... And plants you know, they feed us, but it's very different, you know, humans have the complexity of like, feelings and other things.

While the older children did not necessarily recognize the plants and insects as "friends", all of the children, regardless of age, commented on the use of the garden as a vehicle for social engagement and they consistently brought the content of the conversation back to their relationships with each other, with their teacher, and with the community.

Interestingly, the children not only spoke of the positive social component to their experience of being in the garden and making friends, but three of the participants also spoke directly of occasions when conflict arose and how they were addressed. This additional level of awareness regarding social interaction, whether conflictual or harmonious, illustrates the profound effect that building relationships with other living things can have on children's capacity for human connections. The garden was described as a sort of "practice arena" for other social environments.

The younger children were especially eager to share their experiences of practicing their own social skills. When asked what they learned in the garden, many relevant social skills were named, for example, "listening" and "respect for one another" were among the most commonly expressed skills acquired. As one girl succinctly stated, "No put-downs". Though it could be said that any school-like environment, from the playground to the classroom, serves as an opportunity for children to practice their social skills, one major distinction of the school garden environment is that the children get to practice their social skills with other life forms, such as plants and insects, that may be somewhat more forgiving in the process. The children interviewed spoke of attempting to

maintain respect for the plants, insects, and each other, even when they had felt wronged or maltreated in some way. As one participant pointed out, “Kids are mean sometimes.” There was a general consensus among the younger children that if a student was “mean” or misbehaved in some way, their head teacher would address the conflict and deliver consequences as necessary. Their attachment and trust of their primary adult role model in this setting was very salient in the way they spoke quite confidently of their teacher’s ability to maintain order and safety and model positive social engagement. This emergent theme of attachment and its relevant connection to teaching nurturance and respect for life are discussed further in the following sections.

Attachment (caring and protecting).

Five of the six children interviewed spoke of their connection and attachment to their head garden teacher in some capacity. While the younger children spoke of their teacher as a sort of protector who would intervene as necessary in situations of conflict, the older children were more likely to identify their appreciation of their teacher’s respect for their personal autonomy and the freedom to choose to participate in the weekly gardening activities. One boy stated, “In our case, we have our own free choice because (head garden teacher) doesn’t want us to be struck just like drones... work, work, eat, work.” Another participant agreed, adding, “But it’s like, if we have to go to a class or do something really important we can leave. You know, like, the fact that she (teacher) wants us there, makes us want to stay there, you know, we don’t want to disappoint her or make her unhappy.” In these statements and others the older children interviewed identified their teacher as recognizing and modeling another important social skill of negotiating autonomy and connection within a community setting. For both groups, their

statements demonstrate developmentally appropriate levels of social awareness and attachment to their primary teacher and role model in the garden.

The older children also identified their garden teacher as a liaison to the wider community, and as an advocate for their well-being and hard work. Many of the children interviewed spoke about their exposure through their garden teacher to the local farmer's market that occupies the street where the school garden is located on Tuesday afternoons. As one participant stated, "I've learned about how to support local businesses that promote health." Another student spoke of an incident of vandalism that occurred as a result of the market, and how the school and wider community handled the incident.

Participant #1: "I think, like, we were growing a pumpkin, it's like a little baby that we tended to, then watched it grow, and then finally it just like left, it had to go."

Interviewer: What was that experience like?"

Participant #1: "It's was fun except the fact that our first one, it got destroyed."

Participant #2: "Someone kicked it"

Interviewer: I heard about that.

Participant #3: "It was vandalized by little kids."

Interviewer: How did that feel, when someone you didn't know smashed that pumpkin?

Participant #1: "We spent so long working on it."

Participant #2: "Well, we made signs to protect our garden."

Interviewer: Hmm... to protect the plants that were still growing?

Participant #1: "We still did have a couple incidents, but other than that our pumpkins are still growing."

The students went on to talk about how the head garden teacher had stayed after school during the farmer's market to speak with the vendors about the vandalism that had

occurred. The children expressed their view that their self-advocacy (by making signs) in combination with their teacher's advocacy on behalf of the students within the wider community had led to a decrease in vandalism. The incident, which could have resulted in anger and resentment towards the farmer's market vendors appeared to connect the children more strongly to the wider community and gave them a sense of empowerment, achieved by their willingness to provide protection for the garden.

With two of the oldest children this theme of attachment as expressed by advocacy and a desire to protect the garden was expressed in a conversation around the uncertainty of the garden program's future.

Researcher: Any last thoughts about what you would want people to know of your experiences in the garden, good or bad?

Participant #1: "My message to the city would be don't, don't [sic] make the baseball field."

Participant #2: "Yeah if they do that, we're going to have shift the entire garden over there. But the thing is where they would just be cutting over is where the artichokes is [sic], so we won't lose the pumpkins, which I was really happy that we won't lose the pumpkins. But, the fact that all the noise pollution from over there, because it's going to be a stadium, so it's going to be the noise pollution and then the actual pollution from all the stuff... I don't know how it's actually its going to be, but if it's a baseball field of whatever... I mean and they're not going to even let the public use it, it's just like for hundreds of dollars."

The empowered passion with which these two participants spoke about their desire to protect the garden and advocate for the importance of their community appeared to mirror the actions of their head garden teacher who had clearly spoken to the larger community many times in defense of the garden project and what it offered the students who were so often marginalized by the city council and other local policy makers. This example is perhaps demonstrative therefore not only of their growing sense of confidence

and empowerment, but ultimately their acquisition of important social skills gained through their relationship to their teacher, the garden, and each other.

Both age groups of children spoke clearly of their strong attachment to their head garden teacher and the skills and life lessons she offered them. From the data collected, it appears that the strong bonds between the students and their teacher may have an impact on the children's willingness and capacity to form attachments with the plants and insects that they cared for in the garden. Just as the head garden teacher acts as a protector and advocate for the students in various situations, so do the student's imitate and mirror this form of attachment in their actions towards the plants and insects in the garden. The theme of nurturance and respect for life is discussed in the following section.

Nurturing and respect for living things (being careful, being kind).

Every child interviewed spoke of nurturing and respect for life in some capacity, which was another very prevalent theme throughout the interviews. In the example of the pumpkin, one participant refers to the pumpkin as being "like a little baby", demonstrating a parent-like attachment to the plant that he and the other students had nurtured from seed. The children go on to talk about their efforts to "protect our garden" and keep the plants and insects that live there safe from harm. One younger child who often presented as highly distractible and hyperactive during garden classes stated, "I be really careful with the plants," illustrating his personal effort to practice gentleness.

Four of the children participants consistently spoke of the plants in an anthropomorphic fashion, demonstrating their willingness and tendency to imagine life from the plant's or bug's eye view. Often these efforts at taking another living thing's

perspective directly correlated to an increased level of respect for that living thing. As, one boy stated, “Invasive species should be called plants too out of respect... if you look from the plant’s perspective, they’re just growing, they’re doing their job.” Another child stated, “I think of them (plants) as more peaceful than any other living thing on the planet.” Though the vast majority of students interviewed reported viewing the plants and insects as having a “perspective” similar or comparable to another person, one student countered this trend by stating the following:

I think of them (plants) as living, but of course not like humans or other animals, right, but I guess I just think of them as the only thing they do pretty much is grow. And that’s it... I don’t really think of them in the same way as other animals.

Despite differences in opinion of how the plants and insects should be conceptualized, the overall consensus of the children’s statements indicated a deep recognition of the significance of all things, whether human or otherwise. For instance, though bees and spiders were cited as things they didn’t like about the garden, five participants reported understanding that these insects served a purpose in nature and deserved their respect. These children spoke of the importance and reciprocity in relationship with other living things. For instance, the children are taught to capture snails in small plastic containers rather than killing them. The snails are later delivered to local farmers as food for their chickens. One child demonstrated this connection by stating this:

I think that bees, they always help us by pollinating and making honey and snails- they just want to eat our plants and stuff... We learn that we have to take care of the snails and keep them away from our plants and give them to the farm.

Although, several of the children referred to the snails as “slimy” and understood that their presence was unwanted in the garden, they did not speak of eradicating them or destroying these living creatures, as one might expect. They recognized the purpose that the snails could serve and were dedicated to “preserving the natural order” of things through the mindful practice of removing them one by one from the plants. As the conversations continued, it appeared that snails were one of many species of insects for which many of the students had developed increased compassion and respect, opening themselves to new types of relationships with other living things. The following section highlights the self-reported effects of participation in the garden activities on the children’s receptivity to new experiences.

Openness (trying new things).

All six of the children named “openness” and a willingness to try new things as an outcome from their participation in the garden project. When asked, “what are the good things about the garden?” One of the most commonly mentioned responses was, “You start liking things that you hated.” Several children spoke of drinking tea or trying new foods, particularly vegetables that they had never eaten before garden class, and unanimously, the children agreed that their fear of certain insects, particularly bees and spiders had decreased significantly since working in the garden, as exemplified by the following dialogue.

Participant #1: “My scardieness [sic]... my fear of spiders has gone from 100% to... or from 94 % to 86%,”

Interviewer: Okay so it’s gone down...

Participant #1: And ants, and ants too!

Interviewer: (that's) a significant percentage, though, and why would you say that is?

Participant #1: Mmmm, because you are around them more, like for example if you're afraid of some person, like if I were afraid of Russians for example, not that I am, but then I was never around Russians, but if I then had a Russian neighbor or something, then I would be less afraid."

Participant #2: "My fear of spiders has gone from 1,000,000% to 50%"

Interviewer: Wow! So yours has gone down a lot. Can you say more about your fear and how it's changed?

Participant #2: Now I just leave the spiders alone, and when, before we came to the garden then I just ran away from them....

Interviewer: Yeah... and what's different for you now?

Participant #2: Well, I work around them.

The students identify a key component of experiential learning within this conversation, which is the opportunity for direct first-hand exposure to new experiences. All six of the children spoke about their fondness of the "hands-on" learning that the garden naturally encourages, as illustrated in the following example.

Participant #1: "We have hands-on"

Interviewer: "Hands-on learning?"

Participant #1: "Really hands-on."

Participant #2: "Like dirt on the hands."

Participant #3: "It's better than just a textbook, because you get to experience what you're learning.

They could easily read about spiders or ants in a textbook and learn all about their anatomy and behavior, but the opportunity to have direct and personal, first hand knowledge of these insects was highlighted as a direct cause of their changed perceptions.

As one student so clearly states in the following:

When you do something like work in a garden, it's like you can't learn it out of a textbook, cause the weather is not always going to be the same, and even if it is the same the conditions have infinite possibilities, but I think you can look at it like it's practice for another time, like you may use the same skills, yeah, but you can practice adapting to different situations.

This particular student highlights not only the benefits of experiential learning, but also the increased capacity for “real-life” application. The “skills” this student speaks of gaining are not only the actual horticultural skills being taught, but also the skill of problem solving, as he calls it, “adapting to different situations.” Another student elaborates on this theme, commenting, “You have to have the skills to build your own garden and feed yourself. Because the supermarkets are not always going to be open” Again, connections to empowerment and self-reliance emerge in this statement, leading to another major theme centered on the acquisition and application of life skills.

Competence and confidence (learning new skills).

Competence and confidence in newly acquired skills was a very dominant theme throughout the group interviews. Five of the children spoke of the “things” that they had learned to do as a result of the garden. While the individual skills highlighted varied from student to student, the sense of accomplishment at the sense of mastery was evident and consistent among the participants. When asked, “What do you learn about in the garden?” the majority of the statements made indicated pride in the acquisition of a new skill. The affect and demeanor of the student participants was bright and expansive as they named the tasks and skills they had mastered. Their eyes lit up, their voices indicated excitement and a sense of joy. In the following conversation some of the children interviewed discuss their favorite activities in the garden.

Interviewer: “Hmmm... and why is it your favorite activity to use the shears?”

Participant #2: “It’s my second favorite.”

Interviewer: “And it’s your second favorite. So what is it about the shears?”

Participant #3: “It feels good when you make a clean cut of the grass.”

Interviewer: “Hmmm... So you feel accomplished?”

Participant #1: “I feel like God sometimes, you’re destroying something, but then you’re adding something, creating another thing.”

Participant #2: “And I actually like mulching.”

Interviewer: “You like mulching also, why do you like mulching and weeding?”

Participant #2: “Mmmm... I like to shovel because it gives you a feeling of...that you’re stronger than other people”

Participant #3: “I like planting also.”

Interviewer: “What do you like about planting?”

Participant #3: “Well, of course it’s a good thing to plant something and it’s also fun because you don’t get your hands way too dirty, you just get your hands dirty and it’s not too hard to do.”

As illustrated in the example above, the conversation, which began by discussing favorite activities and highlighted the enjoyment of the activities discussed, quickly led to a discussion of how powerful, strong, and clever the children felt in doing these activities. One child began by stating, “It feels good,” and the others quickly expanded upon this. One child even stated that he felt “god-like” is his ability to create and destroy things. This theme of mastery and confidence gained through experiential learning in the garden setting is very developmentally appropriate given that most of the children interviewed were of latency age, a time at which the opportunity for mastery and accomplishment is important to individual social and emotional development (Simson & Straus, 1998).

Additionally, five out of six of the children spoke about gardening and cooking at home as a result of their acquired skills from participation in the garden program at

school. Only one child interviewed out of the six participants did not comment on feeling a sense of confidence around skill development. However, none of the children offered counter examples of their achievements, for example, times when they felt inadequate or unskilled. Due to the nature of the questions and the fact that the interviews were conducted in peer groups, the children may have been naturally less inclined to speak openly about these types of experiences.

The impact of nature (being outside).

When asked what was special or different about the garden, all six participants commented enthusiastically on the fact that learning in the garden happened in the outdoors, at some point throughout the group interview. This observation is perhaps not surprising given the fact that most children tend to prefer to be outdoors when given the opportunity, though this may be shifting with more recent generations (Louv, 2005). Still for many children recess and other forms of play are associated with being outside, while schoolwork and academics are associated with a more typical indoor classroom environment. The garden classroom exists somewhere in between these modalities of work and play. The BIS garden program particularly employs a combination of structured educational activities, group work, and independent tasks with opportunities for unstructured exploration and play within the natural environment.

While all of the children commented on the natural setting of the garden classroom environment, there seemed to be differences in how the children described their experience of being outside, depending on their age group. Though all of the participants expressed their preference for being outdoors, the three younger children (all

between the ages of 8 and 9 years old) spoke joyfully of how much “fun” they were allowed to have in the outdoor environment of the garden. One participant commented on his experience of the garden by stating, “We get to do stuff, we get to party.” When asked how he thought of the plants and insects in the garden he responded by saying, “They (plants and insects) are really fun to see.” Another younger girl, added, “We get to be out there for a really long time.” While another boy mischievously added, “Yeah, it’s a great excuse to get out of work.” The younger children spoke of the activities such as tag, digging, and even riding bikes that were associated with outdoor play and therefore associated positively with the garden, though to this researcher’s knowledge such activities would only be allowed during break times.

The outdoor environment of the garden classroom does, however, allow for more energetic displays of enthusiasm that are much more developmentally appropriate for elementary school aged children. The opportunity to run, jump, chase, and dig are things that children might do during free play in natural environments; however these activities are often discouraged in classroom environments for safety reasons and many schools, due to budget constraints can no longer provide safe playgrounds for children. As one boy points out, “It’s kind of funny, well it’s kind of weird that my old school has a playground, but this right here we don’t.” BIS is one of many schools in the area that has neither the space nor the resources to provide a play structure for its students. There is a gated baseball and soccer field across the street from the school, but interestingly the students prefer to play in the garden during their unstructured time. In many ways, the garden becomes the playground, an arena for adventure and exploration. With opportunities for unstructured natural play disappearing from schools at a rapid pace

across the nation, and rates of childhood obesity, depression, and attention-deficit disorders on the rise (Louv, 2005), the observations of these young people that simply being outside is “fun” may carry more significance than first meets the eye.

Interestingly, while the younger children spoke excitedly of the amusement and joy that being outside could bring, the three older children (ages 10-14) commented specifically on the “calming” effects of being surrounded by nature in the garden. One boy commented by saying this:

Like if you’re sitting in an office like this one, it’s kind of a square box room, or like in a cubicle with all of those big fluorescent lamps..... then it’s not, not... it doesn’t make you feel as good as if you’re working around trees.

Another participant agreed and added his perspective by stating, “when there are trees around people feel better.”

Though the questions asked by the researcher were aimed at specifically gathering information regarding the participant’s experiences of gardening, the children took this opportunity to speak about their experiences of the natural world in general. In some cases the discussion held philosophical sentiments about the purpose and effects of natural environments on human consciousness. For example in the following excerpts one older boy comments on his understanding of nature’s influence on the human psyche:

Like the chipmunk isn’t thinking about the economy, and the bird isn’t thinking about their retirement fund, so they’re just not thinking about all of that... Yeah, so like the trees are also just growing, so I guess you kind of forget... I guess you, if you’re around something then you start to act more like it, like if you’re around good people or bad people..... and, so the trees are kind of calm and so I guess you start to be like that.

The sentiment apparent in these statements appears to be that nature is peaceful and if we immerse ourselves in nature then we will become peaceful as well. This perspective opens up another area for research and exploration. As previously mentioned, one of the boys interviewed stated that he felt calmer when around the plants and felt that, “plants were the most peaceful beings on earth.”

Of course, the natural world can be quite unpredictable as well, and five out of six of the children also commented on this aspect of their engagement in the garden. The unpredictability of the weather was mentioned by a couple of students, as one boy said, “One not so good thing about the garden is like... when we don’t have garden, like a rainy day.” Another girl commented on the unpredictability of the other life forms she interacted with, as she reported that one of the “not-so-good” things about the garden was, “Bees! I got stung once on my hand.” Among the children interviewed, most had at least one story or scenario to share in which they had felt caught by surprise by the unpredictable nature of wild and natural things.

Interestingly, these anecdotes were often followed by expressions of their learned reverence for the very things that they had felt frightened of, for instance, the girl who spoke of being stung by a bee went on later in the interview to state, “I think that bees they always help us by pollinating and making honey.” This comment demonstrates her understanding of the bee’s purpose as well as illustrating a deeper understanding of the relationship that exists between species and an ability to hold multiple truths; yes, bees can sting you, but they can also help you. Perhaps the lessons learned from being immersed in unpredictable natural environments contribute uniquely to the children’s social and emotional growth in a way that a more controlled classroom or organized play

environment might not be able to offer. The following section highlights another aspect of this research that was unrelated to the main research question regarding empathy development, yet may be significant to further inquiry and analysis.

Cooking (and eating, too).

One very popular recurrent theme among the children was their enjoyment of the cooking practices utilized as part of the lesson plans in garden class. All six children commented on how much they enjoyed cooking and eating from the bountiful harvest of their small garden. When asked what the good things about the garden were, four out of six children named cooking (and eating) as their first and foremost favorite activity. A chorus of excitement arose in the group interviews, shades of laughter in their voices, as they cried out, “All of the food we get to eat”, “I love cooking!”, “Beets!” As one of the youngest children interviewed succinctly stated, “Well my favorite thing to do in the garden, you know, is to cook. cause you get to cook yummy things.” Nutrition was another aspect of this theme that surfaced throughout the interviews. Five of the participants commented on their acquired knowledge of health and nutrition from the cooking activities. When asked, “What do you learn about in the garden?” three of the children spoke specifically about antioxidants, vitamins, and the importance of an organic diet. One boy responded, “You have to know what vitamins you need, and also it’s good to keep you healthy.” Another participant agreed, while adding, “I learned about how to support local businesses that promote health.” Five of the six children interviewed referred to their gained knowledge of nutrition and indicated that their food behavior had shifted in some way due to this knowledge.

Although this culinary and health related theme, at first glance, did not seem to be directly related to my original research question, upon further analysis there may be some relevant connections to the themes of mastery-competence and community. As one child stated, “(Head garden teacher) taught us how to make collard greens, and now I’m making them at home.” Four of the children spoke of mastering and then sharing the recipes they had learned from the garden class with their friends and relatives at home. Another student stated with joy and amazement, “We get to cook also, not just work on the plants, we actually get to use the plants we worked on as food.” The pride indicated in the proclamation that the students were not only growing and harvesting plants, but they were completing the cycle by rejoicing in their bounty and enjoying the “fruits of their labor” is significant in that it is yet another way that students experience a sense of community and self-empowerment. The following section of this chapter will discuss the findings collected from interviews with parents and teachers involved in the school garden program.

Findings of Interviews with Adults

The adults interviewed for the purposes of this research were the head garden teacher, a BIS art teacher, who instructs children in the garden, and three parent volunteers, who also supervise and observe the children in the garden. Many of the themes gleaned from the children’s group interviews were reinforced and elaborated on by these adult participants. For the purpose of continuity, I have kept as many of the subject heading titles the same or similar as the ones used to describe the data collected from the children.

Community.

Every single adult participant highlighted and spoke at length about their observations of the sense of community that exists within the BIS garden program. When asked, “what are the effects of gardening on the children?” terms such as “teamwork”, “bonding”, and “sense of belonging”, poured out from every participant in response to the opening question. One participant commented this:

I’ve noticed that they really bond, they form deep relationships when they’re out there, they really, um... it becomes clear, I think, that no one owns the garden and that they all own in at the same time.

Another parent agreed with this sentiment:

It brings them together... I’ve seen it work towards putting them in a frame of mind of, um, you know, just being a team and.... helping one another, teaching one another, it’s opened up I think that whole great aspect of school.

From teamwork in planting or mulching a new bed, to sitting together and sharing a meal, having tea, or dividing up the day’s tasks, there is a constant sense of unity and connectedness that is pervasive in the reports of the children’s activities. Much of this is due perhaps to the leadership and facilitation of the curriculum, but many of the tasks in the garden seem to lend themselves inherently to building and strengthening social skills.

Cooperation, sharing, taking turns, listening and patience were among the most commonly highlighted social skills that parents and teachers had observed developing and strengthening among the children. Two of the parents commented specifically on their own children who had struggled with hyper-activity, impulse control, and social skills, stating that the garden program had a positive influence on their children’s behavior. One parent reflected on this:

Especially for my son, feeling like he belongs is really a good thing. He's not a child who's into sports or the other things that may bring peers, you know bonding in a physical kind of way, but working together with kids in the garden has helped him.

Another parent commented on her observations of her own daughter's experiences:

I feel that my daughter especially, she is the one that has benefitted, because she was a little bit like very hyper, I know where her energy now can go.... She's helping, she's more interested, it's not just like the books or the play games that she has, but at least you can see like something real that is gardening is there as learning experience.

Both of the teachers interviewed spoke directly to the integration of teaching "life skills" through experiential activities, using the garden as a vehicle for social and emotional development. Patience, tolerance, and the ability to listen, were specifically highlighted as key components of learning in the garden. One teacher commented on this:

I would say kids become more patient, more tolerant of each other, um.... And we do a lot of group collaborative projects in the garden and they are able to really work together I think a lot more cohesively, and in a lot more tolerant way and accepting of quirks or differences between them.

And all participants, both teachers and parents, commented eagerly on the positive change and growth that they had witnessed in the students since working in the garden.

One participant stated this:

The garden teaches patience because you put a seed in the ground, you come back every twenty minutes and look at it and then, wow, something happens. So they get rewarded for their patience. And that's something that doesn't always happen.

Of course, the important gains in social and emotional development made in the garden are not facilitated by the activities alone, but another very salient and prominent aspect of the garden program's design, as well, which both garden teachers specifically commented

on as the conscious intention to teach the children through modeling. One teacher stated in the following:

They have to learn to work together. We don't have tools for every single person, so they have to share tools. They share knowledge. The ones who are more knowledgeable are more than willing to instruct the younger and vice-versa...and they try to be helpful with each other, and I try to encourage that, and the way I encourage that is to be helpful with them.

The teachers spoke of specifically steering away from "explicit" or more direct lessons about sharing and teamwork, but rather teaching through action. One teacher stated, "The way I see it, generally if you make a big deal out of it kids resist, but if you show them and you let them follow then it naturally kind of happens."

The garden environment lends itself to this type of experiential learning, and current theories of child development suggest that children learn by imitating the adults around them, but this type of teaching is much more effective if the children trust and identify with the adults modeling for them (Davies, 2011). One very interesting aspect of the BIS garden program is that this sense of community and belonging extends beyond just the students who attend the program. One teacher commented on this directly:

One of the things that I think makes our program unique here is that we intentionally reach out to parents. We said, "Yes, come be part of it." They dropped the kids off and they were curious about what we were doing. I include them, like can you plant this, you know, or whatever, and it gives, it heightens the level of appreciation for the child, if they see the parents involved and their parents are liking it, and the parents want to do it, it's an adult thing then, yeah this is cool. And taking that home is the holistic approach that I see, even with education here, you can't separate a child from his family for six hours, give him education, and then send him back home to a place where they don't appreciate it. If you can reach out to the family in any way it's better for the child.

It was clear from the interviews with both parents and staff that the use of relationship, whether between student and teacher, teacher and parent, or child and parent, was a key component of the garden's success. The significance of this theme is further discussed in the following section.

Attachment.

The importance of attachment is exemplified by the testimonials and reports of every parent and teacher interviewed. Every single parent and one of the teachers interviewed specifically attributed many of the changes that they had seen in the children to the head garden teacher's influence. When asked, "What do you attribute these changes to?", one parent commented in the following way:

Number one it has to be the teacher, (head garden teacher) has been a big influence on my children, they are always quoting her and, you know, the handouts that she gives them about vegetables or nutritional information, they keep them and it's valued.

Another parent echoed this sentiment, sharing an example that she had observed with her own daughter:

One time, (head garden teacher) gave a tomato plant to my daughter, you know, she always gives us something, she brought the tomato plant and she planted it in our garden, and she planted it in the wrong place, but still in her heart she planted it, and she felt really sad that her uncle did not realize it was a tomato plant and it's been two years almost and she still remembers, that my uncle did not appreciate that tomato plant, you know, how could he do that, you know that was going to give tomatoes, and it was a gift from my garden teacher!

Value in the gifts that their garden teacher had bestowed upon them, whether life skills or physical objects, was one way that parents described their children's adoration and strong bond to their head garden teacher. But observations of this teacher's patience, gentleness,

positivity, and inclusiveness were listed among the many traits that parents valued in her teaching abilities. Another parent shared this:

When (my son) first started, he didn't know anything at all, you know what to do. He, a lot of times, would try to do what they were doing, but it wasn't necessarily the right way or what he was supposed to be doing, and it was all just really careful and caring redirection, it was never, you know, "That's wrong!" It's always like, "Let's try it this way," and I noticed it was easy for him to feel like he fit in, it helped bring his guard down.

Both teachers commented on the intentionality behind this teaching style. In addition to teaching through modeling preferred behaviors, both teachers spoke of placing emphasis particularly on offering the children praise and reflecting their strengths, even when an aspect of their behavior needed to be corrected. The lasting effects of this method, and the strong attachment built between teacher and student in this way, were evident in all of the parents statements regarding their appreciation for the head garden teacher. Both teachers also spoke of the importance of building meaningful relationships with the children and the parents, and the head garden teacher spoke in detail about utilizing the attachment that many of the children naturally had towards their parents as a bridge in fostering interest and excitement for the garden from the whole family.

One teacher shared a particularly moving example of a situation where she had intentionally reached out to a parent who had encountered mostly negative and disempowering experiences in pursuing an education for her son.

There was one gentleman, he's not here now, but he was here last year and he had emotional difficulties, he had impulse control problems and he was very talkative and he would just talk, just to be talking, and he was one of those jealous kids, too... I watched him want to be part of the group, want to be part of the

activities, a few times I had to separate him and he resented that, he didn't like that, so he struggled on his own. What I'm so proud of is that his mom came to me because we talked about artificial color, artificial flavor and preservatives because he was very hyper. And, I gave her a book about it, so she and I connected and he saw us connecting and it changed his behavior right away and then also he moved on back to the mainstream school, so he was here because he was having emotional problems, he wasn't able to, but he worked with me from November to June and he did very well, he improved in all of the areas and I'm taking some credit for that... I talked to him honestly and openly like an adult, like a human being, not an adult, like a human being. And I was clear with him, I was empathic, I loved him, he was a wonderful child and I think it made a difference... He was one who really benefitted from the meditation. He struggled not to talk for five minutes, it was very hard for him to do, but he was able to do it, and then it was ten minutes. He was very proud of that and I think it taught him a skill of controlling a mechanism inside of him that he wasn't able to get a handle on before, but once he started trying it, he got it. And they got off the petrochemicals, the food additives, his mom changed his diet, too.

The transformative power of healthy attachment is illustrated beautifully in this example. According to this participant, not only was the teacher's relationship with this student and his mother a major influence on the student's development and growth, but specifically incorporating mindfulness and empathic understanding into the garden curriculum is cited by this teacher as a major aspect of the potential effects that engagement in the garden can have on a child. This theme is more richly elaborated upon in the following section.

Empathy and mindfulness: teaching respect for all living things.

One aspect of this theme that every single parent and teacher commented on is the emphasis placed on teaching value and respect for all living things. A very unique component of the BIS garden curriculum and particularly the head teacher's philosophy is that the children are taught to value all life forms, even weeds. In fact, according to the students at BIS, there really is no such thing as a weed. The language of weeds and

weeding is not used at all, instead unwanted plants are referred to as “upstarts”, and the head teacher intentionally incorporates *mindfulness* principles in the daily garden activities. For example, weeding is referred to as meditation. One teacher explained this philosophy:

We don't have any weeds, that's what we do in our society, human worth is human worth, they were resistant to the word weeding, we don't weed, we meditate, key to longevity... We don't have harsh language, I try to keep the timber and the tone and the volume down. They believe, and I believe too, and I told them that, the garden reacts to our emotions. If we come in and we're angry and we're stomping around and we're tearing off leaves, the garden is going to react to that, but if we come in and we're kind, we're loving, we're careful, observant, pleasant the garden responds to that. So they understand that connection between the garden and people.

Every teacher and parent interviewed commented on observable differences in the children's ability to demonstrate mindful and empathic behaviors towards each other and towards other living things. Words like *careful*, *gentle*, and *nurturing* were used to describe the behavior of the children in relationship to the plants and animals in the garden. Interestingly every single adult participant reported an observable increase in these types of empathic and mindful behaviors since participating in the garden program. One parent stated, “Now it's more like they appreciate... and they are careful, when they see a flower, even when they see a plant, they are much more careful, and they are able to teach that even to adults.” Another parent spoke similarly of witnessing her own son's behavior change over time:

It seems that my son is a lot more aware, I don't know if this fits into the question, but he is very aware of um life and, um, um, respectful of life, even, you know, a spider that he maybe would have been afraid of before he started gardening. Now he knows the spider is his friend and he knows this worm that maybe on the sidewalk isn't gross anymore or it should be picked up and put back in the ground... It just brings more of a gentleness about him, like he's in tune. I

mean he's always been a gentle guy, but I've never seen it really carry over, you know, to other life forms before.... It's cool.

Every parent and teacher commented on the children's' increase in taking in multiple perspectives— whether it was a demonstration of kindness or respect for a snail, slug, or spider— every single parent and teacher commented on this increased fascination of and respect for other forms of life among the children since working in the garden.

One of the teachers gave an example of this heightened perspective-taking ability:

I can think of a time when we saw a really special spider and a really interesting web and one of my kids, who is extremely tactile and wants to touch everything, was looking at it and getting closer, and closer, and closer, and I said, "Please don't touch it" and he said, "I know, it's his house." And, this is a kid who never respects peoples' personal space and knew that he shouldn't, you know, catch it and take it home with him, that it wasn't his, that it belonged to something greater.

The adult participants commented on various examples of empathic and mindful behavior they had witnessed taking place among the children in the garden— from the practice of catching and releasing insects, to demonstrating kindness and concern for the plants grown from seed. Many of the behaviors described by parents and teachers were demonstrations of empathy and compassion by the children for species of the natural world, mainly insects and plants; however every single adult participant also spoke of witnessing prosocial behavior between students as well. One parent stated that she felt her daughter had become more helpful and understanding of other children. Another parent commented that she often saw the children comforting one another in cases of injury and also encouraging one another to complete tasks as their teacher had shown them. Even times when their teacher expressed frustration with her students became opportunities for the children to practice their empathic skills.

All five of the adult participants also commented on the children's increased interest in environmental stewardship and activism since becoming involved in the garden. There appeared to be not only demonstration of empathic concern for the plants and insects in the garden around them, as well as for each other, but also for the natural world in general and the health of all species that depend on the planet's well-being. For example, one parent stated that all three of her sons now wanted to volunteer at a local animal shelter. Another parent commented that her son was more inclined to shop at the local farmer's market and encouraging the rest of their family to buy and eat organic produce. One of the teachers commented on this aspect of the children's development by stating this:

I think that it's preparing them to be world class world citizens, and I think, in general, just that giving them that reminder that we are little specks in larger system and order of things, and how they really grow to think that's really neat, I think will really effect the way that they live their adult lives, and ... their sense of ethics, their philosophy.

Though three of the five adult participants stated that there was no way to know if the children's increased empathic and mindful behavior was due solely or in part to their participation in the garden program, all five participants adamantly agreed that the experiential learning modality and the unique opportunities afforded to children in the garden to experience the mystery of life first-hand were invaluable to their education and development. One teacher summarized this sentiment in saying this:

There is a magic associated with growing food that you don't get with math... but there's this mystery of putting a small little pumpkin seed in the ground and eight pumpkins come out. There's a majesty and magic and, umm... mystery that is bigger than them and overwhelms them and they even, maybe not consciously, but even subconsciously, they understand that there is some magical power at work, and I think they respect it, instinctively. It's beaten out of them or it's

coerced out of them later, but when they're young, it's that curiosity, it's the magic of it...

This concept of teaching “our place in the circle of things” and respect for the unknown was mentioned specifically by three of the five participants in connection to the inherently therapeutic qualities of just being outside in nature. The following section further elaborates on the influence of the gardening on the children, specifically the impact of the natural environment, as observed by parents and teachers.

The impact of nature.

Every single parent and teacher interviewed commented on the observable calming effect that participation in the gardening activities appeared to have on the children. Words like *calming*, *centering*, and *grounding* were used to describe this phenomena, as witnessed by the adults supporting these young gardening students in their endeavors. One parent commented, “They seem to be just really happy, really calm.”

Another teacher elaborated on this observation by stating this:

They appear a lot more grounded, they're able to focus a little bit more, and it just seems very calming. So they come out of the garden and I assign them some sort of a task or we start in on a project, they are, I feel like a lot more emotionally and mentally organized than if they just come in after running around playing tag, or even coming off the streets, just like a calmer presence and more of an ability to, I guess, focus on what I'm saying and hear me.

All adult participants attributed the calming effects of the gardening on the children, at least partially, to the impact of simply being outside and interacting with nature. One parent spoke about her observations of nature's influence on the children involved in the gardening program.

I think just working with nature, working with the soil is a literally grounding activity that reminds students, um, you know that it's not all just video games, or even books, that there is something very natural that we can connect to with the earth and with each other and we can look at it as a source of you know, sustenance and health, as well as community.

Parents and teachers, alike, commented that the children appeared to have better focus, a calmer presence, and to appear, in general, more emotionally and mentally organized.

Additionally, all five of the adult participants commented on the children's apparent self-awareness regarding the garden's calming effects. One parent commented this:

One of my sons, I think, at the beginning of this semester, I needed some help in the garden to do some weeding and I was kind of hesitant because I just knew it was a lot of work, and I didn't, you know, have the same experience as they had been having and he said, "Oh, I'll go and do some meditating cause it relaxes me," or something like that, and so he was looking at it in a different way rather than it's just a lot of work. It's something that is productive, but it's also helping him...

While all of the participants spoke of the calming effects they had observed, one teacher commented on the garden's ability to "loosen" and inspire children that may be naturally more withdrawn, saying, "it also helps loosen up some of the kids that are kind of stiff and timid." While only one participant spoke of this equalizing tendency to draw out various emotional states for different types of children, all of the parents and teachers commented on the observed differences in the children immediately after participating in the garden program and the "carry-over" that this experience held in relationship to behavior in the classroom and at home. One teacher observed the following:

The experience of coming out to the garden carries over when they go back into the classroom because they've done something they like to do, they enjoyed it. It was "stress-less" or "stress-free", and then they can take that good feeling of meditation, or whatever it is that we were doing, and take it back into to classroom.

The observation that the activities in the garden help to not only emotionally regulate the children, but that exposure to nature and the garden activities immediately influences their behavior in other realms, as well, was a common theme throughout the interviews with parents and teachers. More than half of the adult participants also commented on the increased levels of open-mindedness they witnessed in the students after exposure in the garden to new and unfamiliar experiences. The following section further explores the theme of receptivity, specifically the garden program's influence on the children's openness and willingness to explore new things.

Openness.

Four of the five adults interviewed commented on observable changes in the children's general receptivity to new experiences and willingness to try things. Whether this meant new foods at home or new lessons at school, there appeared to be less fear and opposition surrounding the undertaking of unfamiliar experiences. One teacher remarked about the changes she had witnessed specifically in some of the older students, "They were very fussy about getting their clothes dirty, their fingernails..... I saw a change in their willingness to go out and get a little dirty." This teacher explained that with time and consistent exposure to the garden these students became more willing to participate, even if it meant getting "a little dirty" in the process. She saw them begin to plan ahead to be in the garden, and with time they began to take ownership of the experience, at times even taking initiative with certain tasks without being prompted by a staff member.

Both teachers and two of the parents commented on the children's change in receptivity to insects that may have been thought of as "scary" or "gross" before garden

class. And, this level of increased comfort often led to a natural curiosity about life in general. One teacher stated this:

I've noticed a natural curiosity in nature and science a lot more. They bring up connections while we're doing art projects, um I've noticed more of an interest in cooking and nutrition. They'll give me little facts.

Both parents and teachers also remarked on the children's expanded culinary tastes and their willingness to try new foods from the garden, particularly vegetables and fruits that may have been previously thought of as "gross". One parent commented, "They are more open now... they put hands in it, time and hands and work, and appreciate, I think they appreciate it more." Another parent spoke of the positive influence, that she felt this increased open-mindedness brought to her son's life,

This positive experience, he's drawing on other things, he's learning and taking ownership of it in that way and then sharing it with other people. It definitely reaches out to other aspects of their life.

This inspiration and eagerness to share newly acquired knowledge and skills was something that all five adult participants commented on observing in the children after participating in the garden. The following section more thoroughly examines the subject of mastery and its relevancy to the original research question.

Confidence and competence.

All five adult participants commented on the confidence-building effects of participation in the garden program. Both teachers and parents spoke of how the garden activities give the children the opportunity to practice and master new skills, allowing the students to feel competent and confident. From learning how to use tools to memorizing and replicating recipes at home, the garden's activities seem to lend themselves naturally

to honing confidence boosting skills related to successful mastery completion. Task persistence and building a tolerance for frustration were highlighted by teachers and parents as essential components of developing confidence and competence, especially for children who may be less likely to succeed in traditional academic settings. One teacher commented on this by stating, “The garden is an equalizer in a lot of ways. It doesn’t have a lot of the status stratus that we have of, um, “cool kids”, “smart kids”, you know, those all go away in the garden.” All three parents attributed the opportunity for teamwork as a influential factor in developing confidence. One parent commented specifically on the head teacher’s influence at helping students to develop a sense of successfulness:

I think the teacher helps them to look positive at things, especially problems or mistakes, even. She’ll correct them really gently and in a positive way, instead of maybe, “Don’t do that,” or “Don’t play with that tool,” you know, it’s “Here’s how we use it properly.

All of the adult participants commented on the excitement and pride that the children demonstrated in mastering new skills, granting the students a sense of usefulness and responsibility to assist each other in mastering the same level of knowledge. The teaching of new skills seems to naturally occur not only between teacher and student, but between student and student, as well. One parent pondered the following:

They’re very eager to talk about what they’ve been doing in gardening and what they’ve learned, and so I think that’s something that they’re, they’re not shy about it, they’re empowered by it, and they even feel comfortable sharing that with their acquaintances and friends.

All three parents reported that their children were very eager to start gardens and to practice recipes at home. For many families this has meant radical change in their diets,

as well. The following section further elaborates on a dominant theme that arose throughout the interviews concerning the improved nutrition and physical health of the students involved in the school garden program.

Wellness: nutrition, health and exercise.

Though my research questions were aimed at gathering information regarding the social and emotional effects of the garden program, four out of five of the adult participants interviewed commented on the garden program's influence on their children's, and in some cases their entire family's, eating habits. It seemed that for many participants it was impossible to completely separate the physical benefits from the socio-emotional aspects of the observations. More recent medical as well as psychological research is beginning to examine the benefits of a more holistic approach to wellness that integrates approaches to physical and mental health (Taylor, Walker, Jones, & Kraft, 2006). All four of the participants who spoke about the garden program's influence on their children's eating habits believed that improvement in nutritional health would contribute to the children's mental health as well. As one teacher stated, "I think that it (garden) will effect their eating habits for the rest of their lives... which will have an effect on their emotional well-being and everything."

All three of the parents interviewed commented on their children's increased interest in eating vegetables and supporting local organic farms. One parent commented, "It's been an education for me, for the whole family, it's changing how we eat." Another parent used the example of her eight year-old son's sudden interest in collard greens after growing and cooking them in garden class. The family now eats collard greens, among

other locally available and affordable varieties of greens as part of their weekly diet. This parent commented saying, “So, they are kind of pulling me in a more healthy direction, I guess, you know of course that’s a good thing, it’s good for them, it’s good for all of us.”

Another parent commented on the unique integration of exercise and nutrition:

I think that if there was not a gardening program for kids it would be really, really bad, because gardening is really therapeutic, it really, really helps the kids, it’s like if you take them to gym, it’s different, but this is like doing everything together, learning and gym and also cooking and appreciating, I think it’s a program, that I wish it can stay very long [sic].

All four participants who spoke about the cooking (and eating) component of the garden program agreed that this aspect of the program was irreplaceable and essential to the children’s learning experience. One teacher summarized this sentiment:

I think it’s an invaluable program, it’s as valuable as art or music or science or math or history if we could just understand that. That it’s a knowledge that we used to have and we’ve lost it, and now we’re struggling to get it back... but really, still what do we all still have in common? We have to eat. So that’s what I’m trying to teach them, that this is the basics if you want to be an astronaut, or an engineer, or a skateboarder, or a rapper, whatever you want, you need a healthy body, you got to eat good food.

Summary

The findings compiled from interviews with children, teachers, and parents involved in the BIS garden program suggest that there are many aspects of school garden programs that may positively influence children’s social and emotional development. The significance of community, attachment, teaching respect for life, encouraging openness, the impact of the natural world, and creating opportunities for mastery are themes presented in this chapter that were identified and discussed at length by participants from all three population samples. The adult participants spoke specifically to the impact of the

garden activities on the children's social behavior, emotional regulation skills, and capacity for empathy. The implications of these findings for future research and social work practice will be examined more fully in the next chapter.

CHAPTER V

Discussion

The purpose of this research study was to examine the effects of school garden programs on children's social and emotional development, with special focus on possible connections between participation in school garden programs and empathy development. This exploratory study employed qualitative research methods to interview children, parents, and teachers involved in the Berkeley Independent School (BIS) garden in Berkeley, California, gathering data regarding the participants' observations and experiences of the garden program. This chapter will compare some of the key findings from this study with current literature on horticultural therapy, empathy development, and humane education. I will also discuss the study's major strengths and limitations. Finally, I will highlight ways in which this research study may influence social work practice and offer recommendations for future research on the therapeutic benefits of school garden programs.

Community and Social Skills Development

One of the key findings from this study revealed the important role that school garden programs can play in the development of community among participants. The "sense of belonging" that is encouraged by the cultivation of community land for shared purposes can have tremendously positive effects on a child's social skill development. Reports from children, parents, and teachers indicate that the emphasis on teamwork and

group activities in the garden can foster and strengthen patience, tolerance, and other prosocial behaviors in children, such as sharing, listening, and taking turns. These findings are in agreement with the theoretical framework and basic tenets of horticultural therapy (HT), which proposes that interactions with plants, animals, and humans in a supportive natural environment can encourage important developmental skills (Simson & Strauss, 1998).

The reports of the research participants also indicate that participation in the garden program strengthens children's ability to communicate and work collaboratively. This stance is supported by several other qualitative case studies that report similar findings related to observed increases in prosocial behaviors among children who participate in school garden programs (Alexander et al., 1995; Rossiter, 2006; Schimmel, 2004). The data analysis revealed that the presence of the garden program is also significant in its encouragement of family involvement, which may potentially strengthen relationships within the larger community, as well. These findings are in agreement with the findings from the Alexander et al. (1995) study in which researchers reported an increase in parent involvement in the school community due to the garden project. Parent involvement in the BIS garden program is a unique factor that appears to impact the strength and influence of the program on the children's development. This component brings to light a somewhat unpredicted but not surprising finding, which is the important role that attachment plays in the efficacy of the garden program, as well.

The Role of Attachment

Attachment is an area of focus in psychodynamic theory and research that examines the significance of the bond between a primary caretaker and child in the early developmental stages of a child's life (Bowlby, 1988). The term attachment, in this case, is used more liberally to describe the strong bond not only between parent and child, but between teacher and student, as well. The children interviewed all spoke of their strong admiration and respect for their head garden teacher. While the younger students reported feeling protected and cared for, the older children spoke of feeling recognized in their autonomy and supported in advocacy by their teacher within the larger community. All of the students' reports indicated the strong influence that this relationship has on their interest in and desire to participate in the garden program. The reports of parents and teachers interviewed further illustrated the strong influence that the head garden teacher has on the children's social and emotional development. Both teachers interviewed spoke about intentionally forming relationships with parents, thus encouraging the children to generalize their attachment and build trusting relationships with the teachers, as well.

Though relationship building is an important aspect of working with children in any forum, it seems that the garden setting may lend itself more naturally to strengthening attachment between adults and children. The garden provides the vehicle for children to practice a balance of connection and autonomy within the daily tasks of maintenance and care required for other life forms to thrive. The suggestion that the garden environment naturally encourages bonding between teachers and students is supported by the Alexander et al. study (1995) that reported improved relationships between student, teachers, and parents due to participation in the garden program. Another qualitative study conducted in Canada examined teachers' experiences of

integrating humane education techniques into the curriculum (Daly & Suggs; 2010).

Several of the teachers surveyed claimed they felt that their students had become “closer” to them as a result of using animal-based learning activities in the classroom. The presence of other life forms in the garden, whether animal, insect, or plant, gives teachers the opportunity to model empathic, prosocial behaviors for students, as seen in the case of the BIS garden. When students are given the experience of being compassionately engaged and mirrored in their actions and emotions by their head garden teacher, they in turn engage compassionately with the world around them.

Though the particular theories examined for the purposes of this study’s literature review did not specifically address the interplay of attachment and empathy development, current research in the field suggests that secure attachment may serve as a foundational component for the development of empathy in an individual (Panfile & Labile, 2012).

Most studies focused mainly on the effects of parent- child attachment and its effects on a child’s empathy development, but an increasing number of researchers are beginning to look at the potential for teaching empathy through school-based curriculum, thus using the student- teacher relationship as a primary template for this type of socio-emotional learning (Schonert-Reichl, Smith, & Hertzman, 2012; Spinrad & Eisenberg, 2009). The findings show that the process of forming strong and healthy relationships between caregivers and children, as well as between teachers and students is an integral component of healthy social and emotional development. Though this type of learning can take many forms, the garden environment appears to serve as a naturally conducive environment for fostering empathy in children. These findings are further explored in the following section.

Teaching Empathy and Mindfulness

All of the adult participants, both parents and teachers, interviewed commented on the positive influence that the garden program had on the children's capacity for empathy and compassion. The parents and teachers were asked specifically to comment on observations of prosocial behaviors in the children as well as provide examples of students' demonstrating the ability to take other perspectives through their actions, including the perspectives of other life forms, such as plants and insects. According to theorists and researchers in the field of empathy development, a child's "perspective-taking ability" is thought to be positively correlated to empathic or prosocial behaviors (Cutting & Dunn, 1999; Hoffman, 2000; Howe et al., 2008). Parents and teachers commented specifically on demonstrations of these types of behaviors towards other life forms, such as nurturing a seedling or respecting a spider web, and they often commented on the increases they had seen in the children's abilities to generalize their respect and care for plants and animals in other locations as well, whether it was removing a worm from the sidewalk so that it would not be stepped on or volunteering at a local animal shelter after school.

Many of parents and teachers expressed the belief that this type of prosocial behavior extended out to the children's relationships with humans in the garden and in other environments as well. Of course the examples given, such as expressing concern for a child who fell or offering to help a parent at home, cannot be attributed solely to participation in the garden program; however, it is significant that the parents and teachers involved in the garden program place importance on the role of the garden's influence on their children's empathic behavior.

The students exemplified their empathic concern for the living things in the garden simply in the way that they spoke about the plants and insects: for instance they referred to pumpkins as “little babies” and reassured the researcher that slugs and weeds, though unwanted in the garden, served a purpose in nature and “are just doing their job.” A key component of the BIS garden curriculum is teaching respect for life and this is intentionally incorporated into the lessons and activities. This basic tenet is an essential aspect of both horticultural therapy (HT) and humane education, and the potential for teaching empathy and respect for life is highlighted in the literature supporting these approaches. Reports from adult participants indicating that prosocial behavior among the children has increased as a result of participation in the garden program are in agreement with findings from several studies examining the effects of horticultural and animal-assisted practices with children (Alexander et al., 1995; Ascione, 1996; Daly & Suggs, 2010; Rossiter, 2006; Schimmel, 2004; Thompson & Gullone, 2003).

Though none of the aforementioned studies specifically examined effects of HT and humane education on teaching mindfulness to children there may be connections between encouraging empathic and mindful practices, specifically around the concept of thoughtfulness. “Mindfulness” was a term used by several teachers and parents throughout the interviews to describe an increased state of awareness and conscious action among the children. The head garden teacher spoke directly about using meditation, a tenet of mindfulness practice, to encourage thoughtfulness among the children. Meditation, in this case, was a moving meditation, often in silence, where the children were encouraged to quietly work in an area of the garden pulling up unwanted plants, thereby encouraging them to be attentive to their actions and to the present

moment. The integration of mindfulness into educational and therapeutic practices has become increasingly popular in the last thirty years and integration of these techniques continues to employ drastically different methods and forms depending on the context and theories used (Fodor & Hooker, 2008). Though I did not explore research regarding the use of mindfulness practice with children and its effects on empathy development, it appears that this may be a relevant area of study to consider in future research.

Creating Opportunities for Mastery

Another key finding of this research highlighted the effectiveness of fostering skill development and mastery through gardening activities and its relevance to the socio-emotional development of the students involved in the program. The children were overzealous throughout the interviews to talk about the skills they had gained through participation in the garden program. Whether it was mastering the use of a pickaxe or memorizing and repeating a favorite recipe at home, the sentiment that these students felt accomplished and confident was clear. Many of the children interviewed for the purposes of this research are currently in a latency or middle childhood period of development. At this stage, a child seeks a sense of competence and confidence through task-oriented learning (Simson & Strauss, 1998). If a child is not able to achieve this sense of mastery during middle childhood, he or she may develop a sense of inadequacy leading to behavioral and emotional difficulties. The garden naturally lends itself to a “hands-on” learning environment where students can attain a sense of competence and build self-confidence through horticultural and culinary activities.

Many of the parents and teachers interviewed spoke specifically about the importance of this experiential aspect of the garden program curriculum and related the opportunity for skill development to the children's socio-emotional development, particularly the importance of building self-confidence. These findings are in agreement with a multitude of other qualitative studies, which highlighted similar themes in participants' accounts about the positive impact of school gardens on children's self-esteem (Alexander et al., 1995; Bowker & Tearle, 2007; Schimmel, 2004). The implications that children may experience a heightened sense of self-esteem as a result of participation in the garden program is at odds with Waliczek et al.'s (2001) study, which employed quantitative methods to gather data through self-report from elementary and middle school students involved in school garden programs. Waliczek and colleagues concluded that there was not enough significant statistical data to claim that the garden program had direct impact on student's self-confidence or interpersonal communication skills. However, the researchers did conclude that students who experienced more individualized time in the garden reported more positive attitudes towards school in general. The unique design of the BIS program allows students to have a much more personalized experience of the garden than might typically be afforded at other school environments. Therefore, the data collected regarding the students' and parents' overwhelming positive experience of the garden program may be due largely to the small class sizes and individualized support that students receive, as well.

Though the primary research regarding empathy development reviewed for the purposes of this study did not incorporate the focus on the role of self-confidence in mediating empathy, the effect, if any, that higher self-esteem and a sense of competence

may have on the development of empathy in children may be a relevant area of focus in future research.

The Impact of the Natural World

One very interesting theme that emerged throughout interviews with parents, children, and teachers was the profound effect that exposure to nature can have on children. Though this examination of the garden's inherently therapeutic qualities was not originally incorporated into the main research hypothesis, the findings regarding the therapeutic aspects of being in nature appear relevant to the general exploration of factors that contribute to healthy social and emotional growth in young people. Richard Louv (2005) writes the following:

Nature offers healing for a child living in a destructive family or neighborhood. It serves as a blank slate upon which a child draws and reinterprets the culture's fantasies. Nature inspires creativity in a child by demanding visualization and the full use of the senses. Given a chance, a child will bring the confusion of the world to the woods, wash it in the creek, turn it over to see what lives on the unseen side of that confusion (p. 7).

For many of the students who attend BIS "the woods" may be a virtually unknown entity, but the garden offers an experience of wilderness within the urban landscape, which otherwise might be devoid of natural open space. The parents and teachers interviewed for the purposes of this research all commented that the children appear to be visibly calmer and more grounded after time spent in the garden. Teachers commented on the students' increased ability to focus and follow directions after garden

class and some of the older children also commented on the sense of peacefulness that they experience from working in the garden. These reports are supported by extensive research in the area of people-plant relationships and the positive effects that the presence of plants in an environment can have on mood elevation, ability to focus, work productivity, and even recovery times (Baker, 2009; Relf, 2005; Stigsdotter & Grahn, 2002). Researchers Bowker and Tearle (2007) reported unanimously positive associations to being immersed in the natural garden environment from the children interviewed, commenting that the “feel good factor” associated with being outdoors was strong in all three samples across different continents.

While the tenets of horticultural therapy (HT) maintain that exposure to the natural world is inherently therapeutic and beneficial to individuals, research in empathy development and mental health in general have largely overlooked the potential to offer nature as medicine. As researcher and program director of the Active Living Research Program, James Sallis states, “We can definitely say that the best predictor of preschool children’s physical activity is simply being outdoors and that an indoor, sedentary childhood is linked to mental health problems,” (as cited in Louv, 2005, p. 23). The effects of “nature-deficit disorder” (Louv, 2005) on the physical and psychological well-being of individuals, particularly children, are becoming more commonly researched and discussed across disciplines. Further examination into these principles and their relevance for school garden programs may be helpful to guide research and garner support for school gardens in the future.

Limitations and Strengths of the Study

The original objective of this research was to examine the possible socio-emotional effects of school garden programs, with this specific inquiry: “How are school gardens being used to foster and encourage the development of empathy in children?” I believe that this research study addressed this question from multiple perspectives, specifically highlighting how educators at BIS are intentionally using the garden program as a vehicle for teaching empathy and mindfulness to students.

This exploratory research study did have some limitations. Generalizability of the findings may be limited due to the following factors: the methods used for sample recruitment; the case study design of the project itself; and the atypical nature of the research sample used. BIS is a very small, very unique educational program, and the data collected therefore may not represent the average school garden experience. However, I feel that this case study is an example of what is possible, rather than perhaps what is typical. And, given the significant resource limitations of the BIS program, it seems probable that aspects of this program’s design could be easily integrated into schools of varying size and resource capability.

One very significant aspect of this study was that I became personally involved with the BIS community throughout the process of conducting this research. I was a community volunteer at the garden two hours a week prior to and throughout conducting interviews. This arrangement was initially suggested to me by the director of the program as a way to “gain trust” in this small, close-knit community. It was also proposed that I start by volunteering before approaching the school district about conducting official research. Once the head garden teacher and the parents and students at BIS saw that I was committed to “giving back” to their community by volunteering my time and labor each

week, I was encouraged to pursue my research intentions. However, I first had to demonstrate that my ultimate and foremost intention was to encourage and support their garden and their community. I greatly appreciated this direct involvement with the community and found it to be incredibly beneficial and educational, positively affecting both my motivation and the development of my hypothesis; however, my direct engagement with the participants creates more opportunity for bias in the results, in that the participants, particularly the children, with whom I had the most direct contact, may have tailored their responses to reflect more positive statements about the garden with the hopes of pleasing me or gaining my favor in some way.

The fact that the sample of teachers, students, and parents interviewed were also self-selected must also be considered in reviewing the results. The garden classes at this particular school were optional and so my access to students or families who were not as favorably connected to the garden was extremely limited. While the participants interviewed appeared to have unanimously positive regard for the garden program, they may have been less likely to share any negative opinions or comments about their experiences due to my public role as a volunteer and advocate of garden program research.

I was also required by the Berkeley Unified School District (BUSD) to complete an application detailing the purposes of my research and its relevance to the City of Berkeley school district. I was prohibited by the BUSD review committee from collecting any demographic information on participants, due to concerns around liability and public accessibility to participant's personal information. I was required to complete an additional Human Subjects Review process through BUSD and to submit a report of my

findings to the district, which will be kept as official city records and made publically available. While I was able to generally describe the demographics of my sample population, it is a limitation of my study that the description of my sample population must remain ambiguous.

Lastly, due to the descriptive and exploratory nature of this study, a causal link between school garden participation and prosocial behavior cannot be determined based on the data collected. The findings, however, can provide a rich, descriptive understanding of what benefits children, parents, and staff derive from their experiences in the garden. This will hopefully provide a more complete conception of the myriad of benefits to implementing and maintaining school garden programs beyond the traditional academic and nutritional outcomes.

Implications for Social Work Practice and Policy

The findings of this research present a multitude of implications for social work practice and policy. Accounts from students, parents, and teachers unanimously profess the therapeutic benefits of participation in the garden program. Whether the focus be participating in community building activities, forming strong relationships with teachers, peers, and other life forms, learning about the natural world through direct “hands-on” experience, or simply just being outdoors, all of these components create a rich and meaningful platform for discussion concerning the integration of horticultural programs into school-based socio-emotional curriculums as a tool for teaching empathy.

Though this study did not interview mental health professionals who employ horticultural techniques, many of the aspects of the garden teacher/student relationship

mirrored that of a therapist/client dynamic, and many of the principles utilized in the curriculum to teach students in the garden could quite easily be adopted in group therapy settings. The importance placed on involving parents and families in the garden program is a key finding from this research that could be employed by school-based social workers in many ways, whether by joining with families and building rapport through introduction to the garden, using the garden as a site for family meetings and therapy, or perhaps providing families with produce from the garden as a source of fresh, local food. The possibilities to strengthen connections for students between home and school are abundant.

Horticultural therapy (HT) falls under the large umbrella of alternative therapies, and though the BIS garden was not designed to be an intentionally therapeutic program, it has clearly surpassed the expectations of its founders and participants in providing a plethora of physical, academic, and socio-emotional benefits to the students involved in the program. The findings indicate that the school garden is being utilized to teach a rich array of life lessons such as: strengthening social skills, teaching nurturance and patience, encouraging task persistence, and modeling respect for all life. Therapists, educators, and even caregivers may be able to encourage these traits in young people through interactions in the garden.

The outdoor setting of the garden classroom also holds tremendous potential to harness the inherently therapeutic effects of nature on the human psyche. As Richard Louv (2005) writes, “Nature is often overlooked as a healing balm for the emotional hardships of a child’s life” (p. 49). The richness to be found in integrating physical and emotional health, as seen in school garden programs, can be used to promote overall

wellness in individuals and in communities. By this token school garden programs have the potential to be used not only as a “healing balm” for children suffering from emotional difficulties, but the garden may be used as a buffer, as well, a tool for prevention against the multitude of systemic pathologies that plague our society and so often lead to the development of mental health problems in young people.

The potential for school gardens to be used as both intervention and prevention lead to another key implication that has surfaced in the process of this research, that is the potential for school gardens to be used as a tool for revolution. Throughout the course of this research the BIS garden program’s permanency was unclear. At the end of every school year the school district cuts back more funding from “non-academic” programs and smaller school programs in lower socio-economic neighborhoods are often the first to go. At the time of this writing, the City of Berkeley continues to negotiate the construction of a \$65,000 baseball field that would displace the nearby farmer’s market and appropriate half of the BIS garden space for realignment of the road and sidewalk. The students, parents, and teachers of BIS have been actively involved in opposing this measure, and have gathered support of Berkeley’s Ecology Center in these efforts.

The self-advocacy and empowerment that gardens can inspire in communities is another profound and relevant topic for further exploration in the social work community. Issues of racism, classism, sexism, elitism, and all forms of discrimination affect the practices and policies of educational systems across the nation. School gardens can be used as tools of empowerment and anti-racism work in all communities, but may be particularly relevant in communities where access to healthy food and interaction with

nature is limited. The garden can create a common ground, something to build, nourish, and protect. New York Times garden writer, Anne Raver (1992), writes the following:

Gardens, scholars say, are the first sign of commitment to a community. When people plant corn they are saying, let's stay here. And by their connection to the land, they are connected to one another (para. 15).

The effect that garden programs can have on communities, whether school based or otherwise is an area of research that deserves further exploration. As agencies of all types begin to recognize the value of offering horticultural activities and creating space for individuals to connect with the natural world, the possibility for social workers and mental health professionals to engage with clients and potentially whole communities in ways that encourage self-determinism and empowerment becomes more salient. In schools, the potential for garden programs to contribute to better food security among students and their families is significantly linked to overall wellness, including mental health stability in individuals. Ultimately, this issue is related to social justice and the need for collective empowerment through knowledge of food systems and improved access to real food.

Food security is an aspect of environmental justice, concerned with “fair treatment and meaningful involvement of all people (regardless of race, ethnicity, income, national origin, or educational level) in the development, implementation, and enforcement of environmental laws, regulations, and policies” (Taylor et al., 2006, p. 31). Communities of color in low-income neighborhoods have higher rates of obesity, diabetes, and health-related heart disease due in large part to limited access to fresh, healthy food and the opportunity for regular physical activity (Taylor et. al, 2006). Children and adolescents of

color with lower SES backgrounds are a particularly vulnerable population, as the vast majority of advertising for fast food is aimed at youth from urban neighborhoods. While researchers warn of the increased rates of obesity in children across the nation (now 1 in 4), the most under-reported statistic is that a hugely disproportionate percentage of those children are children of color from poor communities (Kumanyika, 2008).

The garden provides physical activity and increased opportunities for students to engage with the natural environment, which has been linked to improved mood, energy, and overall mental health (Baker, 2009). In a world increasingly controlled by corporate power, growing one's own food is a form of political action, and in communities where nutritious food is scarce, gardening can be a pivotal form of anti-racism work. Though the significance of gardens as tools of resistance was not the focus of my research, the implications for social work practice should not be overlooked. Of course, a garden alone cannot empower a community that lacks significant resources, nor can it single-handedly tear the barriers of discrimination and racism to the ground, however it can serve as a space for community, for collaboration and connection; a garden can provide respite, serving as a source of comfort and perhaps even as a source of food. A garden can serve as a place to learn; an opportunity for vocational training or even academic advancement, but most of all a garden can act as a symbol of change, reminding us what is possible, reminding us that even from the tiniest seed in the most forgotten section of earth, there is so much that can grow.

Conclusion

This exploratory study aimed to examine the multitude of effects that school garden programs can have on children's social and emotional development, specifically regarding effects on empathy development. The participants in this research unanimously agreed that garden programs can have a myriad of beneficial influences on the socio-emotional development of students, and a profound effect on the development of communities, as well. Exploring this query from multiple perspectives was a key component of this research. I felt that it was important to gather as many angles as I could as a researcher to best portray the richness and depth that the BIS garden program provides in nurturing not only empathy, but many other areas of social and emotional growth in young people, as well. It is my hope that the data collected gives all participants a voice and honors what is seen as most important to those who devote their time and energy to maintaining the gardens and advocating for its presence in the school environment. It is also my hope that this research may serve as a foundation for future studies on the relevance and importance of incorporating school garden programs into social work practice.

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Appendix A: Recruitment Letter

Hello,

My name is Emily Wolf McMane, and I am a 2nd year graduate student at Smith School for Social Work. I got your name and contact information from my friend and former co-worker Amy Allen. She told me of the garden projects that you are involved in through Berkeley public schools and I would very much like to learn more. I live in Oakland and I am currently working as a mental health intern for San Mateo County at a Therapeutic day treatment program for teens with emotional and behavioral difficulties. Formerly I have worked as a clinical social work intern for the city of Berkeley's Family, Youth and Children's Services department and as a garden teacher and mental health worker for Seneca Center in San Leandro. I am very passionate about urban gardening and the potential for intersection between community garden projects and the therapeutic benefits of horticultural practices on individual and community mental health. I am currently working on independent qualitative research about the mental health implications of school garden programs for my master's thesis. As a self-proclaimed garden enthusiast and former garden instructor, I believe that school garden programs across the bay area and the nation are fostering much more than academic achievement and nutritional education for children. I am most interested in examining the effects of participation in school garden programs on empathy development in youth, among other psychosocial benefits. My hope is to interview students and staff about their experiences of the garden that may be related to mental health development. I understand that to obtain permission to interact with youth involved in these programs I will need to get permission from parents/guardians of participants and I am fully prepared to provide the necessary

credentials and legal forms with the permission of my university to do so. However, at these beginning stages, I am most interested in meeting with staff members who may be interested in participating in the study by agreeing to interviews and possibly observations while in the field. I look forward to hearing from you and please do not hesitate to include any suggestions or questions you may have for me regarding this potential study.

Thank you for your time.

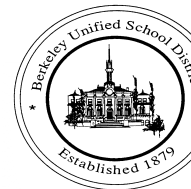
Sincerely,

Emily Wolf McMane, MSW Intern

Smith School for Social Work

Appendix B: Berkeley Unified School District Letter of Approval

Berkeley Unified School District



DEPARTMENT OF EVALUATION AND ASSESSMENT

2134 Martin Luther King Jr. Way, Berkeley, California 94704-1180

PHONE: (510) 644-6959 FAX: (510) 644-7786

Debbi D'Angelo, Director debbidangelo@berkeley.net

Date: January 4, 2012

To: Emily McMane

Cc: Lori O'Connor, Principal, Berkeley Independent Study

Re: Exploring the Effects of School Gardens on Empathy Development in Children

The purpose of this letter is to inform you that your research project has been approved for the 2011-2012 school year. Prior to beginning your research project the following conditions must be met.

1. Submit CPHS approval

If you have any questions your site contact is Lori O'Connor, Principal, Berkeley Independent Study. Also, feel free to contact Vivian Wiggins or myself at the number above.

Sincerely,

Debbi D'Angelo

Director, Evaluation and Assessment

Appendix C: Human Subjects Review Approval

December 21, 2011

Emily McMane

Dear Emily,

Your tone and responses to the Human Subjects Review Committee were very professional and carefully considered. Thank you for your efforts and professionalism. We hereby accept and approve your project.

Please note the following requirements:

Consent Forms: All subjects should be given a copy of the consent form.

Maintaining Data: You must retain all data and other documents for at least three (3) years past completion of the research activity.

In addition, these requirements may also be applicable:


Amendments: If you wish to change any aspect of the study (such as design, procedures, consent forms or subject population), please submit these changes to the Committee.

Renewal: You are required to apply for renewal of approval every year for as long as the study is active.

Completion: You are required to notify the Chair of the Human Subjects Review Committee when your study is completed (data collection finished). This requirement is met by completion of the thesis project during the Third Summer.

Good luck with your research!

Sincerely,

A handwritten signature in black ink, reading "David L. Burton". The signature is written in a cursive style with a long horizontal line extending to the right.

David L. Burton, M.S.W., Ph.D.
Chair, Human Subjects Review Committee

CC: Mod Ono, Research Advisor

Appendix D: Parent/ Guardian Consent Form

Dear Parent/Guardian,

Hello, My name is Emily McMane and I am a graduate student at Smith School for Social Work and a volunteer at the Berkeley Independent School (BIS) garden. I am doing a research project for my master's thesis on the effects of school gardens on children's social and emotional development. I'm looking for students from all grade levels to share their opinions on what its like to be a student gardener.

If your child chooses to participate in this study, he/she will take part in a 30-minute group interview. He/she will also participate in 10-minute discussion about confidentiality prior to beginning the interview. The group interviews will take place at school during garden class hours and I will record the groups and store the information on my computer.

There are no risks to participation. However, if your child feels upset or uncomfortable at any time during the interview he/she can ask to skip questions or end the interview at any time. The benefits to participation for your child may include the opportunity to articulate his/her experience of the garden and to reflect on what he/she has have gained through this type of experiential learning.

The group interviews will be no more than three or four students at a time and they will be held in a quiet space at the school with a familiar adult present (either teacher or staff member). The time of a familiar adult will be greatly appreciated as I acknowledge that this requirement will remove a staff member from his/her normal routine at the school, and this may be a potential cost to the program during that time. This arrangement is however, mandated by the Berkeley Unified School District to ensure the comfort and safety of the student participants at all times. The participants in the group will be asked to verbally agree to respect the privacy of other students and not share information with others outside of the group. Even though we will discuss what confidentiality means at the beginning of the interview, there is no way to guarantee that participants will keep the confidentiality agreement. However, once recorded, all group interview materials will be kept confidential and the only person who will have access to the data other than myself is my research advisor. I will transcribe all data myself and all materials will be kept in a secure location for three years as federally mandated. Should material be needed after three years, it will continue to be kept in a secure location and destroyed when no longer needed. No demographic information will be collected and when the research is presented the data will be generalized and all identifying information will be carefully disguised. The information gathered from this study will be used to write my master's thesis, and may be used in future presentations and/or publication. A summary of these results will also be given to the Berkeley Unified School

district. For your child's privacy, no direct quotations or indentifying information will be shared in the summary provided to BUSD.

Your child's participation in this study is purely voluntary and he/she may choose to withdraw from the study at any time before the interview is completed. However, once the interview takes place and the information has been recorded it won't be possible to withdraw a child from the study due to the nature of the group interview process. If you have questions you can call me at [REDACTED] or email me at [REDACTED]. You can also contact the Chair of the Smith College School for Social Work Human Subjects Review Committee at (413) 585-7974 should you have questions or concerns about any aspect of this study.

YOUR SIGNATURE INDICATES THAT YOU HAVE READ AND UNDERSTAND THE ABOVE INFORMATION AND THAT YOU HAVE HAD THE OPPORTUNITY TO ASK QUESTIONS ABOUT THE STUDY, YOUR AND/OR YOUR CHILD'S PARTICIPATION, AND YOUR AND YOUR CHILD'S RIGHTS AND THAT YOU AGREE TO PARTICIPATE AND TO ALLOW YOUR CHILD TO PARTICIPATE IN THE STUDY.

Child's Name: _____

Parent/Guardian Signature: _____ Date: _____

Researcher: _____ Date: _____

Thank you for your time and consideration.

Sincerely,

Emily Wolf McMane

[REDACTED]

[REDACTED]

Appendix E: Child Participant Informed Consent

Dear Participant,

Hello! My name is Emily McMane and I am a graduate student at Smith School for Social Work and a volunteer at the Berkeley Independent School (BIS) garden. I am doing a research project for my master's degree on what kids think about school gardens and I'm looking for students from all grade levels to share their opinions on what its like to be a student gardener.

If you choose to be in my study, you will take part in a 30-minute group interview. The group interviews will take place at school during garden class and I will record the groups and store the information on my computer.

There are very few "drawbacks" if you choose to participate. You will be asked to share your feelings about the garden in front of your peers, which could make you feel shy or self-conscious. But, if you feel upset or uncomfortable at any time during the interview you can always leave the room or just ask to skip over questions. Some great benefits to participating will be sharing your garden stories and really getting to tell adults how you feel about the garden, good or bad.

The group interview materials will be kept confidential (which means kept in private), and your name will not be shared with anyone. The group interviews will be no more than three or four students at a time and they will be held in a quiet space at the school. A BIS teacher or staff member will also be present for the group interview to help everyone feel comfortable while participating. This may take a teacher or staff out of their normal routine for a little while, but afterwards they will return to their normal classroom activities. All of the participants in the group will be asked to participate in a discussion about "confidentiality" and you will be asked to respect the privacy of other students and not share information with others outside of the group. Even though we will discuss what confidentiality means at the beginning of the interview, there is no way to promise that participants will not talk about the group interview afterwards. After the group is recorded that stored information (also called data) will be kept in a secure location for three years because this is the federal law. If any of the data are still needed after three years it will continue to be kept in a safe and location and then destroyed when no longer needed. When the research is presented, all of the information will be generalized meaning it won't be possible for a person to identify a particular participant. If there are any quotes or stories shared they will be disguised so nobody will know who said what. This is for your privacy and the privacy of others. The results of this study will be used to write my master's thesis and a summary of these results will be given to the Berkeley Unified School District.

Remember, you only have to participate in this study if you want to and you may change your mind and withdraw from the study at any time during or before the group interview. However, once the interview takes place and the information has been recorded it won't be possible to withdraw from the study, because everyone's voices will be recorded together at the same time. Remember, if you have questions at all, big or small, you can call me at [REDACTED] or email me at [REDACTED]. You can also contact the Chair of the Smith College School for Social Work Human Subjects Review Committee at (413) 585-7974 should you have questions or concerns about any aspect of this study.

YOUR SIGNATURE INDICATES THAT YOU HAVE READ AND UNDERSTAND THE ABOVE INFORMATION AND THAT YOU HAVE HAD THE OPPORTUNITY TO ASK QUESTIONS ABOUT THE STUDY, YOUR PARTICIPATION, AND YOUR RIGHTS AND THAT YOU AGREE TO PARTICIPATE IN THIS STUDY.

Name: _____ Date: _____

Researcher: _____ Date: _____

Thank you for your time and consideration.

Sincerely,

Emily Wolf McMane

[REDACTED]

[REDACTED]

Appendix F: Adult Participant Informed Consent

Dear Participant,

Hello, my name is Emily McMane and I am a graduate student at Smith School for Social Work and a volunteer at the Berkeley Independent School (BIS) garden. I am doing a research project on the effects of school gardens on children's social and emotional development and I am looking for educators, staff members and parents who engage with students in the school garden setting to share their observations and experiences in an informal interview setting. The information gathered from this study will be used to write my master's thesis, and may be used in future presentations and/or publication. A summary of these results will also be given to the Berkeley Unified School district. For your privacy, no direct quotations or indentifying information will be shared in the summary provided to BUSD.

If you choose to take part in this study, you will be asked to participate in an individual interview, averaging 45-60 minutes in length. The interviews will take place in a private space at Berkeley Independent school at individually scheduled times based on your personal requests and needs. The interviews will be digitally recorded on my personal computer and then later transcribed by myself on the same device.

There are no risks to participation. However, if you feel uncomfortable at any time during the interview you are free to skip questions and/or end the interview at any time. Personal benefits to participation include the opportunity to share your personal experience in an informal setting and further develop thoughts around ways to encourage growth in students through gardening both socially and emotionally. Your participation may also contribute to further research and validation of school garden programs nationwide.

The interview materials will be kept confidential and the only person who will have access to the data other than myself is my research advisor. You will be asked **not** to reveal the names or identities of any students at BIS when responding to the questions asked in the interview process. I will transcribe all data myself and all materials will be kept in a secure location for three years as federally mandated. Should material be needed after three years, it will continue to be kept in a secure location and destroyed when no longer needed. When the research is presented the data will be generalized and all identifying information will be carefully disguised.

Your participation in this study is strictly voluntary and you may withdraw from the study at any time before, during, or after the interview. If you wish to withdraw from

the study after the interview has taken place you must contact me as soon as possible. It will not be possible to withdraw from the study once the data has been transcribed and concealed and therefore, you must contact the researcher by April 15, 2011 if you wish to withdraw from participation. If you have questions at all you can call me at [REDACTED] or email me at emcmane@smith.edu. You may also contact the Chair of the Smith College School for Social Work Human Subjects Review Committee at (413) 585-7974 should you have questions or concerns about any aspect of this study.

YOUR SIGNATURE INDICATES THAT YOU HAVE READ AND UNDERSTAND THE ABOVE INFORMATION AND THAT YOU HAVE HAD THE OPPORTUNITY TO ASK QUESTIONS ABOUT THE STUDY, YOUR PARTICIPATION, AND YOUR RIGHTS AND THAT YOU AGREE TO PARTICIPATE IN THIS STUDY.

Signature: _____ Date: _____

Researcher: _____ Date: _____

Thank you for your time and consideration.

Sincerely,

Emily Wolf McMane

[REDACTED]

[REDACTED]

Appendix G: Interview Guide

Questions for Child Participants:

- “What are the good things about the garden?”
- “What are the “not-so-good” things about the garden?”
- “What are your favorite activities in the garden? Why? Do any of these activities help you in other ways outside of the garden?”
- “What do you learn about in the garden?”
- “Do you see any connections between what you learn in the garden and how you act at home or in other parts of school?”
- How do you think of the plants and insects in the garden? Are there any similarities or differences between how you interact with the plants and insects of the garden and how you interact with other human beings?
- “Is there anything special or different about the garden from other areas at school?”
- “What’s special or different about the garden?”

Questions for Adult Participants:

- “What are the effects of the gardening on the children?”
- “Have you noticed any changes in the children since working in the garden? What are the changes that you’ve noticed?” If you have noticed any changes, what do you attribute these changes to and why?
- “Do you see the garden as contributing towards the children’s social and emotional development? In what ways? Can you give me an example?”

- Have you observed children in the garden displaying empathic or altruistic behaviors? If so, do you believe that these behaviors are related to the garden activities or lessons in any way? Can you give an example?
- Have you seen any connections between how the children act in the garden and how they act in other environments, specifically around relationships and/or the ability to take multiple perspectives? Can you give an example?