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The Potential of Green Care Interventions to Promote Positive Youth Development with a One Health Lens

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Abstract

The first part of this study is making a conceptual tie between three distinct bodies of knowledge: Green Care, Positive Youth Development (PYD), and One Health. Green Care is an organizing construct for various interventions that use nature as a framework. I suggest that a nature-based program which incorporates Animal-assisted and horticulture interventions have the potential to promote positive youth developmental outcomes. The two major tenets of the PYD model are the mutually influential and bi-directional relationship between an individual and their context, and this relationship characteristic of plasticity, the potential for change (Lerner, 2006). Plasticity is viewed as an asset, suggesting that aligning the assets of the individual and their context through [programming] can promote positive development (Lerner, 2006; Lerner, Lerner, von Eye, Bowers, & Lewin-Bizan, 2011). The PYD approach does not view positive development merely as the absence of problem behaviors; rather, it is viewed as thriving, flourishing, and healthy development (Lerner, von Eye, Lerner, & Lewin-Bizan, 2009). Thriving is conceptualized through the growth in the attributes that are termed the 5Cs of PYD: competence, confidence, character, connection, and caring (Lerner et al., 2005). This study makes the argument that a Green Care intervention which includes Animal-assisted and horticulture interventions can promote PYD by increasing the 5Cs. The suggested Green Care intervention utilizes the human-animal- environment relationship. This relationship is also the focus of One Health which recognizes that the health of humans, animals (pets, livestock, and wildlife), and the environment are interconnected (e.g., the One Health Initiative; AVMA; CDC; Zinsstag, Schelling, Waltner-Toews, & Tanner, 2011). As some of Earth's systems are in danger of becoming unstable (Rockström et al., 2009; Steffen et al., 2015) due to human unsustainable development (FAO, 2011), the One Health field is encouraged to invest efforts in prevention (Amman, 2012, Rockström et al., 2009; Steffen et al., 2015). These prevention efforts tie back to the Green Care intervention suggested in this study. The main goal of this study was to examine a presence or change of the 5Cs within children who participate in a nature-based program. 20 children were interviewed for this study, and these interviews were qualitatively analyzed to answer the research questions. The participants in this study are students at Green Chimneys, a special education school which employs nature-based programs for educational, clinical, and recreational purposes. The presence or change of each of the 5Cs domains was found in varying prevalence, in relation to animals. However, none of the 5Cs domains was found in relation to horticulture. The study concludes that the findings in relation to animals can be explained by direct learning (Feuerstein, Feuerstein & Gross, 1997), whereas, employing intentional mediated learning (Feuerstein, Feuerstein & Gross, 1997) can enhance these finding and form them for the horticulture interventions.

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Hagit Brandes

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suggest that a nature-based program which incorporates Animal-assisted and horticulture

interventions have the potential to promote positive youth developmental outcomes.

The two major tenets of the PYD model are the mutually influential and bi-

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study makes the argument that a Green Care intervention which includes Animal-assisted

and horticulture interventions can promote PYD by increasing the 5Cs.

The suggested Green Care intervention utilizes the human-animal- environment

relationship. This relationship is also the focus of One Health which recognizes that the

health of humans, animals (pets, livestock, and wildlife), and the environment are interconnected (e.g., the One Health Initiative; AVMA; CDC; Zinsstag, Schelling, Waltner-Toews, & Tanner, 2011). As some of Earth's systems are in danger of becoming unstable (Rockström et al., 2009; Steffen et al., 2015) due to human unsustainable development (FAO, 2011), the One Health field is encouraged to invest efforts in prevention (Amman, 2012, Rockström et al., 2009; Steffen et al., 2015). These prevention efforts tie back to the Green Care intervention suggested in this study.

The main goal of this study was to examine a presence or change of the 5Cs within children who participate in a nature-based program. 20 children were interviewed for this study, and these interviews were qualitatively analyzed to answer the research questions. The participants in this study are students at Green Chimneys, a special education school which employs nature-based programs for educational, clinical, and recreational purposes.

The presence or change of each of the 5Cs domains was found in varying prevalence, in relation to animals. However, none of the 5Cs domains was found in relation to horticulture. The study concludes that the findings in relation to animals can be explained by direct learning (Feuerstein, Feuerstein & Gross, 1997), whereas, employing intentional mediated learning (Feuerstein, Feuerstein & Gross, 1997) can enhance these finding and form them for the horticulture interventions.

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Chapter One: Introduction

The potential of Green Care Interventions to Promote Positive Youth Development with a One Health Lens

The goal of this study is to explore the potential of Green Care interventions to promote Positive Youth Development. The study also conceptually ties together three distinct bodies of knowledge (Green Care, Positive Youth Development, and One Health). This conceptual link aims to inform, enrich, and expand each of these bodies of knowledge.

Conceptualizing the Connection Between Green Care, Positive Youth Development, and One Health

Green Care. Green Care is an umbrella term for various interventions that use nature and the natural environment as a framework, and can include, alone or in combination, animal-assisted interventions, horticulture therapy, wilderness therapy, and green exercise, as well as other nature-based approaches (Hine, Peacock, & Pretty, 2008a; Hine, Peacock, & Pretty, 2008b; Sempik, Hine, &Wilcox, 2010). It is important to note that although there is increasing evidence of the benefits of experiencing or being in nature, and although Green Care has very broad applications, they are all interventions that actively seek to advance physical and mental health (Hine, Peacock &, Pretty, 2008a; Sempik, Hine, &Wilcox, 2010). In other words, Green Care interventions are directed and intentional, they have specific goals, and are aimed at achieving specific therapeutic

outcomes. Both the activities and the goals of any intervention can vary broadly and can include physical and mental healthcare, social rehabilitation, education, and work rehabilitation (Hine, Peacock & Pretty, 2008a; Sempik, Hine &Wilcox, 2010).

Writers within the Green Care field encourage researchers and practitioners to link Green Care with existing established theories to provide context and to ground it in a larger body of knowledge and understanding (Sempik, Hine, &Wilcox, 2010). This study suggests linking Green Care to the Positive Youth Development (PYD) model, a conceptual and theoretical framework which informs intervention programs intended to promote positive development.

Positive Youth Development. An effective intervention program needs to be informed by well-founded theories (Jenson & Bender, 2014; Jenson, Alter, Nicotera, Anthony, & Forrest-Bank, 2013), and the theory needs to be clear enough for easy adaptation as an intervention program (Jenson, 2006). The Positive Youth Development model is such a response to this challenge (Jenson et al., 2013).

Within the PYD model, there is a mutually influential and bi-directional relationship between the individual and their context (Lerner, 2006). These relationships govern the direction, pace, and outcomes of development (Lerner, Lerner, von Eye, Bowers, & Lewin-Bizan, 2011), and are characterized by plasticity, i.e. potential for change (Lerner, 2006). The potential for change at all levels, both within the individual and within their context, is viewed as a strength and asset of development (Lerner et al., 2011). Aligning the assets of the individual and their context through programing can promote positive development (Lerner, 2006; Lerner et al., 2011). The PYD approach

does not view positive development merely as the absence of problem behaviors; rather, it is viewed as thriving, flourishing, and healthy development (Lerner et al., 2009). Thriving is conceptualized through the growth in the attributes that are termed the 5Cs of PYD: competence, confidence, character, connection, and caring (Lerner et al., 2005). In positive development, the individual-context relationship is mutually beneficial; thus, a thriving young person should contribute to their ecology/context (Lerner et al., 2011). Contribution is thus the sixth C of PYD (Lerner et al., 2005).

The potential of Green Care as a PYD informed intervention modality. As characteristics of well-adjusted thriving youth, the 5Cs also can be regarded as the desired outcomes of an intervention. In section two, I will present research studies and/or conceptual thinking in the field of Green Care interventions (Animal Assisted Interventions and horticulture interventions) that correspond with the 5Cs. This suggests that Green Care interventions, which support the 5Cs, have the potential to promote PYD.

The Green Care framework investigated in this study utilizes the human-animal-environment relationship as the intervention itself. Another field that is concerned with the human-animal-environment relationship is One Health.

One Health. The One Health paradigm recognizes that the health of humans, animals (pets, livestock, and wildlife), and the environment are interconnected (e.g., the One Health Initiative; AVMA; CDC; Zinsstag, Schelling, Waltner-Toews, & Tanner, 2011). Whereas the One Health literature reflects the concern of controlling infectious diseases and public health, there is a growing interest within the social sciences and other disciplines in this paradigm (Gibbs, 2014).

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The social sciences can play several roles in the One Health paradigm such as recent addition of the mental aspect to public health (Schultz, 2014) and sustainable development which relies on human behavior and is affected by the human-animal-environment relationship. This relationship is determined by social, cultural, economic, and political factors (Zinsstag et al., 2011), and is currently out of balance (Rockström et al., 2009; Steffen et al., 2015).

Additionally, The One Health field is encouraged to invest efforts in prevention (Amman, 2012, Rockström et al., 2009; Steffen et al., 2015); efforts which can benefit from the knowledge and experience of the social sciences.

Conclusion. The three distinct bodies of knowledge – Green Care, Positive Youth Development, and One Health – have points of interface with one another. *PYD and Green Care:* Green Care interventions have the potential to increase the 5Cs and thereby to promote PYD. *PYD and One Health:* In order to allow sustainable development, sustainable behaviors need to be encouraged; in one of its facets, PYD is a framework to design intervention programs that allow behavioral change. *One Health and Green Care:* The One health paradigm is concerned with the human-animal-environment relationship whereas this relationship is the intervention itself in the Green Care modality presented by this study.

Research questions.

- Is there presence/change of the 5Cs among children who participate in a Green Care program?

- Is there presence/change of other elements that are not the 5Cs among children who participate in a Green Care program?

  The purpose of the above two questions is to find out if the PYD model's 5Cs can provide a full explanatory framework for Green Care interventions (i.e., finding the presence of all five components), a partial explanatory framework (i.e., only few of the 5Cs), or perhaps an expansion of the framework to include other elements that are not the 5Cs.

- What are the mechanisms that might explain/lead to such a change in the 5Cs/other elements that are not the 5Cs? ("Mechanisms" refers to any components of the intervention that can explain the change if found).

- Can patterns of the 5Cs revealed in the interviews be matched to patterns in existing data that can be conceptually related to the 5Cs?

Methods

Study context. The research was conducted at Green Chimneys, a special education school, serving around 200 boys and girls in grades K-12. About half are residents, and the rest are day students. The school's academic curriculum meets the New York state standards and is conducted in an experiential learning environment incorporating a nature-based approach (i.e. animals, plants, and environment). Beyond the educational aspect, the nature-based approach is also incorporated into the clinical and recreational aspects of students' experience in Green Chimneys (www.greenchimneys.org).

Procedure. The data collection method for this study was semi-structured interviews, and the inclusion criteria for this study were age (8-12), and duration in the program (at least one year). The study had a total of 18 participants, and all participants had signed parental consent as well as assent forms.

Analysis. The recorded interviews were transcribed, and the analysis process for this study was informed by template analysis.

Findings

Research question #1- Is there presence/change of the 5Cs among children who participate in a Green Care program? All of the 5Cs domains were present, in various prevalence, in relation to animals and people. However, none of the 5Cs domains were present in relation to horticulture.

Research question #2- Is there presence/change of other elements that are not the 5 C's among children who participate in a Green Care program? The participants reported an improvement in various problem behaviors which are manifested by conduct, attitude, and emotions.

Research question #3- What are the mechanisms that might explain/lead to such a change in the 5 C's/other elements that are not the 5 C's? Three constructs-people, animals, and programs- emerged as facilitating factors for change.

Research question #4- Can patterns of the 5Cs revealed in the interviews be matched to patterns in existing data that can be conceptually related to the 5Cs? Predominantly, the youth's perceptions of themselves as reflected by the interviews matched the staff's perceptions of them as reflected in the existing data.

Discussion

    The heart of the discussion lies in its conclusion. Following Feuerstein's distinction between direct and mediated learning (Feuerstein, Feuerstein & Gross, 1997; Feuerstein, 2000), I suggest that the findings of this study reflect direct learning, whereas employing intentional mediated learning can increase those to a fuller potential of nature-based programs to promote PYD.

Chapter Two: Conceptualizing the Connection Between Green Care, Positive

Youth Development, and One Health

Green Care

Green Care is a developing organizing construct that is defined as an umbrella

term for interventions that use nature or the natural environment as a framework. Though

this is a relatively new field of scholarly investigation, the benefits of utilizing animals

and horticulture, especially in hospitals and mental asylums, have a long history (for a

review see: Sempik, 2008; Serpell, 2010; Sempik, Hine, &Wilcox, 2010). For instance,

Sempik (2008) gives an example of Rudolph Steiner's anthroposophical philosophy,

which dates back a century, as informing programs for people with learning and mental

disabilities (Steiner's writings are available at http://www.rsarchive.org/).

Early and, to some extent, current discussions of Green Care took place in the

context of agriculture farms (termed care farming/farming for health). These discussions

urged the field to develop a unifying conceptual framework and professionalization

(Braastad, 2006; Hassink &van Dijk, 2006; Sempik, 2008). The conceptual framework of

Green Care evolved to include other settings and broader activities and is currently

defined as an umbrella term for various interventions that use nature and the natural

environment as a framework. It can include, for example, animal-assisted interventions,

horticulture therapy, wilderness therapy, and green exercise (one or more) (Hine,

Peacock, & Pretty, 2008a; Hine, Peacock, & Pretty, 2008b; Sempik, Hine, &Wilcox,

2010). It is important to note that although there is increasing evidence of the benefits of experiencing or being in nature, and although Green Care has very broad applications, these interventions are all actively intended to advance physical and mental health (Hine, Peacock &, Pretty, 2008a; Sempik, Hine, &Wilcox, 2010). Not "everything that is green is Green Care" (Sempik et al., 2010, p. 11). In other words, Green Care interventions are directed and intentional, they have specific goals and are aimed at achieving specific therapeutic outcomes. Nevertheless, the levels of "care" within Green Care span from structured therapy (e.g., Horticulture Therapy, Animal-assisted Therapy) to a wider range of benefits, and can be used broadly to include elements of healthcare, social rehabilitation, education, and employment opportunities (Hine, Peacock & Pretty, 2008a; Sempik, Hine &Wilcox, 2010).

The different combination of interventions creates various types of Green Care that vary within and between different countries. The most common Green Care interventions can be described using a diagram (Figure 1) arranged by their healthcare function and goals (health promotion, therapy, and a combination of labor and care) (Haubenhofer et al., 2010). Sempik et al.'s (2010) term "combination of labor and care" as "work rehabilitation and sheltered employment" better reflect the terms used within the healthcare professions.

Sempik et al. (2010) categorized Green Care interventions' benefits into *common* (intervention benefits that can be gained by Green Care activities, but by other interventions as well, e.g., "social interaction, and opportunities for social contact, working with others for a common purpose, development of skills, competence and …

self-esteem … opportunities for physical activity", p. 32) and *natural* (benefits that are unique to working with animals, plants, and landscapes, e.g., a sense of being nurturing, being engaged with a dynamic system; and being attuned to the needs of others, e.g., feeding, planting, and harvesting). The distinction between common and natural benefits can aid in defining an effective Green Care model which on the one hand needs to be *specific* in order to distinguish it from similar interventions in its goals and processes, and on the other hand needs to be *generalizable* to address Green Care benefits as a whole (and not just narrowly on a specific benefit of horticulture therapy, for example) (Sempik, Hine, & Wilcox, 2010).

Because Green Care is a complex, new, and developing intervention that has not yet achieved a consensus definition and conceptualization among researchers and practitioners in this field, Sempik et al. (2010) suggested several components or criteria that should be included in a Green Care model.

•The activities and approaches that qualify as Green Care need to be defined, as well as those that do not. The Green Care intervention components of interest to this study are Animal Assisted interventions (AAIs) and horticulture interventions.

•Situate Green Care in the context of existing established theories. This study will provide the rationale for Green Care as a possible PYD intervention.

•Describe the probable benefits that are specific to Green Care and explore the mechanisms that mediate between the intervention and the outcomes. This will be done in the next section by tying Green Care to the PYD model.

•Structure the Green Care activities and processes in a clear way. This criterion

will be covered in the methods section.

Finally, another point to consider is that Green Care is a rapidly developing

phenomenon that can be conceptualized as a link between traditional healthcare and

various interventions such as farming and animal husbandry (care farming), nature

conservation (eco-therapy), and Animal-Assisted Interventions. Communication, a flow

of information, and multidisciplinary innovation might allow the link to inform both the

traditional healthcare sector and Green Care interventions that promote physical, mental,

and social well-being (Haubenhofer, Elings, Hassink, & Hine, 2010).

Overview Sectors of Green Care
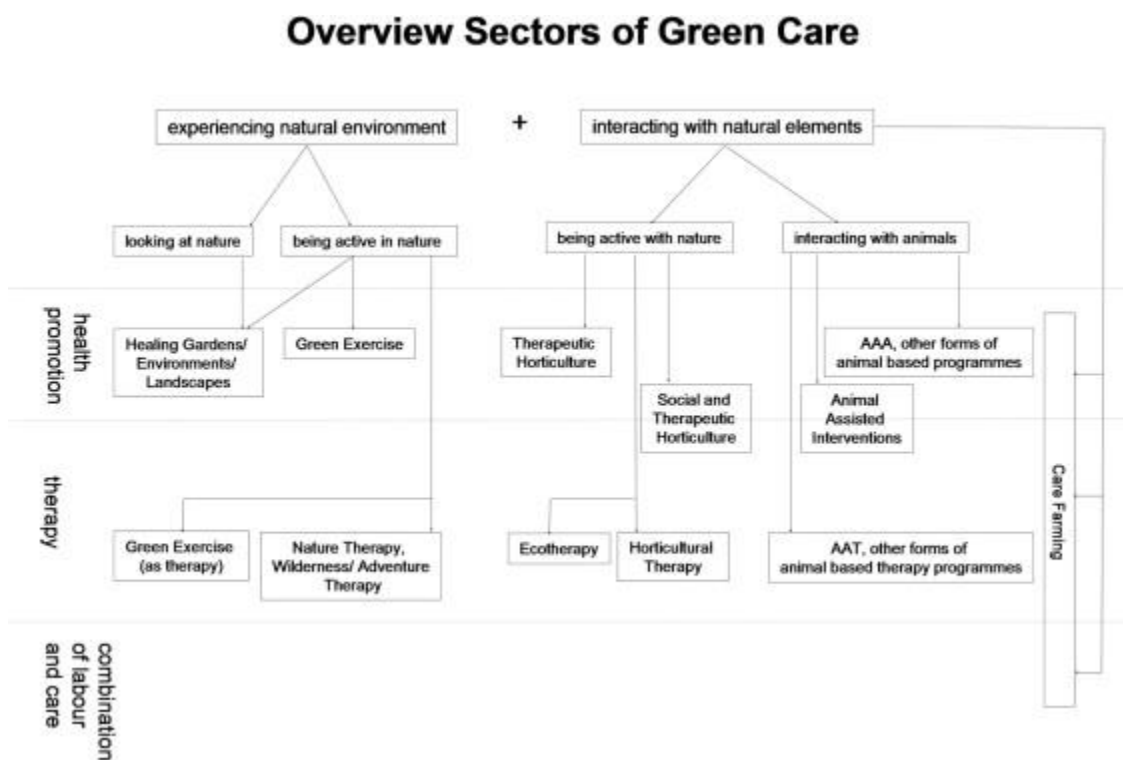
Figure 1. Mapping of Green Care interventions. Source: Haubenhofer, Elings, Hassink,

& Hine, 2010.

As previously mentioned, a Green Care intervention can incorporate many goals and activities. The intervention components that are of interest to this study are Animal Assisted Interventions (AAIs) and horticulture interventions. Following are basic definitions of AAIs and horticulture interventions.

Animal-assisted interventions. Animal-assisted interventions (AAIs) are defined as "any intervention that intentionally includes or incorporates animals as part of a therapeutic or ameliorative process or milieu" (Kruger & Serpell, 2010, p. 36). Kruger and Serpell (2010) used the term as an overarching classification category that includes animal-assisted therapy (AAT), animal-assisted activities (AAA) (Pet Partners, 2012), equine-facilitated psychotherapy (EFP), and hippotherapy (PATH International [Professional Association of Therapeutic Horsemanship International], 2014). Service dogs/animals, including psychiatric service dogs, are classified in a separate category.

Pet Partners (2012) (formerly known as The Delta Society), a leading international source on animal-assisted interventions, whose goal is to improve and promote human health and well-being through service and therapy with animals, has defined AAA as follows:

> AAA provides opportunities for motivational, educational, recreational, and/or therapeutic benefits to enhance quality of life. AAA are delivered in a variety of environments by specially trained professionals, paraprofessionals, and/or volunteers, in association with animals that meet specific criteria ("Animal-Assisted Activities Overview," para 1). Animal-assisted activities are basically the casual "meet and greet" activities that involve pets visiting people. The same activity can be repeated with many people, unlike a therapy program that is tailored to a particular person or medical condition. ("Animal-Assisted Activities," para. 2)

An example of AAA is visiting a nursing home with a dog. One benefit might be the

elders' arousal of memories and, as a consequence, their reinvesting in life and improved

motivation (Brooks, 2006).

Pet Partners (2012) defined AAT as follows:

> AAT is a goal-directed intervention in which an animal that meets specific criteria is an integral part of the treatment process. AAT is directed and/or delivered by a health/human service professional with specialized expertise, and within the scope of practice of his/her profession. ("Animal-Assisted Therapy," para. 1). AAT is designed to promote improvement in human physical, social, emotional, and/or cognitive functioning [cognitive functioning refers to thinking and intellectual skills]. AAT is provided in a variety of settings and may be group or individual in nature. This process is documented and evaluated. ("Animal-Assisted Therapy," para. 2)

Brooks (2006) added an important point to this definition of AAT: The therapist sets the

boundaries that connect people and animals as part of the therapeutic process. During the

therapeutic session, the therapist as the work coordinator is responsible for the behavior

and personality of the animal as well as of the client.

Pet Partners (2012) summarized the critical differences between AAA and AAT

in a table for ease of comparison. Additionally, whereas AAA may have one or more of

the characteristics in the comparison, AAT requires all six, because AAT is a more

formal process than AAA.

Table 0.1
Differences Between AAA and AAT

AAA	AAT
Casual "meet and greet" activities that involve pets visiting people	Significant part of treatment for many people who are physically, socially, emotionally or cognitively challenged
No specific treatment goals	Stated goals for each session

Same activity can be used with many people	Individual treatment for each patient
Detailed noted unnecessary	Notes on patient progress taken at each session
Visit content is spontaneous	Visit scheduled, usually at set intervals
Visit can be as long or short as desired	Length of visit is pre-determined to best fit needs of patient

Note. Adapted from "Understanding the Difference Between AAA and AAT" by Pet Partners, 2012, para. 1.

Traditionally, equine AAIs fall under the jurisdiction of PATH Intl., 2014. However, because Pet Partners' definitions of AAIs include all animal species, for the sake of succinctness, this review will use Pet Partners' definitions.

Despite Pet Partners' efforts to promote standardization of terminology in the AAI field, there is still inconsistency in the terms being used in the AAI literature and field. Some of the terms that can be found in the literature include pet therapy, animal-assisted therapeutic activities, pet-facilitated therapy, and more. This lack of consistency is ongoing and has led to confusion within the field itself, and among clients, other professionals, and the broader public (Brooks, 2006; Kruger & Serpell, 2010).

Similar to Sempik et al.'s (2010) assertion that not everything that is green is Green Care, Kruger and Serpell (2010) state that it is important to make the distinction between an emotional response to an animal that arises in a recreational context and one that arises in therapy. Not every event that is enjoyable to the patient is necessarily a kind of therapy. According to Kruger and Serpell (2010), there is a tendency for quasi-medical fields to use the word "therapy" to describe a transient relief or pleasure but whose practitioners cannot diagnose or affect human disease in a credible and ethical way (e.g.,

aromatherapy, gemstone therapy, and massage therapy). Unfortunately, this is also evident in the AAI field. The urge to call recreation and visitation programs AAT should be resisted, the same way that a clown's visit to a pediatric hospital would not be referred to as a clown-assisted therapy (Kruger & Serpell, 2010).

Horticulture interventions. Similar to the distinctions between AAA and AAT in AAIs, horticulture interventions distinguish between Horticulture Therapy, which is defined as the engagement of a client in horticulture activities by a professional with defined clinical goals where the professional functions as a medium, and Therapeutic Horticulture, defined as any process in which an individual engaging in horticulture may develop well-being. This process may be achieved by passive or active involvement. However, the terms are being used interchangeably in the literature to describe the interactions between individuals and plants that are mostly but not necessarily facilitated by trained professionals (Sempik, Aldrige & Becker, 2003; Sempik et al., 2010).

More recently, the term *Social and Therapeutic Horticulture* has become more prevalent. The inclusion of the word *Social* signifies the importance of social interactions, outcomes, and opportunities as an important part of horticulture interventions. This definition emphasizes the activities that are centered around horticulture by vulnerable people and conducted in a formalized and organized environment (Sempik et al., 2003; Sempik et al., 2010).

The above definitions reflect the thinking and writings in the UK. The American Horticulture Therapy Association (AHTA) has a position paper with definitions regarding human interaction with plants and gardens. As is the case with AAIs, as this practice

gained popularity numerous terms to describe it were used interchangeably (e.g., therapeutic horticulture, garden therapy, social horticulture, therapeutic gardens). AHTA uses the terms *horticulture therapy, therapeutic, horticulture, social horticulture, and vocational horticulture* to describe types of programs. Whereas the definitions for horticulture therapy and therapeutic horticulture are similar to the ones above, they define social horticulture as a leisure or recreational activity without treatment goals or the presence of a therapist; a community garden is an example of this type of program. Vocational horticulture is defined as providing training for individuals who may or may not have some type of disability as part of a therapy program to work professionally in the horticulture industry. They may work independently or semi-independently (AHTA, 2007). AHTA also defines different settings of gardens as those may aid in their design and purpose: *healing gardens, therapeutic gardens, horticulture therapy gardens, and restorative gardens* (for details see: AHTA, 2012).

Green Care is a new and developing intervention modality. Writers within the Green Care field encourage researchers and practitioners in this field to link Green Care with existing established theories in order to put it in context and ground it in a bigger body of knowledge and understanding (Sempik, Hine, &Wilcox, 2010). This study suggests linking Green Care to the PYD model, a conceptual and theoretical framework intended to promote positive development. From the application aspect, PYD is also an intervention or program intended to promote positive development. It is suggested in this study that Green Care can function as an intervention modality informed by the PYD model to promote positive development.

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Interventions for Problem Behaviors Among at Risk Children and Youth

Preventing and treating problem behaviors among youth in the United States dates to the 1800s. However, these early attempts lacked a strong theoretical foundation and were based on the understanding of that time. Accordingly, the results of these early efforts produced very little positive change for children and youth exposed to such programs. Effective intervention (prevention and treatment) programs rely on founded theories to inform their direction and services. In recent years, sociological and psychological theories have been used to design and increase the effectiveness of intervention programs for at-risk youth (Jenson, Alter, Nicotera, Anthony, & Forrest-Bank, 2013; Jenson & Bender, 2014).

Although we witnessed theoretical progress in the way antisocial behavior was understood, prevented, and treated over the past decades, practitioners in this field still found it difficult to apply the complex theoretical models to concrete interventions (Jenson, 2006). The PYD framework is an example of a theoretical framework that informs intervention efforts (Jenson et al., 2013). Moreover, the PYD framework is considered the most contemporary and cutting-edge approach to understanding human development to date (Lerner, Lerner, Bowers, & Geldhof, 2015).

Positive Youth Development

PYD as an instance of developmental science. Developmental science encompasses the philosophical concepts, theory, research, and application (policies, interventions, and programing) of improving and promoting positive development across the life span (Lerner, 2006). The period of adolescence that is examined under this

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perspective is termed Positive Youth Development (Lerner, von Eye, Lerner, & Lewin-Bizan, 2009). Over the decades of the development of this scholarly field, it has had several labels: child psychology, child development, developmental psychology, and developmental science. These labels reflect the ontological and epistemological assumptions about human development changes over time (Lerner, 2015).

In its beginning, the field of child psychology/development and human development at large was understood by reductionist conceptions and through a Cartesian-dualism lens. This split led to understanding development as reductionist nature versus nurture variables which in turn led to variable-centered analyses. By the 1970's there was a call to shift towards an approach which views development, change processes, and growth as the interrelations among variables. New ideas about the potential of relative plasticity (the potential of systemic change); the mutually influential, bidirectional relationship between individuals and their context; and a methodological shift from variable-centered to person-centered research came together in synergy to create a new paradigm of Relational Developmental Systems of understanding human development (Lerner, 2015; Lerner et al., 2015).

The Relational Developmental Systems paradigm rejects the Cartesian-split approach and stipulates that human development is typified by the interaction of multiple integrated and fused systems (Lerner, 2006; Lerner et al., 2015; Overton & Molenaar, 2015). From a human development point of view, a developmental system includes an individual (a system composed of genes, biology, chemistry, history, and so on) and their context (a system composed of family, community, culture, history, and so on) (Lerner,

2006). Due to the integration of all levels of a developmental system, there are mutually influential, bi-directional relationships between all levels of the system. This relationship can be represented as individual ⟵ ⟶ context relations (Lerner, 2006; Lerner et al., 2015). In other words, the context affects the individual's behavior, and the individual affects the context's behavior. Since history or temporality is one layer of a developmental system, it suggests that a systemic change within the individual or their context is possible. This potential for change is termed plasticity and is regarded as a strength of developmental systems (Lerner, 2006; Lerner et al., 2015).

In the course of its development, the field of developmental science has become multidisciplinary due to the various systems that are involved in developmental systems (Lerner, 2015; Lerner et al., 2015). In the 21st century, data from fields such as epigenetics, evolution, and others served to further the philosophical and theoretical advancement of developmental science, and the Relational Developmental Systems paradigms (Overton & Molenaar, 2015). Overton and Molenaar (2015) give several examples of such new knowledge that is shifting the developmental science paradigm. Findings from the field of epigenetics show that any manifestation is more complex than the previous Cartesian position of a simple additive function of genes and environment (e.g., Bateson, 2015; Lickliter & Honeycutt, 2015; Overton, 2015). Another example that challenges the Cartesian perception that mental processes take part solely in the brain is the view that mental processes also take place in the body as embodied action, as well as into the cultural and technological worlds (e.g., Marshall, 2015; Mascolo & Fischer, 2015; Overton, 2015). A third example is from the field of sociocultural development,

where a shift from the view that individual development is separate from culture towards an understanding that there is a mutual development, construction, and determinism between individual development and culture (e.g., Mistry & Duta, 2015).

Lerner et al. (2015) also give examples from the fields of epigenetics and evolution that contribute to the changing view about relational developmental systems. Evidence and conceptual thinking which adopt the relational developmental paradigm in this field assert that development cannot be understood by simple reductionist causation and outcome, but by the many merged levels of a system. Developmental processes and change are created by the bi-directional relation of the individual and their context. Genes can be manifested and altered as a result of this bidirectional relation. In turn, genes that were altered through behavior or another context can be inherited. Further, the developmental process and change show relative plasticity in structure and/or function (Lerner et al., 2015).

PYD as a developmental process. Human development encompasses the developing individual and the various levels of their context. This bi-directional, mutually influential, and reciprocal relationship represented as individual ←→ context is termed developmental regulations (Brandtstädter, 2006), i.e., it governs the direction, pace, and outcomes of development (Brandtstädter, 2006, Lerner, Lerner, von Eye, Bowers, & Lewin-Bizan, 2011). When the developmental regulations are benefiting both the individual and their context they can be termed as adaptive (Brandtstädter, 2006).

History, or temporality, is an integral part of the ecology of a developing system through developmental regulation. Therefore, change is always possible for the

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individual, and to some extent, systemic change to the context is also possible. The

potential for change, or plasticity, at both the individual and context levels, is viewed as a

strength in human development (Lerner, 2006; Lerner et al., 2015). Plasticity means,

however, that change for the better or for worse can affect a developmental trajectory

(Lerner et al., 2011; Lerner et al., 2015).

Another characteristic of the relational developmental systems view is diversity.

Relational meta theory avoids all splits. In the lens of developmental science, avoiding

the split of normal and abnormal (usually based on mainstream samples and ignoring

multiculturalism) opens the way for accepting diversity (Lerner, 2006). Additionally, the

countless possibilities that are created by the intra and inter differences of individuals and

contexts as integrated systems also create diversity (Lerner, 2006).

Moreover, both the individual and the context possess strengths and assets that

can contribute to positive development (Benson, Scales, Hamilton, & Sesma, 2006; The

Search Institute: http://www.search-institute.org/). Since relational developmental

systems are diverse, it can allow finding some ways (through research, policies, or

programing) to align the assets of the individual and the context in order to promote

positive development (Lerner, 2006; Lerner et al., 2011, Lerner et al., 2015).

PYD informed youth programing. There are several approaches to PYD as a

developmental process which in turn lead to constructing youth programing (for a review

of approaches and programs see Lerner et al., 2012; Lerner et al., 2015). This review will

focus on the Lerner and colleagues model (Lerner et al., 2005; Lerner et al., 2009; Lerner

et al., 2011) for two reasons. First, this model has the most empirical support of all

relevant models (for a current review see Lerner et al., 2015). Second, for the purpose of designing and assessing youth programing, this model is the most accessible for operationalization.

Informed by the Relational Developmental Systems paradigm, the PYD approach shifted from the deficit approach that characterized the theory and practice of adolescence to a view of strengths and assets that are possessed by the individual and their context in mutually influential relations (Lerner et al. 2005). Moreover, the PYD approach does not view positive development merely as the absence of problem behaviors; rather, it is viewed as thriving, flourishing, and healthy development (Lerner et al., 2009; Lerner et al., 2015). Thriving is conceptualized/operationalized through growth in the attributes that are termed the 5Cs of PYD: competence, confidence, character, connection, and caring (Lerner et al., 2005).

The main hypothesis of this model is that if the strength and assets of youth can be aligned with those of their context, healthy development will be optimized (Lerner et al., 2015). The second hypothesis assumes that in positive development, the person-context relationship is mutually beneficial; thus, a thriving young person will contribute positively to their ecology/context (Lerner et al., 2005; Lerner et al., 2011). In this kind of a relationship, it is assumed that a thriving young person will be less likely to engage in risk or problem behaviors (Lerner et al., 2011; Lerner et al., 2015). This concept of PYD is illustrated in Figure 2.

In order to promote positive youth development, the philosophical ideas of PYD need to be translated into specific programing and actions. Several sources identify broad

domains that should be included when designing youth programs, such as social,

cognitive, emotional, and behavioral competencies, bonding, resilience, and others (for a

review, see Lerner et al., 2015). For example, Lerner (2004) argued for the Big Three

characteristics for an effective PYD program: 1. At least a one- year- long continuous and

available relationship between a youth and a caring and competent adult; 2. Activities

designed to build life skills; and 3. Opportunities to participate in leadership activities. Of

the various approaches and frameworks to design youth programing, to date, the 5Cs

model has the most empirical support. However, although the 5Cs model can be useful in

conceptualizing and operationalizing a youth development program, it is not yet clear

how to translate this model to a specific program (Lerner et al., 2015). Definitions of the

5Cs can be seen in Table 2.

Table 0.2
The 5Cs definitions

Five Cs	Definition
Competence	Positive view of one's actions in domain specific areas including social, academic, cognitive, and vocational. Social competence pertains to interpersonal skills (e.g., conflict resolution). Cognitive competence pertains to cognitive abilities (e.g., decision making). School grades, attendance, and test scores are part of academic competence. Vocational competence involves work habits and career choice explorations.
Confidence	An internal sense of overall positive self-worth and self-efficacy; one's global self-regard, as opposed to domain specific beliefs.
Connection	Positive bonds with people and institutions that are reflected in bidirectional exchanges between the individual and peers, family, school, and community in which both parties contribute to the relationship.
Character	Respect for societal and cultural rules, possession of standards for correct behaviors, a sense of right and wrong (morality), and integrity.
Caring and Compassion	A sense of sympathy and empathy for others

Source: Lerner et al. (2005).
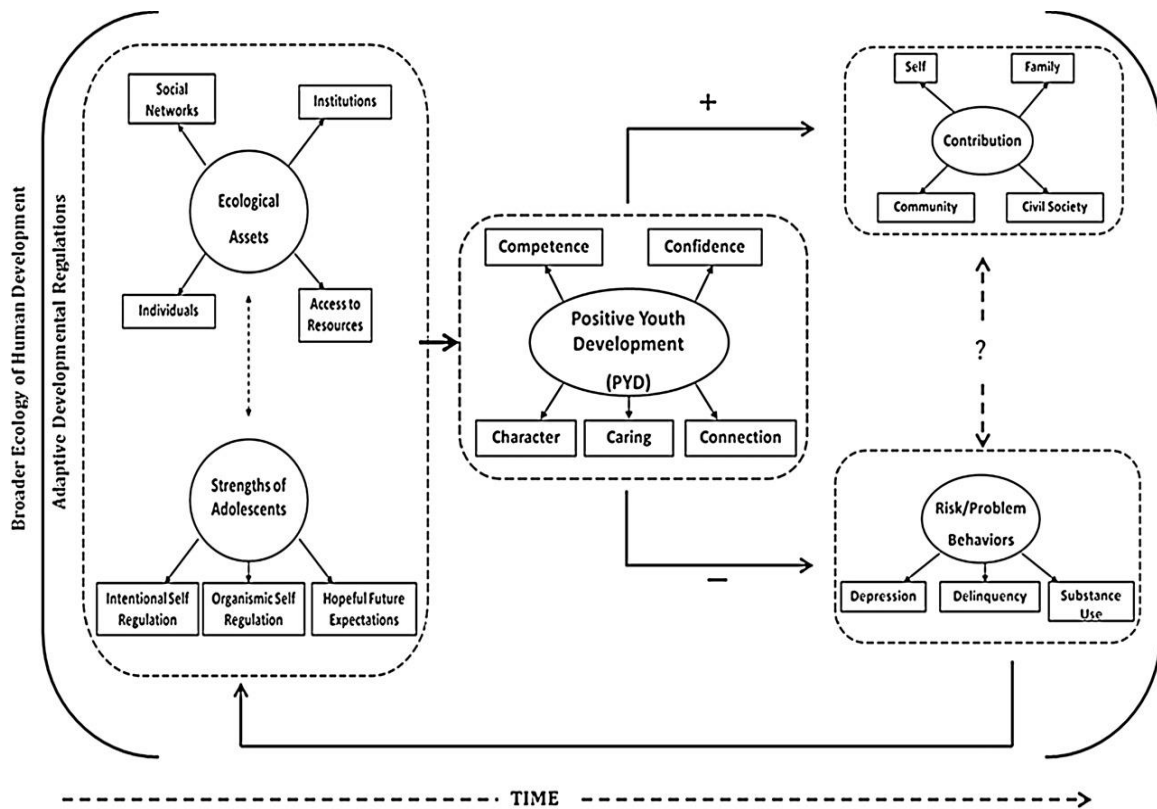
Figure 2. A relational developmental systems model of the individual/context relations in PYD. *Source:* Lerner et al., 2011; Lerner et al.,2015.

As was said above, a prevention program that is informed by the PYD model should make an effort to align the ecological assets with the strengths of the adolescent, with the goal of increasing the 5 Cs. It was also suggested that Green Care can function as a PYD-informed intervention modality, by means of increasing the 5Cs. This will be demonstrated below.

The Potential of Green Care as a PYD Informed Intervention Modality

As was said above, the 5Cs aim to describe the characteristics of well-adjusted and thriving young persons. In other words, they can be related to as the desired outcomes of an intervention. They can also be regarded as mechanisms or mediators of

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other desired behaviors, such as prosocial behavior. There are some Green Care

intervention outcome studies and/or conceptual thinking that are aligned with the 5Cs and

are described below. As explained above, the focus will be on AAIs and Horticulture

interventions.

Competence. Competence is defined as:

Positive view of one's actions in domain specific areas including social, academic, cognitive, and vocational. Social competence pertains to interpersonal skills (e.g., conflict resolution). Cognitive competence pertains to cognitive abilities (e.g., decision making). School grades, attendance, and test scores are part of academic competence. Vocational competence involves work habits and career choice explorations (Lerner et al., 2005. p. 23).

Using a child development model, Endenburg and van Lith (2011) conducted a

review of the human animal connection literature and concluded that there is enough

foundation to assert that pet keeping, and to some extent, AAIs, have a positive effect on

the emotional, social, and cognitive development of children. Based on the child

development model they used, social development includes social competence. Social

competence measures in their review included social skills, social preference, peer status,

pro-social behavior, or developmentally appropriate social play behavior, which were

shown to be positively affected by the human animal bond. According to Endenburg and

van Lith (2011), there are fewer research studies on the influence of animals on cognitive

development; however, it has been suggested that companion animals enhance verbal

skills in children. It was also suggested that because animals are unpredictable, this

unpredictability facilitates what Piaget argued is fueling learning (i.e., "cognitive

incongruity, moderate discrepancy from established schema, and novel information" (p.

211). Additionally, it was shown that animals increase concentration and motivation for learning (Endenburg & van Lith, 2011).

        Confidence. Confidence refers to an "internal sense of overall self-worth and self-efficacy" (Lerner et al., 2005, p. 23). Taking care of animals and growing plants requires the development of certain skills. The successful attainment of such skills can lead to self-esteem and self-efficacy. For example, Berget, Ekeberg, and Braastad (2008) found increased self-efficacy for psychiatric patients working with farm animals in comparison to a control group that received standard therapy. The change was maintained in a six-month follow-up. Similarly, Pedersen, Nordaunet, Martinsen, Berget, and Braastad (2011) found increased self-efficacy among adults with clinical depression working on a dairy cattle farm. The increased self-efficacy was mediated by the progress and mastery of the working skills. In a horseback riding program for people with psychiatric disabilities, participants reported increases in self-efficacy and self-esteem as they were learning and mastering horsemanship skills despite initial fears. A six-month follow-up indicated that the experience was meaningful and the change lasted (Bizub, Joy, & Davidson, 2003). The previously mentioned review by Endenburg and van Lith (2011) showed positive effects of the human animal bond on children's emotional development, including self-esteem, autonomy, self-concept, and empathy (empathy will be further discussed below).

        A small exploratory study designed to assess a vocational horticulture program for young offenders found a slight positive trend in the youths' views of their potential for success. However, half of them still agreed with the statement "What is going to

happen to will happen to me no matter what I do". The feeling they can be successful increased their positive self-image (McGuinn & Relf, 2001).

  Connection. Connection is defined as **"**positive bonds with people and institutions that are reflected in bidirectional exchanges between the individual and peers, family, school, and community in which both parties contribute to the relationship" (Lerner et al., 2005, p. 23). Attachment theory (Bowlby, 1969/1982) and the biophilia hypothesis (Wilson, 1984) provide an explanation of how Green Care interventions can aid in building positive social and environmental bonds. From an evolutionary psychology viewpoint, human survival relied on connection to other humans (i.e., attachment; Bowlby, 1969/1982) and to animals, plants, and the environment (i.e., biophilia hypothesis; Wilson, 1984).

  In recent years, a body of work has demonstrated that people regard their companion dogs as attachment figures (e.g., Kwong & Bartholomew, 2011; Kurdek, 2009). With regard to psychotherapy, following Bowlby's (1988) suggestion to focus treatment on modifying maladaptive attachment styles, Zilcha-Mano, Mikulincer, and Shaver (2011) suggested that AAT might achieve this goal more efficiently than traditional therapy due to the special qualities attributed to animals in therapy (e.g., the perception that animals are non-judgmental, unconditionally loving, and loyal).

  The study mentioned above, which assessed a vocational horticulture program for young offenders, provides another example. It was found that the youths' social bond score increased following the program. This score was composed of several subscales. The findings from the first elicited stronger attachment to school and higher commitment

to education. The second showed a shift to a more positive attitude of respect and attachment to teachers and authority figures. The third subscale showed stronger attachment to peers which, in the case of delinquent youth, might not be a positive outcome; however, peers might also include the positive and more social-confirming influence of the mentors (McGuinn & Relf, 2001).

Character. Character is defined as "respect for societal and cultural rules, possession of standards for correct behaviors, a sense of right and wrong (morality), and integrity" (Lerner et al., 2005, p. 23). Kruger and Serpell (2010) suggested that role theory can explain the benefits of AAT. According to this theory, a role is any set of behaviors that serve a function that is socially agreed upon and has an accepted code of norms. People will change their behavior as they enter new roles in order to conform to the role's expectations. Whether this would be a positive or negative change depends on the role and its associated norms. In contrast to role play that is being used in some interventions that aim towards behavior modification, this theory suggests people actually assume a new role and not just simply play it out in order to strengthen the successful assimilation of new behaviors. According to Kruger and Serpell (2010), this theory falls in line with AAT or training programs for animal caretaking as they allow the individual to assume the role of a teacher or a caretaker.

For children who did not receive modeling for normative behavior in their home and family, a therapist utilizing AAT can model normative social behavior in their interaction with the animal. Moreover, the therapist can mediate the interaction between

the child and the animal, thus enabling the "modeling and internalization of accepted social rules" (Parish-Plass, 2008, p.14).

We can combine the two ideas mentioned above and say that AAT can provide individuals with the opportunity to observe modeling and to practice mediated interactions that target the acquisition of behaviors that foster social and cultural norms, and moral decisions.

Caring and compassion. Caring and compassion are defined as "a sense of sympathy and empathy for others" (Lerner et al., 2005, p. 23). According to Levinson (1983), who is considered to be the pioneer of AAT, since communication with animals is not verbal, and they cannot say what they need or feel, it requires the child to imagine how the other feels or thinks. The child needs to be sensitive to the cues of the pet they are taking care of. The same logic can be applied to horticulture. Communication with plants is nonverbal, and in order to be successful in growing plants, one needs to be sensitive to the plants' signals of what they need in order to prosper. There is some evidence that pet keeping, mediated by the strength of the relationship between the child and pet (e.g., Poresky & Hendrix, 1988; 1990), and humane education programs (e.g., Ascione, 1992) can increase empathy among children.

Above, it was illustrated how a Green Care intervention that is based on AAIs and Horticulture interventions might be viable in increasing the 5Cs and thus have the potential of promoting PYD. The Green Care framework depicted above is utilizing the human-animal-environment relationship as the intervention itself. Another field that is concerned with the human-animal-environment relationship is One Health.

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One Health

      The One Health paradigm recognizes that the health of humans, animals (pets, livestock, and wildlife), and the environment is interconnected (e.g., the One Health Initiative; AVMA; CDC; Zinsstag, Schelling, Waltner-Toews, & Tanner, 2011). Comparative medicine (humans and veterinary) have roots in the ancient world among various cultures (for example: Egyptian papyri dating to 1800 BC deal with human and animal diseases, viewing them collectively as the flock of God; 11-13th century China had an organized public health system which included medical doctors and veterinarians; in India, medical knowledge was influenced by the belief of reincarnation between humans and animals)(Zinsstag et al., 2011). These ideas resurfaced in the 19th century, and the term "one medicine" was coined to signify integrative medicine. However, it was not widely practiced until the 1970's and 80's (for a brief historical account see Zinsstag et al., 2011). Emerging zoonotic viruses that had the risk of creating global crises at the beginning of the 21st century brought governments and scientists worldwide to acknowledge the need for interdisciplinary collaborations in order to control and prevent zoonoses. It was recognized that such collaborations should include not just physicians and veterinarians but wildlife specialists, environmentalists, sociologists, economists, and more. The term One Health was suggested as a framework for such collaboration (Gibbs, 2014). Whereas the One Health literature reflects concern for controlling infectious diseases and public health, there is a growing interest within the social sciences, among other disciplines in this paradigm (Gibbs, 2014). Following are several examples of the roles the social sciences can serve within the One Health paradigm.

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The World Health Organization's (WHO) definition of health is: "…a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (http://www.who.int/about/definition/en/print.html). An example of integrative health thinking that includes mental health can be found in the field of disaster preparedness. Shultz (2014) advocates for the integration of disaster public health (the physical aspect) and disaster behavioral health (the psychological aspect) as they are inseparable. Additionally, it is important to note that the psychological effects of disaster were neglected in the pre-9/11 era (Shultz, 2014).

In 2015, the UN introduced a new sustainable development agenda, including 17 goals to be reached by 2030 (http://www.un.org/sustainabledevelopment/sustainable-development-goals/). Some writers advocate that some of these goals can be reached by adopting a One Health approach (e.g., Lueddeke, Kaufman, Lindenmayer, & Stroud, 2017; Gostin & Friedman, 2015). For example, the Food and Agriculture Organization (FAO) of the United Nations names several of the challenges to health as they are reflected by One Health concepts: The growing human population creates increasing demand for natural resources; There is a growing demand for both plant and animal based foods that intensify food production systems; Expanding global commerce allows pathogens to spread faster and farther than before, creating an issue of food safety; The increase in human population is additionally pushing people to new, previously uninhabited environments; Countries with transitioning economies bring up issues of economic growth, food security, poverty and hunger mitigation, and rural development; Climate change is expected to create more ecosystems where bacteria, parasites, and

viruses can flourish

These fast, global changes are encroaching on Earth's systems. For the past 10,000 years, the Earth's systems have been in equilibrium; however, currently, these systems are in danger of becoming unstable. It is possible to identify earth systems' processes that can become unstable past certain thresholds (Rockström et al., 2009; Steffen et al., 2015). Rockström and colleagues (2009; Steffen et al., 2015) identified nine such processes and termed them the planetary boundaries: "climate change; rate of biodiversity loss (terrestrial and marine); interference with the nitrogen and phosphorus cycles; stratospheric ozone depletion; ocean acidification; global freshwater use; change in land use; chemical pollution; and atmospheric aerosol loading "(p. 472). Thus far, seven of the nine areas have been quantified (Rockström et al., 2009; Steffen et al., 2015).

As the aspiration is to allow for sustainable human development (Rockström et al., 2009; Steffen et al., 2015; Amman, 2012; Rechkemmer, 2015), Ross (2013) suggests the social ecological systems paradigm to inform One Health theorists and practitioners about the nature of human interactions with domestic and wild animals and their ecosystems. She proposes cultural, cognitive, and behavioral dimensions for understanding human thinking and behavior in their interactions with animals and ecosystems that are relevant to One Health.

Cultural dimensions: Culture reflects the way human-animal-ecosystem interact for economic and social purposes. This is determined by religion, belief systems, economic needs, and so on. Different societies then create different interactions based on

these characteristics. Understanding those and communication styles can provide strategies in addressing disease risks.

Cognitive dimensions: Social values and beliefs lead to behavioral norms of right and wrong. Understanding these might assist in communicating risk behaviors for preventing disease transmission. Another aspect is identity. People will be less likely to change their behaviors even if those are harmful to animals or ecosystems if that behavior is highly tied into their identity, and not just for economic reasons. (for more cognitive dimensions see Ross, 2013).

Behavioral dimensions: This dimension includes the reasons people interact with animals and ecosystems (e.g., livelihood, such as hunting and gathering for food or medicine; companionship; aesthetic appreciation), the role of animals in economic relationships (e.g., livelihood, such as food or cash, social status, animals as work force), the role of the environment in livelihood (e.g., clearing woods for agriculture), and the role of companion animals, assessing the benefits and risks of these relationships (Ross, 2013).

Zinsstag et al., (2011) also suggested the social ecological systems paradigm as a framework for One Health research and practice. They begin their reasoning by generally demonstrating the importance of systems thinking to health, and then more particularly to discuss the role of human activities in understanding how to best address health and well-being outcomes. Human interactions in these systems are determined by social, cultural, economic and political factors. Thus, it is important to understand the cultural and socio-political contexts as they affect health outcomes (Zinsstag et al., 2011).

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Other researchers (Rock, Buntain, Hatfield, &Hallgrisson, 2009) make the point that, whereas the social sciences recognize the link between social problems and social inequalities to health problems, and the human health and veterinary fields recognize the link between human and animal health, the One Health field is not addressing the human-animal connection and its effect on health outcomes. They suggest this role should be taken by the social sciences. Animal health and public health should be socially mediated since the human-animal connection occurs in cultural, economic, and emotional ecological relationships (Rock et al., 2009).

Williams (2014) advocates for including One Health thinking in social work research and practice. Both One Health and social work rely on the understanding and intervening with complex systems to promote positive outcomes for individuals and communities. Additionally, social work research on social, psychological, and economic issues such as poverty and child well-being might contribute and aid to bridge the social science gap in the One Health framework (Williams, 2014).

The One Health field is relatively young and is still evolving and forming. The lack of a generally accepted theoretical framework brings about several points of critique that are of relevance to this study. First, although the One Health paradigm calls for multidisciplinary collaboration, it still very much functions in separate silos of thinking, with the exception of collaboration between human and veterinary medicine (Zinsstag et al., 2011). Above, I provided a few examples of the role the social sciences can serve to One Health concepts and the importance of such contribution. Second, while the One Health field is typified by risk informed, post-disaster, and reactive approaches (Amman,

2012; Zinsstag, Schelling, Waltner-Toews, Whittaker, & Tanner, 2015), it is encouraged to shift to proactive approaches that focus on prevention (Amman, 2012; Rockström et al., 2009; Steffen et al., 2015). This study is suggesting Green Care as an intervention informed by PYD concepts. The PYD approach for intervention programs relies on strengths and resilience-building that promotes thriving and by doing so reducing problem behaviors. Such programing might fit the call for prevention within the One Health paradigm. Last, although the One Health paradigm advocates for the health of humans, animals, and the environment, Hanraham (2014) argues that it is an anthropocentric view of health. The health and well-being of animals and ecosystems and animal welfare are being considered only to the extent that they affect human health. She draws a parallel to social work theory and practice. Although social work theory is embedded in the concept of person-in-environment which relies on general systems theory, this concept of person-in-environment had been reduced and limited to only the social environment. She gives several examples from critical social work which considers this practice oppressive and morally limiting and promotes a more biocentric approach. She concludes that social work theory and practice and One Health can collaborate on this shortcoming and inform one another towards a biocentric approach (Hanraham, 2014).

Conclusion

This study provides the rationale for the conceptual link between three distinct bodies of knowledge: Green Care, PYD, and One Health, and suggests that these three distinct bodies of knowledge have some points of interface or intersection (as illustrated

in Figure 3). *PYD and Green Care:* In one of its aspects PYD is an intervention intended to increase the 5 Cs. It was demonstrated that Green Care interventions have the potential for increasing the 5Cs; thus, Green Care has the potential for operating as a PYD-informed intervention modality. *One Health and PYD*: One of the areas of concern in the One Health field is the imbalanced relationship of humans, animals, and the environment, and the role of human behavior that contributes to this unbalance. It is suggested that this relationship can be brought to balance by intervention programs designed to modify human behaviors and that the PYD model might serve as a useful framework for such programing. Additionally, both approaches rely on contemporary systems thinking. *One Health* and *Green Care:* As was said above, one of the One Health field concerns is the human-animal-environment relationship, whereas the Green Care intervention is using this relationship as the intervention "tool" itself. As can be seen, One Health and PYD have a point of interface. However, Green Care has a bigger intersection with both PYD and One Health and thus can be considered as the bridge that connects these three fields together.

Sempik et al., (2010) list ecotherapy as one of the possible Green Care interventions. They define contemporary ecotherapy as "an umbrella term for all nature-based methods aimed at the re-establishment of human and ecosystems' reciprocal well-being" (p. 44). The goal is to enhance social, physical, and psychological health for individuals and ecosystems. This definition is of importance to the thesis brought up in this review for two reasons. First, the idea that individuals and ecosystems co-act in a mutual and reciprocal relationship is tied to the ideas of PYD as was presented above.

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Second, tying together individuals with ecosystems (environment, plants, and animals) is central to the One Health paradigm. Thus, this definition of contemporary eco-therapy is tying together the fields of Green Care, PYD, and One Health. Although this study explores AAIs and horticulture intervention, which are distinct Green Care interventions, I argue that their combination can fit under the contemporary ecotherapy umbrella.
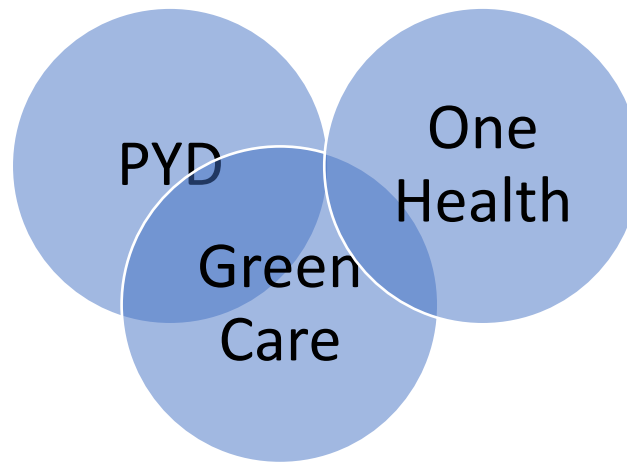
Figure 3. The relationship between Green Care, PYD, and One Health.

Beyond making this conceptual link between Green Care, PYD, and One Health, this study also performed an initial inquiry into this conceptual link. More specifically, it aimed to examine if a Green Care program can function as PYD-informed intervention modality by increasing the 5Cs. The method of choice in this case is a qualitative one for two reasons. First, I was interested in finding the presence of the 5Cs within children who participate in a Green Care program; however, I also wished to remain open to identifying other parameters that might arise. Second, instead of simply measuring the 5Cs, my intention was to tap into the mechanisms that may be involved in the process of

the 5Cs change for children who participate in a Green Care program. In other words, what element of the program led to such a change. Additionally, I matched patterns of the 5Cs to existing data that can be conceptually related to the 5Cs.

The research questions are:

- Is there presence/change of the 5Cs among children who participate in a Green Care program?

- Is there presence/change of other elements that are not the 5Cs among children who participate in a Green Care program?

  The purpose of the above two questions is to find out if the PYD model's 5Cs can provide a full explanatory framework for Green Care interventions (i.e., finding the presence of all five components), a partial explanatory framework (i.e., only few of the 5Cs), or perhaps an expansion of the framework to include other elements that are not the 5Cs.

- What are the mechanisms that might explain/lead to such a change in the 5Cs/other elements that are not the 5Cs? ("Mechanisms" refers to any components of the intervention that can explain the change if found).

- Can patterns of the 5Cs revealed in the interviews be matched to patterns in existing data that can be conceptually related to the 5Cs?

Chapter Three: Methods

Study Context

Green Chimneys is a nonprofit organization located in New York State, which offers several programs, such as special education school, summer camps, outdoor education, and before and after school enrichment programs. All programs are based on animal and environment therapies and activities (e.g. gardening, nature exploration and study, farm and wildlife activities) (www.greenchimneys.org). Of interest to this research is Green Chimney's special education school. The school serves around 200 boys and girls in grades K-12; these individuals are day and residential students with special needs such as Anxiety Disorders, ADHD, Autism Spectrum Disorders, Bipolar Disorder, Impulse Control Disorder, Mood Disorder, Post-Traumatic Stress Disorder, and Reactive Attachment Disorder (www.greenchimneys.org).

The school's academic curriculum meets the New York state standards and is conducted in an experiential learning environment incorporating a nature-based approach (i.e. animals, plants, and environment). Beyond the educational aspect, the nature-based approach is also incorporated into the clinical and recreational aspects of students' experience in Green Chimneys (www.greenchimneys.org).

There are five main categories of programs incorporating animals/plants at Green Chimneys: classes, therapy, farm jobs, after school clubs, and evening programs. These are elaborated below:

- Classes- classes include: wildlife, farm, riding, dog education, and garden. Half a class attends these classes while the other half is having a different class (e.g. consumer education). The classes are offered on alternating quarters based on age group (one quarter for younger kids, and the next for the older kids). It is important to note that garden classes were not offered for approximately half a year (the garden teacher resigned, and a replacer was not yet found).

- Therapy- social workers have the option of conducting their sessions with the kids at any of the animal facilities (teaching barn (farm), horse barn, wildlife, dog kennel) if they so choose. Day students meet with their social worker at least one hour a week. Residential students receive 45 minutes of individual therapy, and 45 minutes of group therapy a week. Once a month they have family therapy.

- Farm job- children have the option of working with interns whose job is to care for the animals (e.g. feeding, cleaning) at any of the animal facilities as specified above. The children can request a farm job, and which one they would like. Based on availability a child will get a farm job and the one they asked for. The children also get paid for their farm jobs. Farm jobs take place in the morning between 7:30-8:30. This time slot is available only for residential students. End of day farm jobs takes place between 2:45-3:30 pm. typically a child will have an hour a week of a farm job.

- Afterschool clubs- the after school clubs include horsemanship, farm, dogs, and Boni-Bel (whereas the garden classes take place on campus, the club takes place at Boni-Bel which is a much bigger and more versatile garden about a mile down

the road). The clubs are being offered for an hour a week on a quarterly basis. However, there are many other options the kids can choose for clubs (e.g. sports, music, art, culinary). The ability of day students to participate in clubs depends on their own district's transportation (some of the students arrive from more remote places).

- Evening programs- these are similar to the afterschool clubs and available to residential students. Additionally, residents can have mandatory evening activities (e.g. life skills).

Procedure

Consent phase. All procedures were approved by the University of Denver, Institutional Review Board for Human Subject Research, and by Green Chimneys' Institutional Review Board. I asked Green Chimneys to generate a list of eligible participants for my study based on my inclusion criteria (ages 8-12 and at least one year in the program). Parental consent forms with a cover letter signed by me and Green Chimneys' Clinical Director were sent to all eligible participants' parents on January 31st, 2017 (An example of parental consent form can be found in appendix A). Since my aim was to interview 20 children, by the time Green Chimneys received about 25 signed consents we started planning my travel to visit with them (February 13th, 2017). For the sake of efficiency and time, Green Chimneys prepared a list of the children for whom we received signed parental consent just prior to my visit. My visit with them took place on March 13-17, 2017. The list I received contained 46 participants along with all the consent forms for my records. By the time I finished the data collection there was a total

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of 58 consents received. However, as was said above, I worked with a pool of 46. Only after the fact it also came apparent to me that consent forms were sent to all kids within the age criteria regardless of how long they were in the program. At any case, the criterion of at least one year in the program was an arbitrary decision on my part of what seemed to be a reasonable time frame to witness a change. That makes the total of consents sent 153 (I will report youth's duration in the program in the sample description below).

Selection phase. To select the 20 participants out of 46, I took the pile of consents and alternately divided it to two (i.e., I took one at the time for each pile). When I reached 20 I stopped, and marked each participant on my list. In cases where a selected participant was not available, I went one down the list for the next one, which resulted in 5 swaps.

Interview phase. There are two points I would like to mention before I describe the interview process as they affected this process. Firstly, although not required by IRB, I wanted the children to sign assent forms as well, to give them the feeling of choice. Secondly, all doors at the school and dorms are locked with a key card, so I received help from staff bringing and taking back the youth to the school or dormitory.

Because two out of the four days of interviews were snow days, the operation of the interviews was conducted in two major ways. On the first snow day, I interviewed only residents in an unoccupied office in one of the dorm buildings. The children were brought to me and taken by dorm staff. On the second snow day, I interviewed again only residents in an unoccupied office in the administration building. Dorm staff, again,

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brought and took the children. Before I started the interview, I went over the assent form with the children, explaining who I am, the purpose of the interview, and so on (An example assent form can be found in appendix B). After the children had signed the assent form, we conducted the interview. On the other two days, I interviewed day students in an unoccupied office in the administration building. The children were brought and taken by the Health Center staff aid, and a psychology intern. On these days, they are the ones who went over the assent with the children, and I received the signed assent when they brought the child. The reason for this difference in assent process stems from the fact that when I interviewed the day students, I needed to explain the procedure only to two people, and thought the children might feel more comfortable with having someone they know explaining to them what is being asked of them. When I interviewed the residents, it was on the spur of the moment arrangement, I had multiple staff members involved, and it made more sense for me to do the assent process myself. In all cases, each interview lasted about 30 minutes and was audio recorded (A full interview protocol is included in Appendix C).

Sample

Green Chimneys has a total of 205 students, out of whom 17 are girls (8.3%), and 102 are residents (≈50%). My sample included 20 participants, out of whom 1 was a girl (5%), and 11 were residents (55%). The sample constituted 9.75% of the entire school population, and 13% of the age group (total of 153 students ages 8-14). The distribution of students by age at Green Chimneys and the sample are provided in table 3.1 below.

Two interviewees' data were excluded from the analysis for the following reasons. Interviewee #19 was uncooperative and was thus excluded from my analysis. Interviewee #2 said he does not care for Green Chimneys' animals because he cares for the animals on his Dad's farm which is a commercial farm, and the interview surrounded those animals in his life. After analysis, I decided that my ability to use the data from this interview was very limited because the approach to animals at Green Chimneys which is closer to the interaction with pets or companion animals is very different from that of a commercial farm. The numbers in parentheses reflect this adjustment.

Table 0.1
Age distribution of sample

	Green Chimneys		Study (adjusted)	
Age	No.	%	%	No.
8	10	6.5	5 (5.5)	1 (1)
9	22	14.38	5 (5.5)	1 (1)
10	14	6.54	10 (11.1)	2 (2)
11	19	12.4	15 (16.6)	3 (3)
12	26	16.9	20 (16.6)	4 (3)
13	30	19.6	20 (22.22)	4 (4)
14	32	20.9	25 (22.2)	5 (4)

The youth in my sample have one or more of the following diagnoses: ADHD; ADHD (combined type); ODD; Autism Spectrum Disorder; Generalized Anxiety Disorder; Mood Disorder; Schizoaffective Disorder (Bipolar Type); Bipolar Disorder; Anxiety Disorder; DMDD (Disruptive Mood Dysregulation Disorder); Reactive Attachment Disorder.

Duration at Green Chimneys. Interviewee #17 had been in the program for only 2.5 months. At the time, I thought it was a glitch that he came up in my sample (as I said above, only after the data collection I found out that consent letters were sent to all

parents in the age group). Since he was one of the last interviewees, I thought it might be

interesting to see what I heard from someone who is relatively new to the program. The

rest of the participants' duration in the program can be found in table 3.2 below.

Table 0.2
Participants' duration at Green Chimneys

Duration (years)	No. of participants
1-2	7
2-3	6
4-5	2
5-6	2
6	2

Analysis

For the analysis process of this study, I chose template analysis as a method to

inform this process. This section will have three parts: firstly, I will describe the reason

for this choice; secondly, I will describe the mechanics of using template analysis; lastly,

I will describe the actual analysis process for this study.

Rationale. Template analysis is a technique utilizing the thematic organization

and analysis of textual data (Brooks & King, 2012; King, 2012; King, 1998).

Epistemologically, template analysis can be positioned on a spectrum between a more

positivist approach attempting to reveal the underlying causes for human behavior (e.g.,

content analysis), and a social or contextual constructionist approach which assumes

multiple interpretations of a phenomena are possible (e.g., phenomenological approaches)

(King, 1998; Brooks & King, 2012; King, 2012). It is a flexible approach that lends itself

to various epistemological views and not leaning more towards one end of the spectrum

or the other (King, 1998; Brooks & King, 2012; King, 2012).

There are two features of template analysis that make it suitable for the purpose of this study. First, template analysis commonly focuses on across cases analysis rather than on within cases (Brooks & king, 2012). Second, template analysis allows the researcher to define some "a priori" codes, based on theory, that are applicable to the data set (Brooks & King, 2012; King, 2012).

Template analysis allows for a priori codes by acknowledging that sometimes researchers start a project with assumptions about the phenomena under investigation (Brooks & King, 2012). However, it is important to recognize that all a priori codes are tentative and subject to deletion or redefinition if they do not prove effective in characterizing the data. Additionally, it is also advised that researchers limit the number of a priori codes in order to avoid defining the template too early and to ensure that no themes that are unrelated to the a priori themes are overlooked (Brooks & King, 2012; King, 2012). In a case where the design and goals of a study are informed by theoretical concepts, the use of a priori themes can be particularly advantageous (Brooks & King, 2012). As was previously stated, this study is informed by a theory to be investigated and will use the 5Cs as a priori codes. Additionally, due to the emphasis on theory, it will attempt to find the presence of the 5Cs across cases.

Mechanics of template analysis. In this section, I will describe the application of template analysis. In the analysis process of this study, I did not necessarily use all possible features available by this technique. However, I would like to provide an overview of this method as a whole. The section that follows this overview will provide an account of the specific features I used in the analysis process of this study.

Coding.

Defining codes. Codes are defined by attaching a label to a section of text related to a theme that is associated with the research question (King, 1998; King, 2012). Template analysis allows for codes to be descriptive or interpretative (King, 1998). It is important to note that defining a theme implies a repetition, within and between participants. Additionally, themes need to be distinctive from one another (King, 2012).

Hierarchical coding. Codes can be grouped together to create a higher order code. This allows for analysis in varying levels of particularity (King, 1998; King, 2012). A higher level broad code can give an overview of the issues, whereas detailed lower codes enable fine distinctions both within and between cases (King, 1998). Although there can be as many levels deemed useful by the researcher, it is important to remember that having too many levels might hinder the clarity and organization of the analysis (King, 1998; King, 2012). Usually, studies fall in the range of having two to four levels (King, 1998). Themes can also be linked laterally across lower order themes (King, 2012).

Parallel coding. Template analysis allows the assignment of different codes to the same segment of text at the same level. That can be problematic in cases where a researcher wants to use template analysis that is closer to the positivist end of the spectrum (King, 1998; King, 2

Integrative themes. Sometimes there are themes that run across participants' accounts. They do not fit as a higher-level theme but are too important to be a sub theme (King, 2012).

Forming the template.

Forming an initial template. To help guiding the analysis, template analysis typically starts with several predefined codes. It is important to be cognizant of the amount of predefined codes being used. Too many carry the risk of neglecting data which conflicts with the researcher assumptions. Too little, on the other hand, may overwhelm the researcher handling large amounts of complex data (King, 1998). The initial template is typically applied to a subset of data and then utilized on the rest of the data (King, 2012).

Once the initial template is defined, the researcher goes over the entire data set. Each section of text is being assigned with one or more suitable codes. This process might demonstrate that the initial template is insufficient or unsuitable and needs revisions. The final template is developed during this process (King, 1998; King, 2012). There are typically four types of modifications when the template is revised. The first is called *insertion,* which is done when the data reveals an issue that is relevant to the research question but is not covered by an existing code, a new code will be created and added. Insertion is the most common revision (King, 1998; King, 2012). The next modification is labeled *deletion.* There are three instances of deletion. A code is not reflecting the data and will be deleted, it can be replaced with a more suitable code that might come up in the process of refining codes (King, 1998; King, 2012), or two codes can be merged into one (King, 2012). The third modification is called, *changing scope* when initial codes which prove to be too wide or too narrow in scope, will be redefined at a higher or lower level (King, 1998; King, 2012). The final modification is labeled

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changing higher-order classification. If a lower level code fits better another higher-level code than the one it's currently under, it will be moved (King, 1998; King, 2012).

The final template. Although The process of refining and modifying a template can be never-ending, each project needs to come to a decision when a template is good enough. Nevertheless, a template cannot be deemed final if there is still uncoded data that is relevant to the research question (King, 1998; King, 2012), and before at least two comprehensive readings of the data. Although, more common are three or four readings before a researcher feels comfortable with the finalized template (King, 1998).

Interpretation. The analysis process does not end with the production of the template. Doing so would produce flat descriptive results (King, 1998; King, 2012). Although each project has its own goals for analysis, there are some suggestions for further analysis (King, 1998; King, 2012). *Listing codes.* Looking at the distribution of all codes within and between participants might be helpful. For example, if a code largely appears in most participants but one or two, it can be helpful to explain the absence of this code in a certain participant (King, 1998; King, 2012). *Selectivity.* Not all themes that the data produces have the same importance. The analysis process needs to identify those themes which are the most fundamental to the investigated phenomena (King, 1998; King, 2012). *Openness*. Although the analysis process is guided by the research question, the data might produce other themes as well. The researcher needs to carefully consider how to deal with them (King, 1998; King, 2012). *Relationships between themes.* Relationships between themes that were not recognized during coding might be

recognized at this point and added to the findings and discussion (King, 1998; King, 2012).

  Presentation. The presentation is not distinct from the analysis and interpretation processes; rather it is a continued process of achieving a deeper understanding of the investigated phenomena (King, 1998). Although there are no set instructions for presentation, there are three common ways of presentation (King, 1998; King, 2012). The first is described by "*a set of individual case studies, followed by a discussion of differences and similarities between cases*" (p. 132) (King, 1998; King 2012). This form of presentation keeps the themes less abstract and closer to the individual experiences. However, it might be confusing and space consuming with large amounts of data. The next presentation style is defined as *"an account structured around the main themes identified, drawing illustrative examples from each transcript as required" (p. 132)* (King, 1998; King 2012)*.* This form of presentation can be more succinct and coherent. However, it requires caution with jumping to generalizations and straying from the participants' voice. The last style of presentation is termed *"a thematic presentation of the findings, using a different individual case study to illustrate each of the main themes"* (p. 132) (King, 1998; King 20102). This style is a synthesis of both forms described above. A challenge with this choice is to select cases which fairly represent the entire data set; Regardless of the presentation form of choice, it is essential to include quotes. Typically, a presentation will include short quotes which illustrate the interpretation process and long quotes that provide the essence of the participants' voice (King, 1998; King, 2012).

Analysis process. The analysis process for this study was informed by template analysis, as described above, as well as Saldaña's (2009) coding manual.

Once the data collection phase was done, I transferred all the audio files of the recorded interviews to a third party for transcribing. When I received the transcriptions, I went over the transcriptions while listening to the audio and made corrections where needed. Taking the time to go over all the interviews consecutively helped me to reorient myself to the data. Even though a short time (approximately two weeks) had passed since the data collection, it was helpful in terms of being removed enough from the experience to allow me to re-encounter the data with a clearer mind after the dust settled. Additionally, listening to the interviews while reading the transcripts was helpful by noticing nuances that sometimes get lost in text.

Approaching the coding process and analysis of this study I was informed by a partial mix of 3 different coding approaches: *provisional coding, evaluation coding, and hypothesis coding* (Saldaña, 2009). Based on the literature review of this study, specifically the theory of Positive Youth Development (Lerner, 2006; Lerner, von Eye, Lerner & Lewin-Bizan, 2009; Lerner, Lerner, von Eye, Bowers, & Lewin-Bizan, 2011; Lerner, 2015; Lerner, Lerner, Bowers, & Geldhof, 2015) and based on my clinical experience working as an Animal-Assisted- Psychotherapist, I had an expectation of what I anticipated I would find in my study. This expectation generated a list of *provisional codes* that informed my coding process. I will describe my provisional code list further down. The expected outcomes as explained above led me to also hypothesize that I would find that Green Care interventions promote PYD. This again dictated my a priori codes.

My analysis also included some sort of accounting for frequencies of codes and themes which is typical to *hypothesis testing/coding* (Saldaña, 2009). It is important to note that even though forming hypotheses might be inevitable, these assumptions are challenged when tested against experience (Saldaña, 2009). Lastly, my inquiry can also be considered as a *program evaluation* of sorts. My goal is to ascertain whether animal and plant based programs indeed promote PYD. However, this is an initial exploration since my focus in this study is relatively narrow and my study does not include any comparison to other programs, multiple sites, or long-term exploration.

My list of a priori codes has two components. The first component is the 5Cs which are: competence, confidence, character, connection, and caring and compassion. The second component was derived from the broader questions on my interview protocol. The first question/code was "what do you like/ don't like about Green Chimneys?" the purpose of this question was to detect how many participants will include animals or plants in their response before I directly ask about animals/plants. This might serve as an indication of the importance of animals/plants as part of the children experience at school. The second question/code was what do you like/ don't like about working with animals/plants?" the purpose of this question was to tap onto possible mechanisms or the contribution of animals/plants to the children's experiences. The third question/code had three parts. 1. "do you feel like you have changed ever since you came to Green Chimneys?". The purpose of this question was to find out if the children notice any change in themselves. 2. "what have changed?" the purpose of this question was to see if

the change is related to the 5Cs. 3. "what helped change?". The purpose of this question was to see if animals/plants are responsible for the change.

In the analysis process of this study, I used ATLAS.ti 8.0 software. The analysis was done in stages, and the steps are described below.

Step 1: initial/open coding (Saldaña, 2009). In this step, I went over all the interviews and coded In Vivo (Saldaña, 2009) three main domains: 1. Anything that seemed to be related to the 5Cs; 2. Any response directly tied to one of the questions on the interview protocol; 3. Anything that seemed interesting or relevant, but I could not define as one of the previous.

Whereas Saldaña (2009) classifies initial coding under elemental methods in the first cycle of coding methods, the third domain of my coding would fit his definition of pre-coding (Saldaña, 2009). However, because my study had the a priori codes, it made more sense to lump it to my initial coding.

In this step, I also recorded attribute codes (Saldaña, 2009). This is the only part of the coding I did on paper (not using the ATLAS.ti software). My attributes included the participant's age, duration at Green Chimneys, a day or residential student, and participation in any of the programs that include animals/garden activities. (These programs are detailed in the study context section)

Step 2: structural coding (Saldaña, 2009). Among other applications, structural coding is suitable for hypothesis testing inquiries, by applying codes and initial categories to data segments that relate to a specific research question (Saldaña, 2009). In this step, I particularly coded each of the 5Cs and each of my broad interview protocol questions.

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The coding process of the 5Cs also included *pattern matching*. In the pattern matching method, there is an attempt to match the expected outcomes as they are derived from the theory to the observed outcomes of the study. As qualitative studies tend to produce more variables than data points, this allows the testing of more variables and dimensions of the theory in comparison to quantitative methods that in general produce more data points and compares groups of observations on a single measure (Bitektine, 2007).

In the process of structural coding, two other types of codes emerged: 1) Although I was looking for the 5Cs as they are related to any work done with animals/plants, I noticed that connection came up distinctly in relation to people, and coded it separately and 2) Codes that came up from the data but were not on my a priori codes list. In the language of template analysis, the newly created and added codes are classified as insertion (King, 1998; King, 2012).

The amount of provisional codes recommended for a study varies greatly from 5-6 to 12-60 (Saldaña, 2009). I started this step of coding with 11 a priori codes (6 for the 5Cs including "connection-people" and 5 codes that stemmed from the interview protocol questions). Four new codes were added in this step. A list of the codes generated in this step can be seen in table 3.3 below. This list reflects the initial template (King, 1998).

Table 0.3
Codes generated at step 2- structural coding

5Cs	Interview protocol questions	New codes
Caring and compassion	Change	Helping factors
character	Like about Green Chimneys	Programing
competence	Don't like about Green Chimneys	One Health

| confidence | Like about animals | ? (these are quotes that seemed important, but I could not name) |
| Connection- animals Connection- people | Like about plants | |

In this process, I also employed simultaneous coding (Saldaña, 2009) or parallel coding (King, 1998; King, 2012). Simultaneous/parallel coding refers to the assignment of two or more codes to the same segment of data (King, 1998; King, 2012; Saldaña, 2009). Although sometimes simultaneous coding is warranted, since social and human interactions are not always distinct in isolated units, it is advised to use it cautiously as it can be attributed to the indecisiveness of the researcher or to the lack of clear and focused research purpose (Saldaña, 2009). I used simultaneous coding in two instances: 1) When I indeed felt that a data segment held more than a single meaning and is relevant for two or more codes and 2) When I didn't want to break up a segment of data in order to retain the context of the narrative, even though different portions within the segment could have been distinctly coded.

Step 3: Theming the data (Saldaña, 2009) and categorizing/sub-categorizing.
This step involved further coding that relied more heavily on analysis and involved several types revisions. The first type of revisions included *splitting* a general code to more specific codes (for example: the code "Change" was split to three codes- "CHANGE: yes/no"; "CHANGE: what changed"; "CHANGE: what helped change"). Some codes from the initial template were reordered as a category with further specified sub-categories (for example: the code "5Cs: Caring & compassion" became a broader category to include under it the sub-categories: "5Cs: Caring & compassion: Empathy

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people"; "5Cs: Caring & compassion: Empathy animals"; "5Cs: Caring & compassion: taking care of animals"). This modification of changing scope and creating a hierarchy (King, 1998; King, 2012) constitutes the second type of revision. The third type of revision I used was deletion (King, 1998; King, 2012). For example: Green Chimneys has a variety of programs during the school day (and after for residents). This is a unique feature in comparison to other schools, and this topic came frequently in the interviews. Thus I coded it as "Programing" in the second step of the analysis. However, in this step of the analysis, I noticed that all the quotes under this code fall under two already existing codes that better reflect the data. Therefore, the code "programing" was deleted, and all the quotes under it were distributed between the codes "LIKE ABOUT GC: Programming" and "Helping factors: Programs".

Another process that took place in this step involved theming the data. This process occurred in two distinct manners. Initially, the process of theming was not a deliberate one and occurred naturally. As I was reviewing the various codes in the analysis process, I noticed that various quotes within the codes "Connection- people" and "Like about animals" had recurring patterns or themes. I then attached the appropriate theme to each quote within these two codes. I believe that this "natural" process was aided due to the relatively larger number of quotes within these codes. As theming allows for further specificity within a code, thus allowing a more accurate and substantive account of the data, I then decided to deliberately search for themes firstly within the 5Cs codes, and then the rest of the codes as well.

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Themes vary in name and function across the literature. For example, it can be termed as descriptive versus interpretive, or identified at the manifest or the latent level. At the manifest level, themes function as organizing clusters of repeating ideas with the purpose of further clustering similar themes to create higher order theoretical constructs. At the latent level, themes function to phenomenologically understand the meaning of everyday experiences. They are interpretive and insightful (Saldaña, 2009). Based on the complexity of the issue I assigned both descriptive and interpretive themes (for example, with in the code "5Cs: Caring & Compassion: Empathy-people" there is a descriptive theme such as "being helpful" which actually uses the participants' own words, and an interpretive theme such as "understanding other's feelings" which required my inference).

In both the manifest level and the latent level, the goal is to sift through and narrow down the number of themes to create a coherent narrative in the case of the manifest level, and to what is essential rather than incidental in the case of the latent level (Saldaña, 2009). However, in contrast to this process of reduction, my process was one of expansion. Since I started the coding and analysis process with a theory and hypothesis testing, I started with a smaller amount of a priori codes which I then further broke down to themes. The theming process was done with the goal of identifying or taping into mechanisms that might explain and shed further light on the findings.

The list of codes, categories, sub-categories and themes (where relevant) generated at this step can be found in table 3.4 below.

Table 0.4

List of codes, categories, sub-categories, and themes generated at step 3.

5Cs	
Caring and Compassion [category]	
Sub-category	Theme
Empathy- people	*Being helpful*
	Understanding other's feelings
	Understanding cues/communication
Empathy- animals	*Understanding other's feelings*
	Respect for someone else wishes
	Making someone else feel good
	Understanding cues/communication
Taking care of	*Like taking care of animals*
	Being helpful
	Nourishing
	Parenting
character	Theme
	Aggression and violence
Competence [category]	
Sub-category	Theme
Competence- academic	*Improvement (yes; presence; wish to)*
	What improved (reading; general)
	What helped (staff; programs; not running from class)
Competence- social	*Improvement (yes; no; I don't know)*
	What improved (interaction; general; attitude)
	What helped (behavior modification strategies; don't know; helping peers)
	With whom (peers; staff; general)
Competence- NS	*Knowledge/skills*
	Pride/confidence
confidence	Theme
	Generalized
	Mastery
	Pride
Connection- animals	Theme
	Interaction
	Familiarity/individuality
	Taking care of
	Making someone else feel good
	Special relationship
Connection- people	Theme
	Helping relationship- staff

	Helping relationship- mentoring
	Caring/attention
	Like working with animals/garden because of staff
	Fun relationship
	Proper boundaries
	Connection

Interview protocol questions		
Change [old code]	CHANGE: yes/no [new code]	
	CHANGE: what changed [new code]	Theme (beyond 5Cs)
		Conduct behavior
		Attitude
		Cerebral
		Emotion
	CHANGE: what helped change [new code] (quotes in this code were absorbed by the code "facilitating factors")	
Like about Green Chimneys	Theme	
	LIKE ABOUT GC: Animals	
	LIKE ABOUT GC: Food	
	LIKE ABOUT GC: Garden	
	LIKE ABOUT GC: Peers	
	LIKE ABOUT GC: Pool	
	LIKE ABOUT GC: Programming (Amount, variety, interest, Chance to be out of class/dorm)	
	LIKE ABOUT GC: Staff	
	LIKE ABOUT GC: Trips (dorm)	
	LIKE ABOUT GC: Wood shop	
Don't like about Green Chimneys	Theme	
	DON'T LIKE ABOUT GC: Away from home (residents)	
	DON'T LIKE ABOUT GC: Food	
	DON'T LIKE ABOUT GC: Not home district	
	DON'T LIKE ABOUT GC: Peers	
	DON'T LIKE ABOUT GC: Staff	
Like about animals	Theme	
	LIKE ABOUT ANIMALS: Fun	
	LIKE ABOUT ANIMALS: Interesting/exotic	
	LIKE ABOUT ANIMALS: Money for farm job	
	LIKE ABOUT ANIMALS: Non-human companion	
	LIKE ABOUT ANIMALS: Non-judgmental	
	LIKE ABOUT ANIMALS: interaction/relationship (repeating 5Cs- removed)	

	LIKE ABOUT ANIMALS: Familiarity (repeating 5Cs-removed)
	LIKE ABOUT ANIMALS: Connection with the human care taker (repeating 5Cs- removed)
	LIKE ABOUT ANIMALS: Make me feel better/happy/calm (repeating facilitating factors- removed)
	LIKE ABOUT ANIMALS: Make me feel special (repeating 5Cs-removed)
	LIKE ABOUT ANIMALS: Taking care of/being helpful (repeating 5Cs- removed)
	LIKE ABOUT ANIMALS: Petting/playing (repeating 5Cs-removed)
Like about plants	Theme
	Activities (garden class)
	Eating product
	Different- fresh
	Maple syrup
	DON'T LIKE: Requires patience
	DON'T LIKE: Getting dirty

New codes		
Helping factors [category] ➔ New name- Facilitating factors	Facilitating factors - people (sub-category)	Theme
		Accessibility for support *Option for time out coping skills*
	Facilitating factors - programs (sub-category)	Theme
		Breather *Move around* *Better focus* *Being busy*
	Facilitating factors - animals (sub-category)	Theme
		Calming *Mood enhancement* *Being active & outside* *Taking care of* *General*
~~Programing~~ This code was deleted, and the quotes were distributed between the codes "Like about GC" and "Facilitating factors- programs".		
One Health		

² This code was deleted. After further review, it seemed that although these quotes were interesting, they were not related to the research questions.

Chapter Four: Findings

Introductory Findings

As was explained above, the first question on the interview protocol was "what do you like about Green Chimneys?". The purpose of this question was to find out how many participants will name animals or garden as a significant part of their experience at Green Chimneys before I ask about them directly. Following is a simple account of all the components participants indicated in response to that general question. The components are listed in descending order.

Table 0.1
Participants' accounts for they like about Green Chimneys

	1	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20	Total
Animals	1	1	2	1	0	1	0	0	1	1	1	1	1	1	1	1	0	1	15
Programs	0	1	1	1	1	1	1	0	1	1	1	1	1	1	0	2	0	0	14
Staff	1	1	1	0	0	1	0	1	0	0	1	0	1	1	0	1	0	0	9
Trips (dorm)	0	0	0	1	1	1	0	0	0	1	0	0	0	1	0	0	0	0	5
Wood shop	0	0	1	0	1	0	0	0	1	0	0	0	1	0	0	0	0	1	5
Pool	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	3
Peers	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
Garden	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2
Food	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2

As can be seen from the table above, the most prevalent elements the participants named were: animals, programs, and staff. Both animals and programs were repeated twice by one participant, making the totals 14, 13, and 9 respectively. All other elements are considerably lower in prevalence. It will be shown in subsequent findings that these three elements will recur through various aspects of the data.

Research Question #1- Is There Presence/Change of the 5Cs among Children Who Participate in a Green Care Program?

The quotes for the 5Cs emerged from two main lines in the interviews. Firstly, from a more general question such as "what do you like about animals" or more specifically asking about a certain program that incorporates animals/plants (for example: "what do you like about your farm job?"). Secondly, from the question "what do you feel has changed?" the purpose of which was to examine if the children identify a change within themselves that is related to the 5Cs. Additionally, I asked three questions that are specific to the 5Cs domains: *academic competence* ("do you feel you are doing better with school stuff ever since you came to Green Chimneys?"), *social competence* ("do you feel you have better relationships with peers/staff ever since you came to Green Chimneys?"), and *confidence* ("do you feel you have more confidence ever since you came to Green Chimneys?"). However, these questions were not part of my original interview protocol questions and occurred spontaneously. Consequently, they were not consistent across all interviews. I asked these questions when participants were less talkative. With participants who were more talkative, I did not have time to ask these questions.

The frequencies of quotes/mentions of each of the 5Cs domains was varied. Following is a report of each of the 5Cs in descending order. As was said above, I also assigned themes for each of the 5Cs. The report of each of the 5Cs will be organized and illustrated through the particular themes of each.

Connection. Lerner and colleagues (2005) define connection as "Positive bonds with people and institutions that are reflected in bidirectional exchanges between the individual and peers, family, school, and community in which both parties contribute to the relationship" (p. 23). In my analytic process of coding for *connection* I was looking for connection in relation to animals. However, connection in relation to people was distinctly present. Following, I will describe the findings for connection with animals and with people.

Connection- animals. The frequency for *connection- animals* had a total of 43 quotes (within 17 interviews). In the process of theming this code, 5 themes emerged: *interaction, familiarity/individuality, special relationship, making someone else feel good, and taking care of*. A list of the themes and their frequencies can be found in table 4.2 below.

Table 0.2
Themes for "connection- animals"

Theme	Frequency (quotes)	Frequency (interviews)
Interaction	24	16
Familiarity/individuality	13	9
Special relationship	11	7
Making someone else feel good	3	3
Taking care of	2	2

Themes illustrations. As can be seen, the theme *interaction* was the most prevalent. *Interaction* referred to reciprocal exchange of actions and is manifested through various aspects, depicted as follows: Some of the quotes are descriptive. For example: "…just fun to interact with them and stuff"; "I just really like bonding with dogs"; "There's no point in just looking at the animal and not being able to do anything with it. The animals that don't interact at all, which is actually very few - most of the animals can interact with you". Other quotes are more inferential. For example:

There's this one pig named Copper, he's brown. If you hold your fist out like this, hold them and say "sit" he will literally sit… And open his mouth. If you had a treat on you, he will sit and you'll feed him something.

Participant: "…we used to go feed the goose named Lucy. Whenever you say his name, he makes a noise. So if you say, "Lucy," he'll go, "UUAH."

Interviewer: You think he recognizes his name?

Participant: Yes.

Some quotes are about participants' desire for more interaction. For example:

Interviewer: The thing that you don't like is you would like more interaction with the-

Participant: Yeah. Yeah, like actually you being able to go in and play around with them personally.

Interviewer: Have more of a relationship?

Participant: Yeah. Although, not too much, because you don't want them to get too connected to you, so that way they don't leave.

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And then other quotes talk about a deeper relationship rather than just an interaction. For example:

> Interviewer: So it helps you. You think it helps them too?
>
> Participant: Yes.
>
> Interviewer: So it's like a mutual?
>
> Participant: It's not a one-way relationship. Yeah, more mutual.
>
> Interviewer: Do you feel like with the dogs or the birds that you used to feed, do you feel like it's a relationship? You know their name, you take care of them.
>
> Participant: Yes, a relationship.
>
> Interviewer: They are reacting to you.
>
> Participant: It's a relationship.
>
> Interviewer: Can you say more about that, what do you mean?
>
> Participant: It would be a good relationship, because, between the people and dogs, dogs are really friendly if you get to know them by heart. When you are friendly to them they won't be aggressive to you, but if you are aggressive to them they will be aggressive to you. If that happens, if they bite you and you start to bleed, then we have to take them back to the shelter.

All the animals at Green Chimneys have names and their own life story. The theme *familiarity/ individuality* reflects this practice and is significant because the animals are individuals and not objects. It is not a pig, it's Copper, or Wilbur. It's not a horse, it's Mack. Each animal is an individual with a name and their own unique

personality. This unique individuality is the pathway to a relationship or connection. For example: "Then there's this other pig named Wilbur from the movie Wilbur… I actually do like that name. He has a friend named Vanilla. It's a goat. They just both get along a lot".

I usually work with the same horse so I kind of know him and what he responds to, what he's gets frightened of. So I kind of avoid that stuff and focus on the things that I know he likes and I know that he would have a good response to

Interviewer: What do you do in your farm job?

Participant: The one that I have is horse barn. Last week I groomed the horse, and his name was Bear, I think. He's the best. 'Cause he doesn't get angry at you. But some horses, Mac is ... Sometimes he wobbles this way and then he stays there. It's annoying.

Interviewer: So you can't get around to brush him?

Participant: Yeah. And you can't go behind him 'cause ... It's actually kind of funny 'cause his butt was here and this is the door. And his butt was right there. It was funny and the person that was coming out was opening the door and they were like-

Interviewer: Do you feel like every horse-

Participant: Is different? Yeah.

Interviewer: Yeah?

Participant: Yeah.

Interviewer: You treat them differently, they treat you differently?

Participant: Yeah. Some of them are grumpy in the morning and then they're nice in the afternoon, so when they're nice in the afternoon and then grumpy at night.

Above it was illustrated how the children perceive the animals as unique individuals. Sometimes the opposite happens, and animals give the children the feeling that they regard them as unique individuals. This is reflected under the theme *special relationship.* For example:

I like the dog program. Yeah, that one is fun. Because ... my favorite animal is the dog and I have a lot of contact with dogs. I pet them and they just like me naturally, so I guess I just have a good aura around the dogs

One time there was this dog here named Riley. He really was the only dog here I ever could literally get to sit down with me. He had to lay down with me at least 20 minutes one time. A whole session with the social worker ... I was pretty happy. He'd broken a record for me. Most dogs they just spend 5 minutes and then they get up and walk away because they're bored.

Interviewer: Can you think of maybe ... You can explain to me why you like the animals?

Participant: They're trained to help you feel better.

Interviewer: They're trained to make you feel better. How do they make you feel better?

Participant: Like onetime, this pig came up to me and rubbed her head against me.

Interviewer: How did it make you feel, did you like it?

Participant: Happy.

Interviewer: Happy?

Participant: Yeah.

Interviewer: You felt like she likes you?

Participant: Yeah.

Interviewer: Specifically you?

Participant: Yeah.

Interviewer: Does she do it with other people too or just with you?

Participant: Just with me.

The themes "*making someone else feel good*" and "*taking care of*" both belong to the "caring & compassion" of the 5Cs. I classified these specific quotes also here because they seemed to me relying more on a relationship, or a connection (as can be seen in the table above, the frequency of these specific quotes is low). For example:

And one thing is, you have to make them feel good. Like if they did something good, you have to reward them or make them feel good about themselves. Like saying, ooh, I just did something cool. And if you don't do anything, they might think, oh ... if you don't say, "Good job" or anything, they're probably going to think, oh that wasn't a good thing or whatever.

Interviewer: When you do all these things for the horses or you're taking care of the horses, can you tell me what about this you enjoy?

Participant: Whenever they go out, we clean up their stalls and when they come back they know that it's not a mess anymore and that someone cleaned it up after them, they know that someone actually likes them, so that's a good feeling.

…

Participant: They can't clean up after themselves, so we have to, so that's really

nice.

Interviewer: … Can you say ... how is it different for you to take the riding classes

because it's with the horses versus taking care of them?

Participant: Because you don't get to clean them, you just get to ride them and it's

different because you go riding around, you don't get to hang out with them, you

just ride them and then go back to class. It's different because in your farm job

you get to see them, hang out with them, clean them, make them feel good.

Connection-people. The frequency for *connection- people,* had a total of 38

quotes (within 14 interviews). In the process of theming this code seven themes emerged:

helping factors- staff, like working with animal/plants because of instructor, connection,

caring/attention, helping relationship- mentoring, fun relationship, and proper

boundaries. A list of the themes and their frequencies can be found in table 4.3 below.

Table 0.3
Themes for "connection- people"

Theme	Frequency (quotes)	Frequency (interviews)
Helping relationship- staff	8	5
Like working with animals/plant b/c of instructor	6	4
Connection	5	5
Caring/attention-	4	3
Helping relationship- mentoring	4	2
Fun relationship	4	3
Proper boundaries	4	3

Themes illustrations. The theme "*helping relationship-staff*" is a general descriptive theme using the youth's words. It includes topics such as teachers who help with school work, staff members teaching coping skills, social workers who are there to assist and so on. For example: "They have social workers that help you, and they have a lot of people that try to help you"; "When I was feeling upset, they told me a way to calm down and help me"; "Interviewer: So what do you think helps you here to be less angry? Participant: Good people".

Interviewer: … What's different here that helped you change?

Participant: Teachers. Lots of the teachers help you. They help you with work. They'll help you with ... Maybe ask you for a coping skill or a break or ... Maybe take a time away. Maybe get stress ball, maybe headphones. Lots of that stuff. It makes you feel calm and then you can be happy again instead of being mean and nasty to a teacher.

The theme "*helping relationship-mentoring*" is similar to the previous one, rather with peers than staff. For example: "I look up to the big kids to help me when I'm upset and stuff".

The theme "*caring/attention*" reflects the notion that there is someone attentive to offer support. For example: "Interviewer: What makes this place safe? Participant: Staff that care about you";

Interviewer: What makes this principal the best?

Participant: He's always willing to help me when I'm having a tough time.

Interviewer: What do you mean by a tough time? Can you give me an example?

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Participant: Say if I got home and I was frustrated, my mom would call up the ...

Like if I was really frustrated, my mom would call up the school and say, "Could

I talk to Mr. …?" And then Mr. … would talk to me and say, "Hey, blah, blah,

blah." And then sometimes I would feel better. So that's why I like him.

I believe that "*fun relationship*" is an aspect that makes Green Chimneys' staff

more rounded characters for the children. Beyond the element of fun per se, I also believe

it facilitates connection. For example:

There's a lot of nice teachers and stuff. Some of the teachers can be really nice. I

had a teacher here when I was in class over there. His name was Mr. Rapp and

when I first went there, he played this game with us called Dungeons & Dragons.

Interviewer: What do you like about the staff here?

Participant: The fun.

Interviewer: Fun?

Participant: I play Hide and Go Seek with them.

Related to this is "*proper boundaries*", or in the words of one of the participants:

"One of my TAs … they're just really fun to bond with. It's like he … is really just fun,

and it's like you can actually bond, but he … just is strict when they need to be strict".

The definition of connection includes positive bonds also with institutions. I chose

connection as a theme to reflect a change resulting in less running away from programs

and truancy. For example: "at my old school ... I used to run out of classrooms…";

Participant: ... Oh yeah. I notice how I was feeling about going to school. 'Cause that's one of my problems. That's why I'm here, because I was refusing to go to school.

Interviewer: And here you feel more comfortable going to school.

Participant: Yeah.

Interviewer: Why? What's different here that makes you feel more comfortable going to school?

Participant: Actually I cannot tell. I just felt like the staff at real schools are more of the mean types of teachers.

Interviewer: Mm-hmm. So you like the school staff here better.

Participant: Yeah. 'Cause they don't really be mean to kids.

It is an accepted concept in the AAT field that animals can function as a "social lubricant". Meaning, the therapist-client relationship is facilitated through the client-animal relationship. I was surprised to find that in some cases it was the opposite. For example:

Interviewer: Do you like your farm job?

Participant: Yeah.

Interviewer: Can you say what you like about it?

Participant: I can, but it's really everything about it is really cool.

Interviewer: Can you give me an example of one thing, two things, that ...

Participant: I would say the people that take me. Miss Danielle and Miss Valerie, they're really cool, because Miss Danielle, she had really cool conversations with

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me about what the animals do during the day, 'cause I wasn't always there. And

me and Miss Valerie, we talk about Pokemon and stuff like that.

Competence. Lerner and colleagues (2005) define competence as:

Positive view of one's actions in domain specific areas including social, academic, cognitive, and vocational. Social competence pertains to interpersonal skills (e.g., conflict resolution). Cognitive competence pertains to cognitive abilities (e.g., decision making). School grades, attendance, and test scores are part of academic competence. Vocational competence involves work habits and career choice explorations (p. 23).

As can be seen above, the 5Cs definition of competence contains four specific domains. Two of the four came up in the data of this study, academic competence, and social competence. Another type of competency emerged from the data that I could not classify under any one of the defined domains, and I labeled it as "Competence- Not Specified". The three types of competence are detailed below.

Table 0.4
Academic competence

Academic competence (interviews frequency- 13)			
Improvement	Yes (8)	Presence (3)	Wish to (2)
What improved	General (6)	Reading (2)	
What helped	Teachers/staff (4)	Programs (1)	Not running from class (1)

Table 0.5
Social competence

Social competence (interview frequency- 10)			
Improvement	Yes (8)	No (1)	Don't know (1)
What improved	Interaction (play, talk) (1)	General (6)	Attitude (friendlier, kinder, less reactive verbally) (3)
With whom	Peers (6)	Staff (2)	General (1)
What helped	Behavior modification strategies (coping skills, rewards, proper boundaries) (4)	Don't know (1)	Helping peers with school work (1)

Competence Not Specified. The code, competence not specified, had a total of 11 quotes (within 7 interviews). As was said above, the quotes under this code do not fit any of the specific domains defined in the 5Cs. However they are related to the procurement of certain skills. All quotes, but one, are related to a skill attained by animal interactions. Two themes arose within this code. *Knowledge/skills* pertains to a certain set of skills or knowledge around animals, such as training dogs, riding horses, or learning how to care for an animal, and *pride/confidence* pertains to the feeling of accomplishment that accompanies the learnt skill. For example:

> Riding it's more of a ... the horses honestly doing most of the physical work. But you also need to learn how to steer. I have been in it for a while so I usually don't have a leader clipped on. So I have to control the horse.

> With the horses, they have a riding program which I participate in. I like to do riding a lot. It's pretty fun. The first month that I was doing riding, not the first month, like the first quarter of the school year I did riding. Then I did a horse competition. I had barely even rode before in my life

> Interviewer: How do you like your farm job?

Participant: Its fun. I care for all the dogs.

…

Interviewer: The dogs come to the program, do you help train them so they can be adopted later?

Participant: Yes. I take care of them. We train them to sit, roll over, lay down, and we do stuff like that. We tell them to stay, and if they don't listen we keep

practicing until they get it, and then they get the treat. Then, later on, people like

you can adopt them, come and adopt. Then the kids who are in the dog program

can make goodbye letters and you can send them letters back.

…

Interviewer: Can you explain what you enjoy about taking care of them?

Participant: It is fun for me because I can really enjoy it. I can get money. I can

help the dogs. If someone needs help with their dog, I can be there and help them.

Caring and Compassion. Lerner and colleagues (2005) define caring and

compassion as "A sense of sympathy and empathy for others" (p. 23).

The code "caring and compassion" had a total of 28 quotes (within 13 interviews).

During the process of analysis, this code became a category with three sub-categories:

Empathy-people; Empathy- animals; and Taking care of animals.

Empathy- people. The code "Empathy- people" had four quotes (within four

interviews) and three themes: *understanding other's feelings, understanding*

cues/communication, and being helpful. Overall, empathy refers to the ability to identify

with others' feelings, thoughts, and attitudes. The themes and frequencies can be seen in

table 4.6 below.

Table 0.6
Themes for "empathy- people"

Theme	Frequency (quote)	Frequency (interview)
Understanding other's feelings	2	2
Understanding cues/communication	2	2
Being helpful	3	3

Themes illustrations. The theme *understanding other's feelings* refers to the ability to identify how another person feels (e.g. sad). The theme *understanding cues/communication* refers to the ability to identify how another person communicates behaviorally how they feel (e.g. if someone is crying they are probably upset). The following is an example of both of these themes: "Sometimes I also like to help kids calm down. Like, I don't really like to see my friends crying, I guess. I always go over and help".

The theme *being helpful* refers to the added layer of taking action that is based on empathy as defined above. For example:

Participant: For example, I'm a mentor for raven.

…

Interviewer: And what do you do as a mentor?

Participant: Just give the kids a friend, basically.

Interviewer: Like a big brother?

Participant: Yeah.

Interviewer: Do you like it?

Participant: Yeah. I've only been in it for a couple of weeks.

Interviewer: Can you explain what do you like about it?

Participant: I like that the kids ... I just like helping little kids.

Empathy- animals. The code "Empathy- animals" had 11 quotes (within seven interviews) and four themes: *understanding cues/communication, respect for someone else's wishes, understanding other's feelings, and making someone else feel good*.

Similarly to empathy for people, empathy for animals is the ability to identify with animals' feelings, thoughts, and attitudes. The themes and frequencies can be seen in table 4.7 below.

Table 0.7
Themes for "empathy- animals"

Theme	Frequency (quote)	Frequency (interview)
understanding cues/communication	6	6
respect for someone else's wishes	2	2
understanding other's feelings	4	3
making someone else feel good	3	3

Themes illustrations. The theme "*understanding cues/communication*" refers to the ability to identify how an animal behaviorally communicates their wishes and is reflected in the next quote:

Interviewer: So you're asking for if they want your company? And how do you know when an animal wants you to come closer or not come closer?

Participant: They will get closer.

Interviewer: Mm-hmm (affirmative).

Participant: They will get closer to you and then you can pet them and stuff.

Interviewer: So you can understand that maybe they don't ...

Participant: Yeah.

The continuation of this quote reflects the theme "*respect for someone else's wishes*" which refers to honoring the animal wishes:

Interviewer: So if an animal doesn't get close to you, you're not gonna walk over them and try and pet them if they don't approach you?

Participant: No, you can't do that.

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"*Understanding other's feelings*" refers to the ability to identify how an animal feels and is exemplified in the following quote:

Participant: I used to see ... I like going to the chicken cage and I get to see all the chickens, pick up the chickens, be able to hypnotize them. You could be able to, if you flipped them over this way, their feet will go back and that will mean that they've been hypnotized and they'll just stop moving because it's, I don't know, I think it's scary for them or something. I don't know.

…..

Interviewer: So, did you like to do it even though you know it scares them or you didn't know it scares them when you did that?

Participant: Sometimes if ... I don't really do it all the time. I always usually maybe pick up the chickens and hold them and maybe pet them.

The above quote demonstrates that the participant understands the chickens' feelings. He knows that what he does frightens them. When I confronted him about it, he relegates his previous statement saying he does not usually do it. He knows that scaring them is not a kind behavior.

Finally, the theme "*making someone else feel good*" refers to the joy stemming from bringing about joy or pleasure to someone else, and is reflected by: "And then if he gets a little upset, I'll rub him in the tummy and he goes [mimicking the sounds the horse makes]. It's funny".

Taking care of animals. The code "taking care of animals" had 13 quotes (within 8 interviews) and four themes: *like taking care of animals, being helpful, nourishing, and*

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parenting. This theme is echoing the idea that having the capacity or desire for taking care of someone else requires empathy. The themes and frequencies can be seen in table 4.8 below.

Table 0.8
Themes for "taking care of animals"

Theme	Frequency (quote)	Frequency (interview)
like taking care of animals	4	3
being helpful	3	3
nourishing	6	4
parenting	3	3

Themes illustrations. The theme "*like taking care of animals*" is descriptive. It is using the participants' words when they said they like taking care of the animals but could not explain why. For example:

The animals ... When I first came here the animals I actually liked. I actually did want to come here because of the animals, to take care of the animals…It's fun to be able to take care of the animals and ride horses, walk llamas, walk sheep, walk goats ... Hang out with the pigs, hang out with chickens, hang out with rabbits, hang out with the big rabbit. We have a big rabbit, a big girl rabbit.

The theme "*being helpful*" is similarly descriptive. For example: "Interviewer: What do you like about your farm job? Participant: Helping the animals".

It is an accepted conception within the AAIs field that one of the unique opportunities animals bring to the setting is the idea of nourishment. It is believed that by nourishing the animal (which is a common occurrence within AAIs), the participant feels nourished themselves. This idea led me to the theme of "*nourishing*". For example:

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Interviewer: And you know how you told me you like feeding the dogs? Why do you like feeding them, do you know?

Participant: Because somebody can be strong too. And they can grow and be healthy.

Interviewer: So food is important?

Participant: Yeah, food is important. You're right.

I believe that the theme I chose to label as "*parenting*" is similar to the idea of the theme "*nourishing*", and is reflecting a relationship where the participant plays the role of a parent to the animal. For example:

Interviewer: Can you tell me what you like about doing this farm job?

Participant: It's just ... I would rather do horses than any other farm job because I like hanging out with horses and I like to ... it makes me feel, whenever I clean up after the horse that when they come back they're not expecting to have a clean stall but they actually do, so yeah.

Interviewer: You're taking care of the horse?

Participant: Yeah.

……

Interviewer: When you do all these things for the horses or you're taking care of the horses, can you tell me what about this you enjoy?

Participant: Whenever they go out, we clean up their stalls and when they come back they know that it's not a mess anymore and that someone cleaned it up after them, they know that someone actually likes them, so that's a good feeling.

Interviewer: Yeah, maybe like an adult taking care of a kid?

Participant: Yeah.

Interviewer: That's something that makes you feel good-

Participant: They can't clean up after themselves, so we have to, so that's really nice.

Confidence. Lerner and colleagues (2005) define confidence as "An internal sense of overall positive self-worth and self-efficacy; one's global self-regard, as opposed to domain specific beliefs" (p. 23).

The code confidence had a total of 18 quotes (within 10 interviews) and three themes: *mastery, pride, and generalized*. The themes and frequencies can be seen in table 4.9 below.

Table 0.9
Themes for "confidence"

Theme	Frequency (quote)	Frequency (interview)
Mastery	7	5
Pride	8	6
Generalized	7	6

Themes illustrations. Although confidence is defined as a global rather than domain specific perceptions about self, there were quotes where mastering a specific domain generalized to a global sense of confidence. These quotes were labeled as "*mastery*". For example: "Interviewer: Do you feel like you have more confidence in yourself? Can you tell me why? Participant: I feel more proud of myself because I can read"; Similarly, the theme "*pride*" reflects pride in a specific achievement that generalized to a global sense of confidence. For example:

I can train a llama… I trained the llama here, I know how to get it to come to me, they said no one ever thought of that interest of doing that, and I was like, yeah, that's fun. Cos we had a 4H fair, which is really fun where they do competitions, which is one thing I really do love about this, is that they have a 4H club here, it's very - I love that, where you get to present and I won twice, twice in a row actually. We have the regular 4H presentation, where you present a topic and that's - we do that every year, there's rounds, I got to county four.

Conversely, the theme "*generalized*" reflects a global sense of self-worth, as defined by the 5Cs. For example: "I feel proud about my confidence because I really stand up out my shell, my outer shell. I really can see the bright things coming"; "Interviewer: Can you say what had changed in you? Participant: I don't know. It's just ... I feel better about myself. I don't know".

Character. Lerner and colleagues (2005) define character as "Respect for societal and cultural rules, possession of standards for correct behaviors, a sense of right and wrong (morality), and integrity" (p. 23).

The code character had a total of 9 quotes (within 5 interviews). All quotes were related to aggression or physical violence. For example: "I used to not be afraid to be angry and do something bad. But now I'm a little scared to do something 'cause I don't want to hurt someone";

Interviewer: Do you feel like you have changed ever since you came here? Can you tell me what changed?

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Participant: I haven't been physical in such a long time. I've been behaving a lot better. So yeah ...

…..

Interviewer: Can you give me an example, what it means behaving better?

Participant: Keeping my hands to myself. Keep my anger in control.

As can be seen in the report on the findings of the 5Cs, each of the 5Cs components was represented in various frequencies in relation to animals or people. Plants or any of the garden programs were not represented in the 5Cs findings. Following, a report of the garden programs findings is provided.

Garden programs findings. The aim of this study was to explore the potential of both AAIs and horticulture interventions as PYD promoting interventions. However, none of the data about the garden programs fit any of the 5Cs domains. Following, I will describe the findings related to the garden programs.

It is noteworthy that the garden programs at Green Chimneys take place in two locations. The garden classes take place on campus. The rest of the garden programs take place at the Boni-Bel farm, which is located about a mile down the road from campus.

The garden programs had a total of 21 quotes (within 13 interviews), and six themes: *maple syrup, eating product, different- fresh, activities, don't like- requires patience, and don't like- getting dirty*. The themes and their frequencies can be found in table 4.10 below.

Table 0.10
Themes for garden programs

Theme	Frequency
Maple syrup	5

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Eating product   5
Different- fresh   3
activities   1
Don't like: requires patience   1
Don't like: getting dirty   2

Themes illustrations. In general, the responses to my questions about the garden

programs had an air of indifference to them, and it felt like I need to probe deeper to get

something. For example: "Interviewer: What about plants? Do you like working with the

plants? Participant: Sometimes. It just gives me something to do";

Interviewer: And so what do you think about growing plants? Is that something ...

Participant: It's never been my full thing, because it's more of my dad's thing.

Interviewer: Your dad likes to do it?

Participant: Uh-huh. I don't like doing it as much.

Interviewer: Do you like those classes?

Participant: Yes, I love my classes.

Interviewer: What do you like about them?

Participant: That you get to play with animals and you get to ride horses ... well,

actually not as much garden but I like the other ones.

One of the activities the youth get to do at the Boni-Bel farm is producing *maple*

syrup. The maple syrup is later being sold at the country store adjacent to the Boni-Bel

farm, which is open for the public. This is one out the two most prevalent responses I got

when asking about the garden programs. For example:

Interviewer: What did you like about Boni-Bel?

Participant: Well, really I liked how we got to learn how to ... How maple syrup and stuff that they make. That campus, they have a store and everything and they make it also.

Interviewer: What about the Boni-Bel have you ever went there?

Participant: Yeah, we did maple sap making. Maple tree or something like that. Made maple from a tree.

Interviewer: You made maple syrup?

Participant: Yeah, and then we got to try it.

Interviewer: How did you like that?

Participant: It was really fun, yeah. We tried it with waffle sticks dipped in maple syrup.

The second of the most prevalent response was "*eating product*" (the various fruits and vegetables growing in the garden). For example:

Interviewer: What did you like about those classes?

Participant: I like the plants we made in the garden, because you actually got to eat them. They were really good.

Interviewer: How did you like Boni-Bel?

Participant: I liked it. It was fun because we got to go over to Boni-Bel and eat some of the veggies and stuff. It's pretty good. I like the radishes. They made good radishes.

All three responses related to the theme "*different: fresh*" are a result of my probing efforts when I asked if the fruits and vegetables they eat from the garden taste different. For example:

Interviewer: Did it taste different just because you grew it than if you got one in the grocery store?

Participant: Yeah. It taste pretty different. It's 'cause its fresh, ripe, picked it right from there.

Interviewer: Do they taste the same or different from the grocery store?

Participant: A little bit different.

Interviewer: Why do you think they taste different?

Participant: They're like, fresh, fresh, fresh. Like, fresh.

Interviewer: Right.

Participant: Like, from the ground.

One participant said he liked the garden class because of different *activities* they do in that class that are not related to actual gardening work:

Interviewer: What did you like about it when you did take it?

Participant: ... We get to do activities. We get to make scents. We put it in a bag and then we put all sorts of plants in the bag.

One participant said he didn't like plants because it "*requires patience*": "Participant: The plants take forever to grow. Interviewer: Mm-hmm (affirmative). Requires a lot of patience. Participant: Yeah. I don't have patience".

Two participants said they do not like plants because they do not like their hands "*getting dirty*". For example:

Interviewer: Any other things you like? Are there things you don't like? Sure, what don't you like?

Participant: Garden. I don't know.

Interviewer: What don't you like about the garden?

Participant: I don't know, I just don't really like plants.

Interviewer: Really? How come?

Participant: I don't know, it's just ... I don't like getting my hands dirty.

Supplemental findings. As was explained above, the purpose of the question "what do you like about animals" in the interview protocol was an attempt to discover a relationship between animals and the 5Cs. Responses that are related to the 5Cs are reported above. However, other responses came up as well. Below, I will report these responses that caught my attention as possibly being worthy of future investigation.

Fun. The word fun appeared in 11 quotes, usually within whole sentences including other elements and not as a stand-alone response. I initially coded it because it seems as an important component of a relationship (similarly to the theme "fun relationship" within the code connection- people). However, when I reviewed these quotes, it seemed that the word fun in these quotes was used either as a filler word, or when a participant did not have the vocabulary to describe an emotion. For example:

Interviewer: What else about animals do you feel like helps you?

Participant: It's a lot. Probably ... they just help with anger, I guess, really. They're

just comfortable. I don't really know a specific ... any way of a specific ways. Just

I guess they're fun to have.

Interesting/exotic. The notion of animals as interesting or exotic came up in 9

quotes (7 participants). For example: "I like the fact we have animals 'cause I just like

animals in general. Animals are my favorite … Because they just look cool and I like

seeing another thing just walk there";

… but if you can't see the animals because you maybe have a bad day or not

doing good, you have to do work and didn't do you work then you can't see the

animals, but ... Every kid in this school likes to see the animals because they're so

interesting to see.

… because when I got to go to wildlife, I got to do all this stuff with exotic

creatures. It's like I got to wash a monitor in a bath. No, no, no, it is not what you

think. It's this type of lizard thing. Don't worry, I'm not washing TVs.

Money for farm job. Two participants mentioned the money they receive for their

farm job. For example:

Interviewer: Are there things you don't like about working with animals?

Participant: No, I like working with them cause after when you wait for 2 weeks

you get paid cause they pay you. It will start by getting 25 cents and it will start to

go up and up until you get more and more. So I used to got 25 cents but now I get

dollars and dollars and cents and then I can be able to use it to ... Maybe when I'm

playing Xbox I can play a game or buy a game.

Non-human companion. One participant said he would prefer a non-human companion sometimes:

I just think a lot of the animals are really nice and it's fun to have someone that's not exactly human to hang out with … You need a companion and sometimes the best thing isn't a human. It's an animal. And all the animals here are very nice.

Non-judgmental. It is an accepted conception within the field of AAT that one of the unique properties animals bring to the therapeutic relationship is that they are perceived by the client as non-judgmental. One participant brought up this topic:

Participant: I like my dogs because they don't judge you.

Interviewer: They don't judge you?

Participant: A lot of people would judge me if they knew exactly stuff that I do in my free time. A lot of people would judge me. My dogs see me doing that stuff and they don't judge me they just come up to me and I just pet them.

Research Question #2- Is There Presence/Change of Other Elements That are Not the 5 C's Among Children Who Participate in a Green Care Program?

Although the main aim of this study was to explore the possibility of Green Care interventions to promote PYD by effecting or increasing the 5Cs, I also wished to remain open to other elements that might be effected by the intervention. The data that informed this research question stemmed from the question: "what changed in you?". As was mentioned above, the purpose of this question was to find out if the children recognize a change that is related to the 5Cs. However, it was also meant to remain open from the outset to be able to answer this research question.

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Some of the answers to this question were indeed related to the 5Cs and are reported under the previous research question. Simultaneously, other issues came up as answers to this question. All topics that came up can be identified together as various problem behaviors. I further broke them down to *conduct behaviors, attitude, emotions, and cerebral*. Frequencies of the various themes can be found in table 4.11 below.

Table 0.11
Themes for improved "problem behaviors"

Type of behavior	No. of participants
Conduct behavior	10
Attitude	6
Emotion	7
Cerebral	1

Themes illustrations. "*Conduct behavior*" includes behaviors such as being less physically aggressive, throwing things, and yelling. For example: "I used to throw fits every day, and I got restrained four times in a week once. Now, I haven't got restrained in like two months"; Interviewer: Do you feel like you have changed ever since you came here? Can you tell me what changed? Participant: I haven't been physical in such a long time. I've been behaving a lot better. So yeah ...";

> … I just destroyed bookshelves, chairs, desks, teacher's desks, metal, paper, binders, books, everything was all over the floor … If I were to do that here, I would get restrained instantly. They wouldn't just stand at the door and wait. I would get restrained instantly. But it's only to keep me and my peers safe.

All the quotes under "*attitude*" are literally related to the youth talking back less. For example:

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Interviewer: Can you give me some examples of things you feel like you've changed in?

Participant: My attitude. I know that that's changed. 'Cause when I got here, I used to have an attitude all the time.

Interviewer: What do you mean by attitude?

Participant: I mean I was talking back, and stuff like that. I don't do that much anymore.

Interviewer: To staff? Or to the other kids?

Participant: Really, to everybody.

The change represented by "*emotions*" include being less angry, less anxious, and having a better or more stable mood. For example: "My temper has been much better. Just my general attitude has gotten much better than it used to be. Basically become a better person, you could say, by coming here"; "Interviewer: Can you tell me examples of what changed? Participant: Like my mood and my behavior. Interviewer: What's different in your mood and behavior? Participant: What's the change is, I've been staying more positive";

Interviewer: So can you give me examples of what's changed in you?

Participant: I think anger, really. Because when I sometimes get angry, I used to be physical more. But now I don't. Or not now. As much as I was.

Interviewer: So you get angry less. And less physical than before. What else do you feel like changed?

Participant: Probably mood swings. I've been having the same calm, boring, lazy mood.

Something happened today and Monday. Mr. Torres thinks I have a fever. You know why? Because I don't ever walk in with a smile, I'm like this, but Monday I came in with a smile. Monday I left with a smile. Today I came in with a smile. Mr. Torres was like feeling me he's like, "You have a fever? You have a fever?"

There is only one quote under the theme I chose to classify as "*cerebral*": "Interviewer: Really? What do you feel like has changed? Participant: Like my focus. Interviewer: You can get better focused. Participant: Than before. Interviewer: Yeah? What else? Participant: That's it really".

Research Question #3- What are the Mechanisms That Might Explain/Lead to Such a Change in the 5 C's/Other Elements That are Not The 5 C's? (Mechanisms Refer to Any Components of the Intervention that Can Explain the Change).

The data to answer this question came from two codes. The first code is "What help Change". This was a pre-defined code that stemmed from one of the interview protocol questions. The quotes within this code are essentially answers to direct questions such as "what helped you change?". The second code is "facilitating factors". This code emerged in the analysis process, and the quotes within it were inspired by my deduction of elements that seemed to be helpful or facilitating change. While some of the quotes overlapped with the previous code, this code had additional quotes that were more inferential on my part.

As I was going over the quotes to examine if there are reoccurring patterns, I noticed two main constructs repeating in the code "what helped change". People and animals appeared to be change promoting elements. Within the code "facilitating factors", three constructs emerged such that people, animals, and programs appeared to be change promoting elements. These constructs were further themed and will be reported below arranged by constructs, and then themes within each construct.

Facilitating change- people. The construct *facilitating change- people* had a total of 19 quotes (within 12 interviews). Three themes emerged in this construct: *accessibility for support, option for time out, and coping skills*. The themes and their frequencies can be found in table 4.12 below.

Table 0.12
Themes for "facilitating change- people"

Theme	Frequency (quotes)	Frequency (interviews)
Accessibility for support	8	8
Option for time out	4	4
Coping skills	3	3

Themes illustrations. There are two aspects underlying the idea behind "*accessibility for support*". Firstly, support is accessible as a result of the amount of available staff members for each child. Secondly, support is accessible by the propensity of the staff to aid the youth. In this theme, both aspects can be distinctly or jointly present within a quote. For example: "Interviewer: Can you think what about here … helped you change? Participant: I always have somebody to talk to"; "I had no help there. Before I came, I had no help. I had to yell";

Interviewer: Can you think about why you changed like this?

Participant: I can't really know why, but I think it's just all the stuff that Green

Chimneys does for you. If you have a problem they are usually there to help and

talk it out. They're usually pretty good about it.

The youth at Green Chimneys have the "*option for time out*" when they feel upset

and unable to regulate their emotions before they escalate to an undesired behavior,

which can also be viewed as accessibility for support. For example:

No, for me, I hate school. But here it's kind of different. Because there's different

things in school. Yeah, there's a lot of different things. It's kind of like

comfortable here, because the staff and stuff. You can have some time away.

Most schools I'm pretty sure you can't just ask and I'm pretty sure that can't just

take you to go somewhere if you're upset or something. I'm pretty sure some

schools you have to just stay inside the classroom.

Interviewer: So, when you go to the behavioral support, what would you

do with a person that you're there with?

Participant: Usually I would just sit there. 'Cause you just sit there, and then relax,

and then regroup yourself. And then if I wanted to talk, I would talk but ...

Sometimes I talk, but not a lot. 'Cause sometimes I'm upset.

Interviewer: So just give you a chance to be alone with yourself in a place where

you don't have to interact with someone and just regroup a bit? And how does that

help you not to hurt other people?

Participant: It helps me a little.

Interviewer: How?

Participant: It helps me by it gets my mind off of it. So it helps me not think about it. That's pretty much it. Yeah.

The theme "*coping skills*" refers to either teaching or providing coping skills. For example: "When I was feeling upset, they told me a way to calm down and help me, so yeah";

They'll help you with ... Maybe ask you for a coping skill or a break or ... Maybe take a time away. Maybe get stress ball, maybe headphones. Lots of that stuff. It makes you feel calm and then you can be happy again instead of being mean and nasty to a teacher.

Facilitating change- animals. The construct *facilitating change-animals* had a total of 19 quotes (within 11 interviews) and refers to the youth's views on animals as a catalyst for change. Five themes emerged in this construct: *calming, mood enhancement, being active and outside, taking care of, and general*. The themes and their frequencies can be found in table 4.13 below.

Table 0.13
Themes for "facilitating change- animals"

Theme	Frequency (quotes)	Frequency (interviews)
Calming	12	8
Mood enhancement	3	2
Being active & outside	1	1
Taking care of	1	1
general	1	1

Themes illustrations. The animals' role as change facilitators came up predominantly as having a "*calming*" effect. For example: "The animals are trained to

help you feel better. Whenever I'm mad, I go to the farm. The animals are trained to know when you're upset and they make me feel better";

Interviewer: The first thing you said you liked about Green Chimneys is the animals, do the animals help you in changing?

Participant: One time, I was running out of program, and I ran towards Lucy, I just wanted to see her, well, him I mean. I calmed down and I said, "I'll see you later Lucy." Then I walked away.

In the continuation of this quote, the participant says he would like to have this option by request:

Interviewer: That's a good example. Do you have more examples of how the animals help you when you need to calm down or change your behavior?

Participant: If I want to, I would say, "Can I please go to the farm to see my friends." They would say, "Sure." Then I would say, "Hey, what's up? Dixie, Lily, and Toby. Hey, what's up Condor," or Peacocks, or animals like that.

Interviewer: Can you think of why it helps you when you see them?

Participant: It helps me because I can take deep breaths and use my coping skills. When I usually see them, it just pops up and I'm like "Oh, there is he, he can help me calm down."

Interviewer: So you feel like it's working better than the safe couch, because basically you do the same thing with the safe couch, right?

Participant: Yes.

Interviewer: With the animals it works better?

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Participant: Yes.

Another participant expressed a similar desire:

Interviewer: ... What do you like about the interaction with animals?

Participant: I just really like how ... I don't know. It's like the fidget cube that I have. I was playing around with a fidget cube earlier. It's somewhat like that. But it's relaxing, instead of just a fidget toy.

Interviewer: So you feel like, when you interact with an animal, it calms you down.

Speaker 2: Yeah.

…

Interviewer: Can you explain … why is that something that you would like? Why you miss more interaction.

Participant: I just feel like it would keep me calm, more. Like, when I get frustrated, maybe I could see them ... Like they make it not just a one-time program. They should make it where, if you're having trouble, or getting aggravated, you can pet them. Or see them.

Interviewer: Do you think maybe there are any elements in this program that might have helped you?

Participant: The animals, definitely, since it's just like you just got to calm down. Animal therapy, I believe, helps you in a way. If you feel so stressed out and you just get to pet a pony, or a dog or a rabbit or a frog or whatever just makes you feel nice, because you can talk to animals as much as you want-

…..

Interviewer: So animals help you calm down?

Participant: Yes.

Interviewer: And the petting is helping just relaxing?

Participant: Yeah.

….

Interviewer: ... Is there anything else that you like about the animals, that you think is helpful?

Participant: If you think about it, they're just animals and they help you with calming down. It isn't how, it's if, and they will.

Interviewer: So you're saying it's sure going to happen. I'm actually curious about the how-

Participant: If you just give them a chance, it will help.

Interviewer: It's gonna happen.

Participant: Yeah.

Interviewer: I'm actually curious about the how. About what about them make us feel better.

Interviewee: It's just a good old friend. It's nice.

Speaker 1: What helped you? You're saying, "I've changed, I'm more focused." What made you more focused? What helped you change?

Speaker 2: Like playing with the animals helped me.

Speaker 1: Really?

Speaker 2: Yeah.

Speaker 1: How so?

Speaker 2: Because sometimes I just like petting their fur, because sometimes it's so soft.

Speaker 1: Mm-hmm (affirmative). Right, so their soft fur. How does that help you focus?

Speaker 2: Just like ... Even like stress ball, like what you're doing right now.

Speaker 1: Yeah?

Speaker 2: It's just like fur, and you just squeeze it or something.

…

Speaker 1: ... You're saying that when you pet an animal, is it like using this ball, where, you know ... What's better, an animal or a ball?

Speaker 2: Ball.

Speaker 1: Better than an animal?

Speaker 2: Not really.

Speaker 1: If it is then it is. I mean, whatever It's for you.

Speaker 2: To me, they're like the same thing.

Speaker 1: They're like the same thing?

Speaker 2: Yeah.

Another participant explained why he prefers to walk dogs when he meets with his social worker:

Interviewer: ... How is walking with a dog different than just walking around with her [his social worker]?

Participant: Because you get to talk and they're there for you and you feel comfortable talking when you have a dog with you and you just feel more open to talking.

Interviewer: Just because the dog is there with you.

Participant: Yeah, and comfort you.

The following quote combines the theme *calming* along with the theme *mood enhancement*.

Interviewer: ... So you said that one of the big thing about here that you like is the animals. So can you explain to me what you like about having the animals here?

Participant: The dogs, for one thing, it's like of course you're going to want a dog near you when you're upset. Because it's comfortable. Soothing. It's kind of enjoyable. When I see a dog I automatically feel happy. And when it comes next to me I feel even happier.

One participant said that working with the animals helps him by "*being active and outside*". This theme will appear again more generally under the next construct of "*facilitating change- programs*".

Interviewer: And do you feel like something about visiting, working, visiting with animals helps you change too?

Participant: Mm-hmm (affirmative).

Interviewer: Or with the plants in the garden?

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Participant: Yep.

Interviewer: How does that help you in changing?

Participant: Just makes me feel like so I can be active. So I can get outside and play around and stuff. Go maybe out ... Go out ...

One participant said that "*taking care of*" the dogs helped him change:

Interviewer: Can you think what made the change?

Participant: Maybe the program, I guess.

Interviewer: But what at the program?

Participant: I guess the dogs. I don't really know how to explain.

…..

Participant: I guess it would be taking care of it, but I can't fully put my finger on the full idea of ...

Interviewer: But the taking care of?

Participant: Like an animal. That's the main idea of it.

Lastly, I decided to include the final theme *general* mostly because of the acknowledgment of the participant to the unique opportunity of going to a school that has animals as an integral component.

Interviewer: Okay. Can you tell me what about the fact that the Green Chimneys have animals, what do you like about that?

Participant: Because they help you, they're therapy and you could play with them and groom them and most schools don't get to do it, so this is once in a lifetime.

Facilitating change- programs. The construct *facilitating change- programs* had

a total of 14 quotes (within 10 interviews). Four themes emerged in this construct: *move*

around, breather, being busy, and better focus. The themes and their frequencies can be

found in 4.14 table below.

Table 0.14
Themes for "facilitating change- programs"

Theme	Frequency (quotes)	Frequency (interviews)
Move around	7	5
Breather	5	5
Being busy (dorm)	1	1
Better focus	1	1

Themes illustrations. The theme "*move around*" is related to the physical aspect

of the afforded benefits of having a variety of programs throughout the day. It is a chance

for having physical activity. For example:

Interviewer: Do you feel that classes or other activities that makes you physically

active are helping you out rather than if you just had to sit in class all day?

Participant: Yep. You hit the head on the nail.

Interviewer: Yeah?

Participant: Hit the nail on the head.

Interviewer: How do you feel it helps you?

…..

Participant: I have ADHD so I like to move around, and it's hard to stay still.

Interviewer: How about the fact that ... we talked about it before, that you

get to move a lot and you don't have to sit in your chair all day?

Participant: Yeah, I like that because I fidget a lot and whenever I move around it

makes me not fidget as much, so yeah, I like that.

One participant also added that the variety of offered programs is helpful as well, as they

can choose the programs they find interest in:

Yeah, I mean, I can't sit still. It's the only thing. Everything else I can stand. It's

fine. I just can't sit still. That's pretty much it. I tend to get bored kind of quick

depending on what I'm doing. It just depends what the day has been like and what

I'm doing.

….

The programs that you do, you get to choose what you want to do, so you're not

going to get something that you don't want. In public school or something you

possibly choose something, but the basic programs that you do, you don't like

those maybe but you still have to do them. Here, you don't have to because

they've got so many things you can choose.

…

Yeah, that's why it's pretty cool. You can do a lot of things that you want to do.

One participant said he would like to have even more opportunity to move around:

Interviewer: Are there things that you don't like about Green Chimneys?

Participant: We don't ... we have longer periods in the beginning of reading and

math, are the first two, but then we get to go outside. I would like it if we had

reading and then go outside and then go back to math and go outside, so we don't

have to stay and sit in the classroom for a while.

…

Interviewer: You would prefer it-

Participant: I would like to move around a little bit.

Interviewer: More. Even in early in the morning.

Participant: Yeah.

The theme "*breather*" is related to the mental aspect of the afforded benefits of having a variety of programs throughout the day. It is a chance for a mental break. For example:

Interviewer: What about school stuff? Do you feel like you're doing better in school?

Participant: I guess, yeah. Yes. Definitely.

Interviewer: Yeah? And can you think why?

Participant: More programs during school. More breaks, I guess you could say. But that's not really the correct word to use.

Interviewer: I think I understand. By having programs, tell me if I'm getting it correct. By having more programs, that have you be more physically active and not just sit in your ...

Participant: Yes, yes, yeah. I'm not the most energetic, but I would like a gym class or something just to get out of the same room for six hours.

The next quote was in response to the "animal classes" (wildlife, farm, dog education, and riding):

Interviewer: How do you like those classes?

Participant: They're great. Yeah.

Interviewer: Can you tell me what you like about those classes?

Participant: Well, the real question is, would you enjoy if you're just working on work, "Oh, man. I really wish that I could have a break," and it's just like, "Everybody line up. We're going to a barn?" "Hurray."

Interviewer: (laughs) Okay.

Participant: In general, I just love it. How many kids who get to go to a school with such a great location and get to be with animals, except like private boarding schools?

One participant talked about the benefits of having a variety of programs for residential students in the dorms. I themed that as "*being busy*":

Interviewer: I think the programs with the animals and probably the other programs requires you to be more active, like run, walk, do physical activity. Is that something that you feel is helpful for you?

Participant: Yeah, because I guess it keeps you stimulated, and basically gives you something to do that you probably wouldn't have had at home, so that's one of the benefits of being at Green Chimneys. You have a lot of things that keep you out of your room, chilling- Not necessarily chilling, but some things that keep you from staying watching TV all day, keeps you going. It's pretty nice. I like this.

Interviewer: It's giving you things to do so not just sitting getting bored and then being like-

Participant: Yeah, because that's no fun.

One participant talked about having "*better focus*" during programs. However, this theme stayed descriptive to the participant's words, because I couldn't get more from him about this subject:

Interviewer: … Do you like the fact that there's a lot of programs and you do a lot of different things?

Participant: Yeah. Yes.

Interviewer: Can you maybe explain to me what you like about that?

Participant: Like the programs?

Interviewer: Yeah.

Participant: Well, they keep me focused. I think on one thing that I really want to do in the program.

Interviewer: So when you do the program it helps you keep focused, and when you have to sit in class it's harder to get focused?

Participant: Yeah.

Supplemental information. As was said above, some of the data to answer this question originated from inferential coding, while other originated from direct answers to the question "what helped you change". I find it important to note at this point, that some of the children found it hard to provide an explanation when being directly asked about what helped them to change.

The analysis for this study included 18 interviews. With the exception of one interviewee, I asked all participants: "do you feel you have changed ever since you came to Green Chimneys?" (the one exception was a participant who was extremely talkative

in a way that was overwhelming to me, it was hard for me to keep track of my protocol questions). All participants replied affirmatively to this question with varying degrees of approval. However, when I subsequently asked "what helped you change?" not all youth were able to provide an explanation. For example: "Interviewer: And can you think why this has changed? Participant: No, just from Green Chimneys, I guess";

Interviewer: Can you think maybe of what helped you to make this change?

Participant: No, I don't know really. It just happened. I don't really know.

Interviewer: It sounds like a lot of hard work, making all this change.

Participant: It actually isn't. It just happened while I've been here. I don't really know why.

Interviewer: So let's say if I know a kid that's kind of like you, or like you were a year ago, and I want to help them too. And let's say they come here. Or not here, because they live far, far away.

Participant: I think if they just started hanging out and having fun it starts to change. That's kind of what happened to me. Over time it just started to change.

Interviewer: Because of the different activities you participated in?

Participant: I don't know. Just because I don't really know. I had lots of problems when I was here at the beginning and then it started just to change.

Interviewer: So you can't think of why or ...

Participant: I don't really know why or anything, or how I mean.

Research Question #4- Can Patterns of the 5Cs Revealed in the Interviews Be Matched to Patterns in Existing Data That Can Be Conceptually Related to the 5Cs?

The purpose of this question was to get an additional perspective about the presence or change of the 5Cs among participants. I wanted to see if the youths' account about themselves match with staff's reports about the youth. To obtain the staff's perspective, I used the children's report cards and Green Chimneys' internal survey (GLAS). For example: To determine a match for academic competence I looked at what the participants said about their school work compared to their school grades in the report card; To determine connection with people, I compared the code "connection- people" with the GLAS item: "Relationship with authority: 1. Compliance with staff directions; 2. Response when interacting with or given directions by staff". A table with a complete list of the 5Cs and corresponding items in the report cards/GLAS tool can be found in appendix D.

There are two points to consider with regard to the process of matching participants' quotes with staff's records. The elements corresponding with the 5Cs as they appear in the report cards and GLAS are merely approximates, and reflect my own perceptions based on the available data. Additionally, the process of matching the children's quotes about the 5Cs and the corresponding elements in the report cards/GLAS also relied solely on my perception and judgment. Most of the time the decision was not clear cut. Consequently, the findings as reported below have a possible variance I cannot account for.

In the table below, green signifies a match, orange signifies a slight discrepancy, and red signifies a mismatch. The table has a total of 49 filled cells, 34 green cells (69.4%), 11 orange cells (22.5%), and 4 red cells (8%). As can be seen, the children's and staff's perceptions mostly match. Below I will provide two examples (one for a mismatch, and one for a slight discrepancy) to illustrate the matching process.

Table 0.15
Matching children's and Staff's perceptions

	Competence-academic	Competence-social	Confidence	Connection	Character	Caring & compassion
1	green	orange	N/A	green	N/A	N/A
3	green	green	N/A	green	green	N/A
4	red	red	red	green	N/A	N/A
5	green	green	N/A	green	N/A	green
6	green	N/A	N/A	green	N/A	N/A
7	red	N/A	N/A	orange	N/A	N/A
8	N/A	N/A	N/A	green	N/A	N/A
9	green	N/A	N/A	N/A	orange	N/A
10	green	green	green	green	N/A	N/A
11	green	green	N/A	N/A	N/A	N/A
12	N/A	N/A	green	green	N/A	green
13	green	orange	N/A	orange	green	N/A
14	green	N/A	orange	N/A	N/A	N/A
15	N/A	orange	N/A	orange	N/A	orange
16	orange	green	green	green	N/A	green
17	N/A	N/A	N/A	green	N/A	N/A
18	green	green	N/A	green	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A	N/A

Illustrations for discrepancies.

Participant #4. This participant said school work is easy for him. However, he is a C student. Although, this is a clear mismatch between what the participant says about his academic competency and his actual school grades, there are underlying issues that

can illuminate this discrepancy. He doesn't like his teacher this year, and acts out in response, as can be seen in the following example:

Participant: Yep. I'm having a bad time this year.

Interviewer: Why?

Participant: Because ever since my parents said, ever since I heard the name Ms. Gold [pseudonym] was my next teacher, I was having bad days. We started out on the wrong foot and now she's so rude to me.

…

Interviewer: You don't really like her as much?

Participant: No. She's the main problem. When she's out on days, I'm usually good. When she's here on days, I usually sleep through it and stuff because I don't want to deal with her BS.

Interviewer: Why don't you like her?

Participant: She's rude in general.

Correspondingly, his teacher's comments in the report card reflect his disengagement: "Jason's [pseudonym] lack of motivation and participation greatly hinders his academic performance. Jason is a bright child who has potential to succeed in our program both academically and socially"; "Jason's continual lack of motivation and interest in learning greatly hinders his learning progress".

Whereas the participant feels that "one on one" time helps him:

Interviewer: How did the dorm help you?

Participant: It had a lot of support. …

Interviewer: You had someone, an adult, who had more time to spend with you one on one?

Participant: Yep.

Interviewer: You felt like it's supporting you when you get upset or if you need something?

Participant: Yeah my mom recommends one on one because I'm better with that but the school doesn't do one on ones because it's too much money.

The staff is encouraging him to be independent:

It continues to be a struggle to get Jason motivated in our program. He is requiring a lot of 1:1 staff assistance to get his work done and when asked to complete things on his own that he is more than capable of doing he will become upset and act out. Jason is a bright child who has potential to do well if he was still motivated by our program.

Participant #1. The following is an example of a slight discrepancy between how the participant perceives his social competency:

Interviewer: So, what are the things you feel you have changed about you?

Participant 2: My personality.

Interviewer: Explain that to me. What do you mean personality?

Participant: How I react to peers. Being nice to them. Being friendly and kind.

Interviewer: So that is something you're better at now than before?

Participant: Yeah. Cause I used to go in 2 public schools and I used to be rude and stuff and I didn't like that at all.

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Interviewer: Mm-hmm (affirmative).

Participant: Cause I would think that some of the teachers were being rude to me. Lots of teachers being rude to me, but now that I moved here I'm perfectly fine in the school cause this school is the best.

Interviewer: And you feel you have better friends here? It's easier for you to get along and have friends?

Participant: Yeah, I have better friends here and I can be able to play with them on Xbox and talk to them and play with them. It's really fun.

And how staff perceive his social competency as reflected by the counselling recommendation for continued work. It appears that the participant might be feeling he is doing a little better than he is:

"David [pseudonym] is making slow but steady progress towards his goals. David will continue to work on the development of age-appropriate social skills as well as identifying triggers to negative behaviors with staff and peers".

Chapter Five: Discussion

5Cs

The various domains of the 5Cs appeared in different frequencies in the data of this study. The different frequencies manifested in the number of quotes as well as the number of interviews. For example: the highest frequency emerged in the code connection- animals with 43 quotes within 17 interviews, whereas, the code character had the lowest frequencies of 9 quotes within 5 interviews. On the one hand, the different prevalence can attest to a degree or magnitude of importance or significance. On the other hand, they can be a result of the nature of the interviews informing this study. Issues such as connection and competence, for example, are more likely to come up in a natural conversation and easier to ask about directly than tapping on issues such as respect for social norms and moral behavior. Whether or not the 5Cs have a hierarchy of significance can be an interesting topic for further investigation.

Informed by the theory or reasoning that led to the research questions of this study, I was looking for the 5Cs components as they are related to animals as well as horticulture. However, the results showed the 5Cs as they are related to animals and people, but not horticulture. It is important to note that Green Chimneys offers more programs involving animals than programs involving horticulture. Additionally, at the time of data collection the garden class was not held for approximately 6 months (the garden teacher left and was not replaced in this time period). Therefore, Green

Chimneys' students have less exposure to horticulture programs than to animal programs. Although I cannot quantify the differences in exposure, or attribute it to the findings, it is a possibility worthy of further investigation. Another possibility lies within some inherent differences between AAIs and horticulture interventions. For example: it is an accepted convention within AAIs that one of the benefits of this work is that animals provide an immediate feedback to client actions. Whereas with plants, in the words of one of the participants: "The plants take forever to grow … I don't have patience". Other aspects of AAIs and horticulture interventions as they relate to the 5Cs should be examined.

Elements Other than the 5Cs

There are two sections of the findings that did not fit the 5Cs and merit further attention. First, one of the questions that was intended to tap onto the 5Cs as they relate to animals (i.e. "what do you like about animals?") also elicited additional responses: fun, interesting/exotic, money for farm job, non-human companion, and non-judgmental. *Fun*- as was said in the findings section, in the data of this study, the word fun appeared to be used as a filler word, or a go-to word when participants could not articulate a certain feeling. However, as fun can also be an important component of relationships as well as a motivator for engaging in activities, it might be worth while to include it in further detailed investigation; *interesting/exotic*- it seems as though there is something compelling and enticing in the variance of different life-forms; *money for farm job*- this element is specific to the farm job and is not reflecting other forms of AAIs. The practice of farm jobs at Green Chimneys originated from the aspiration to provide vocational training for youth that was ejected from traditional education systems. Although not

targeting vocational training purposes per se today, the practice of farm jobs remained. Being valued monetarily for a job done has the opportunity of contributing to a sense of self-esteem or confidence. Although this issue did not come specifically in my data, it might prove useful to examine such connection, and further examine if such self-esteem (if found) that is domain specific generalizes to a global sense of confidence; *non-human companionship-* only one participant said that sometimes he prefers a non-human companion. Although many speculations can be made about the reasons for such a preference, I believe it might serve as a worthy goal for a methodical investigation; *non-judgmental-* as was stated above, in the findings section, it is an accepted conception within the field of AAT that one of the unique properties animals bring to the therapeutic relationship is that they are perceived by the client as non-judgmental. Although brought up only by one participant in my data, since this is an accepted concept within the AAT field, it merits more attention.

The second part of the findings that is not related to the 5Cs pertains to change. When I asked the children "what changed in you?" I got answers that are related to the 5Cs (as reported in the findings of the first research question), as well as additional replies (as reported in the findings of the second research question). As can be seen in the findings section of the second research question, all replies that were not related to the 5Cs were classified as various problem behaviors that manifest by conduct, attitude, or emotion. The children I interviewed have various diagnoses. Although this difference in diagnoses might lead to a different manifestation of problematic behaviors, the change the children reported about, seems to weave across diagnoses. The same is also true for

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any change shown in the 5Cs and might suggest that the intervention or program is apt and advantageous for various diagnoses. The specific change mechanism, as they came up in this study are discussed next.

Change Mechanisms

In the interviewing process, my first question was very general: "what do you like about Green Chimneys?". My purpose in asking this question was to probe how many participants will answer animals or garden, as an indication of them as a significant part of the participants' experiences at Green Chimneys, before I ask directly about animals and plants. The most prevalent answers to this question turned out to be animals, programs, and people. Other replies were considerably less prevalent (data can be seen in the introduction section of the findings). When I was coding and analyzing for elements or factors that facilitate change, animals, programs, and people emerged again as three distinct constructs of promoting change.

While animals, people, and programs appear to be the change promoting factors, their themes can provide further insight as to the change promoting mechanisms within these factors. *People factor-* there are three themes or mechanisms under this factor: accessibility for support, option for time out, and coping skills. Access to support has two aspects. First, due to the amount of staff at Green Chimneys, the children feel there is always someone available to talk with them and address any issue they have. This feeling is enhanced when put in comparison to other schools the children attended. The second aspect is staff propensity to assist the children. The children feel that staff cares about them, and have a genuine interest in their well-being. Conceptually related to this

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mechanism is the second mechanism. When the children feel upset and cannot regulate

their emotions, they have the option of asking for a time-out (accompanied by staff)

before the situation escalates to an undesired behavior. This as well was stated as an

advantage in comparison to previous schools. Lastly, participants brought up the matter

of being taught or provided with coping skills as facilitating change. It is interesting to

note that under connection with people of the 5Cs, there are two themes that are

resonating with the themes of the change mechanism: helping relationship, and

caring/attention. *Animals factor-* the themes or mechanisms that came up under this

factor are: calming, mood enhancement (e.g. becoming happier), being active and

outside, taking care of animals, and general. The calming effect of animals as a change

mechanism appeared to be predominantly prevalent mentioned by 8 participants for the

total of 12 times. Participants' accounts point to the calming effect of seeing, interacting,

and petting animals when they are upset or mad. Some participants compared the effect

to the one of a stress ball or a fidget toy. Two participants said that the animals work

better than the objects, and one participant said it was the same for him (however,

mentioning the animals as facilitating change was brought by him without any prompt

from me, and it was the last thing he said before we ended the interview, and he was

impatient to leave). Moreover, some participants expressed a desire to have even more

opportunities to enjoy these benefits and being able to go especially to visit with the

animals for this purpose. One participant said he likes walking the dogs when he meets

with his social worker because he feels more comfortable talking with her in the dogs'

presence. The other mentioned mechanisms appeared in considerably lower prevalence

(mood enhancement by two participants and the rest by one). Nevertheless, they are worthy of further investigation as possible mechanisms of facilitating change. *Programs factor-* one of the unique features at Green Chimneys is the amount and variety of programs offered throughout the day (some are animal and plant related but not all). Two mechanisms emerged predominantly, and roughly to the same extent, under this construct. I themed them as move around and breather. The first is essentially having the opportunity to be physically active, and the second stands for the opportunity to have a mental break.

Potential for Enhanced Therapeutic Benefits

My main aim in this study is reflected by its title and the first research question. I hypothesized that I would find that AAIs and horticulture interventions promote PYD by increasing the 5Cs. As can be seen in the findings section, there is presence and/or change of the 5Cs among the participants of this study, some related to animals, some related to people, and none related to horticulture. Even so, in the week I spent at Green Chimneys conducting the interviews, I felt that the participants' accounts were kind of flat. Based on my own experience as an Animal-Assisted- Psychotherapist, and that of colleagues I expected more. As the week progressed, I was trying to think of reasons for that. Maybe I am not a good interviewer; maybe the children do not feel comfortable with a stranger they have never met before, and so on. Since I finished my interviews a day earlier than I planned, I remained with an extra day and decided to talk with some staff members that work with the children in the animal programs, to find out if they see something I did not see in the interviews, as they work with the children continuously

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over time. For the same reason, in the early stages of the inception of this study, I did plan to interview both children and staff. When that was not feasible, the study focused on interviewing the children.

Out of all the "animal and horticulture programs" that are offered at Green Chimneys, the farm jobs and therapy are the ones the children spend more time at and more consistently (i.e. classes and clubs are taken in alternate quarters, whereas farm jobs and therapy are at least one hour a week throughout the year). Therefore, I believe that these two programs have the most potential of eliciting the nature-based programs' benefits. In the farm jobs, the children work with interns, and therapy refers to meeting with the social workers. As was said above, my conversations with the interns and social workers were not planned, and thus were not held formally. Following I will describe my impressions and conclusions from these informal conversations.

Farm jobs. When I met with the interns, we talked either in small groups or individually. The focus of the conversation were children that I interviewed, and they worked with. All together I talked with seven interns. I started by asking them to share with me anything that caught their attention while working with the children. When they did not know how to answer this question, I asked them if they had noticed any change within the children during the time they worked with them. When they did not know how to answer this question, I asked if they have any goals for the work they are doing with the children. They said that sometimes they get OT goals such as staying on task or breaking up tasks, or PT goals such as raking, but not much more than that. The next morning, one of the interns was looking for me. There was a sick goat that the farm staff

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isolated in a separate pen so they can monitor her food intake. The child she was working

with that morning saw it and asked why the goat was separated to another pen, and she

explained. The child then asked if they can make the goat a get-well card. I told the intern

that this is a great story that can indicate empathy and that these are the kind of stories I

was looking for when I talked with them. She replied that if I had not talked with them

the night before and this happened today, she would not have paid much attention to it.

About 6 weeks later, I met her again at a conference I attended hosted by Green

Chimneys. I asked her about it. I asked if her new awareness changed something in the

way she works with the children. She said that yes, but it lasted for about a week before

old habits took control again.

Reflecting jointly on what I heard from the children and what I heard from the

interns led me to some conclusions that can be articulated by Feuerstein's method of

Mediated Learning Experience (MLE) (e.g. Feuerstein, Feuerstein & Gross, 1997;

Feuerstein, 2000; Feuerstein, Klein & Tannenbaum, 1991). At the heart of MLE lies the

tenet that "cognitive development occurs through an individual-environment interaction"

(p. 4 Feuerstein, Feuerstein & Gross, 1997). There are two ways by which change can be

formed by this interaction: 1. Direct learning following direct exposure to stimuli; 2. A

person mediating between the individual and the stimuli. The mediator acts by filtering,

selecting, interpreting, and elaborating the experience (Feuerstein, Feuerstein & Gross,

1997). MLE requires that the mediator intentionally insert themselves between the

individual and the stimuli on the one side, and the individual's response to the stimuli on

the other side (Feuerstein, Feuerstein & Gross, 1997; Feuerstein, 2000). To be considered

MLE, three parameters are required. The first is *intentionality and reciprocity* which involves the idea that the mediation needs to be intentional and can be successful only if reciprocated by the individual. The second is *transcendence* which signifies the idea that whatever is learnt in a certain situation should be transferable to a new situation, and the third is *mediation of meaning* which reflects the idea of the mediator providing meaning to the experience beyond the experience itself. In this process, it is also possible to add meaning of desired values (Feuerstein, 2000). Further opportunities can be provided by mediating situational variables for other important parameters. Such as behavioral regulation, feelings of competence, a sense of belonging, and more (Feuerstein, Feuerstein & Gross, 1997).

Going back to the farm jobs, I felt as if the children's experiences are not being verbally framed by the interns, and that if there is no verbal framing to the experiences, then they are not being registered or assimilated. Consequently, they cannot be verbalized back, as what I felt was the case with the interviews. In MLE language, the experiences were not mediated. Moreover, the experiences that are mediated can be chosen to promote any set of desired behaviors. When mediating the experience, the mediator chooses the focus of attention, interprets, and expand on it. For example, if one would choose to promote PYD by increasing the 5Cs, mediating would be made when related experiences present themselves. The example given above could have been used to mediate and reinforce a sense of empathy. Furthermore, these experiences might have the ability to generalize or transcend from interacting with animals to interactions with humans.

Therapy/social work. In the interviews, I asked the participants if they visit with the animals when they meet with their social worker. Out of the 18 participants reported in this study, nine said no, two said yes, 7 said sometimes. Five said they walk dogs, one said they visit with other animals as well, and 3 were not specified.

As mentioned above, intentionality is important for creating a process of change. I believe that there are two important aspects of intentionality with regard to AAT as they are reflected by this study. Intentionality of setting and intentionality of practice. *Setting.* There are many discussions on the importance of the setting in therapy. The different aspects of the setting, the rigidity versus flexibility of the setting and so on. I believe that for an effective AAT, the consistency of the animals as part of the setting is important. For example, in my practice of Animal-Assisted- Psychotherapy, whatever animals I was working with at the time, were always part of the setting and accessible. That does not mean however that they were necessarily the focus of occurrences or interaction. My setting also always included board games, card games, books, and art supplies. The animals were another option to choose from, but a consistent option. *Practice.* Intentionality is also needed to fully enjoy all the afforded benefits of AAT. For practice, the knowledge of the possible benefits and how to utilize them is also important. Following, I will give some examples of the practices utilized by the social workers incorporating animals in their sessions. 1. "Some children run out of therapy because it is too emotional for them. If you put them on a horse, they cannot run away". In this example, the horse is being utilized as an object. There is no inherent benefit to the unique contribution the horse brings to the therapeutic process, versus other possible

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ways of engaging the child. Another aspect that might be present in this example is

motivation. It is an accepted convention in the AAT field that animals are generally

motivating children to want to come to therapy because they want to be with the animals.

Utilizing this aspect of motivation to come to therapy is a wonderful first step. However,

if it stops there then again there are missed opportunities for many other benefits when

the animals are an integral part of the therapy itself; 2. Another example for the way the

social workers are incorporating animals in their sessions is "walking dogs". This

example was not accompanied by a rationale. From an AAT point of view, this is a good

example for some flexibility to the setting that is allowed by AAT. This might work well

for children who find it hard to sit in an office versus going on a walk for example.

However, like as in motivation, this is only a first step to make therapy more accessible to

some children. Additionally, the following example came up in one of the interviews in

relation to walking dogs during a therapy session:

> Interviewer: How is walking with a dog different than just walking around with
>
> her?
>
> Participant: Because you get to talk and they're there for you and you feel
>
> comfortable talking when you have a dog with you and you just feel more open to
>
> talking.
>
> Interviewer: Just because the dog is there with you.
>
> Participant: Yeah, and comfort you.

This is a good example of one of the benefits of AAT. I did not have a chance to talk

specifically with this participant's social worker, so I do not know if it is intentional or

rather just occurred naturally; 3. The following is an example of a "contraindication" for incorporating animals in sessions: "a dog that refuses to go up the stairs or an elevator, will not be worked with if there are stairs or elevators in the planned rout". I believe that this is a missed opportunity. In this example, the dog's fear of stairs or elevators is known in advance. However, AAT provides plenty of other unplanned opportunities such as this one. In this case, instead of avoiding the challenge, there is an opening to ask the child: "why do you think the dog is scared to go in the elevator?", "is it familiar to you maybe from your own life that there is something that scares you and you are asked to do?", "how do you think we can help the dog to overcome their fear so they can go in the elevator?" and so on. Such questions and the process they can lead to are an example of one of the unique benefits afforded by AAT- "projection from a safe distance". Projection is a powerful tool in therapy in general. Specifically, within AAT- on the one hand, animals are similar enough to humans to be able to project certain behaviors, feeling, and so on. On the other hand, they are distinguished enough to allow the "safe distance" (i.e. projecting on a friend, for example, is close enough to expose the fact that I am talking about myself. The animal takes the projection one step further to be safer).

The above are few examples of benefits that can be gained in AAT, among other possible benefits. Being intentional can optimize and maximize the potential of such benefits. Moreover, comprehensive knowledge of AAT can inform such intentionality.

Lastly, one participant brought up a point worthy of attention. When a therapist chooses to incorporate animals within their practice, one should be aware and examine

their own biases and reasons for including animals in the practice. The following is an

example of probably not well-thought of application:

> Interviewer: When you meet with your social worker and you go to the dogs, do
>
> you like it better than the office, or the same? Or less?
>
> Participant: ... that's very rare that I have to go with her to the dogs. Probably
>
> because she has her own dog. Her dog is named Lucky (pseudonym). … I think
>
> she just like having Lucky play about in the dog pen.

Simply put, the participant says: I have to go with her because she likes it when her dog

plays in the dog pen. Trusting that this is not the social worker intention, such a statement

still warrants attention. Therapy should be about the client and not about the therapist and

should be clearly felt by the client as such.

Conclusion

As was stated above, the main aim of this study was to discover a change of the

5Cs as it is related to AAIs and horticulture interventions. The findings show a change or

presence of the 5Cs as they are related to animals and people. No change in the 5Cs was

found as it is related to horticulture interventions. The discussion section is suggesting

possible reasons to explain these findings, as well as the discrepancy in the intensity

between the actual and the expected findings. My conclusion follows Feuerstein's ideas

as described in the discussion section. Change can occur either as direct learning, or

mediated by an intentional adult. I believe that the findings of this study reflect direct

learning, whereas intentional mediation is lacking. Intentional mediation could serve to

both intensify the 5Cs as they are related to animals, and elicit them as they relate to

horticulture. In the discussion section, I suggested that one possibility to explain the varying accounts of the 5Cs domains might suggest a hierarchy. Another possible explanation which follows the idea of mediation can suggest that perhaps connection, for example, is a process that is more readily achieved by direct learning, whereas character, for example, is a process that requires more mediation. By applying the ideas of intentional mediation, the potential of this Green Care intervention can be realized more fully. The following quote by one of this study participants is an example for a statement that is more in line with my expected outcome:

> Oh, I love it. Working with plants, being on the garden. I work with my mom in the garden once in my first house, but I moved to a new house so I didn't ... Well, we are gonna be doing planting this year. We're gonna be making avocados, just growing them to a big tree. Having figs ... Having fig trees grow. That's about it. … It makes me feel happy to go in a garden and then sometimes we'll have to bring plants home to take care of the plants at school and then we bring them home and take care of them. It's like taking care of a person almost. Like, our environment because we have to take care of the environment to be able to have the world be alive.

I believe that this is an excellent example of a mediated experience. From the context of the quote, it can be assumed that this mediated experience was learnt at home. However, it reflects the great potential of such practice. Moreover, this is the only quote in the entire study which reflects a One Health ideas. The lack of relevant findings related to horticulture can explain the lack of One Health findings. To allow findings that reflect

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One Health thinking requires the presence of all three components: people, animals, and plants (/environment).

I believe that one of the advantages of AAIs and horticulture interventions is by providing plenty opportunities of naturally occurring events/experiences that are relevant to both the 5Cs and to One Health. Accompanied by intentional mediation they can achieve their full potential.

Limitations

In this study, I used semi-structured interviews as a technique of data collection. Using semi-structured interviews ensured I will cover all the key components I intended to cover while allowing more in-depth investigation based on participants' responses. However, consequently, there is variance in consistency between interviews. For example: some participants were asked directly about academic and social competence, and confidence, while some were not (as explained in the findings section). My interviewing skills also improved during the process itself. I learnt what works better with the participants, and through talking with the participants, I also learnt to better understand the program.

The children I interviewed are typified by extreme swings in their condition. For example: there was one child on my list that had a bad day everyday for the week I was there. I ended up replacing him on the last day. With another child, I conducted half an interview one day, and we continued the second half the next day. Sometimes the swings are not that extreme, and since I do not know the children, I cannot account for who was

having a good or a bad day. I assume that talking with each one more than once might have had different outcomes.

Finally, because I think the information I looked for exists but was not verbalized to me for lack of awareness, observations as a research method might have been able to provide me with more accurate data.

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Appendix A

Parental consent form

University of Denver
Parent or Guardian Permission Form
for Child's participation in Research

Title of Research Study: The potential of Green Care to promote Positive Youth Development with a One Health Lens

Researcher: Hagit Brandes, PhD candidate, University of Denver

Study Site: Green Chimneys

Purpose

You child is being asked to participate in a research study. The purpose of this research is to explore the potential of animal and garden based programs like your child participates in at Green Chimneys to promote positive developmental outcomes.

What your child will do in the study

If you agree to let your child participate in this research study, your child will be asked to interview with the researcher. In the interview, your child will be asked about their daily experiences as a student at Green Chimneys (at the end of this form you can find a list of the questions your child will be asked in the interview).

Additionally, the researcher will need access to your child's school records as those are being kept by the school (the records include school grades, attendance, and behavior as those are kept on the school's report card and follow up of school related behaviors).

Time Required

Your child's participation in this study will take approximately 30 minutes. The interview will take place during the school day. Your Child's teacher will designate a time when they can miss class.

Voluntary Participation

Your child's participation in this study is completely voluntary. You have the right to withdraw your child from the study at any time without penalty. If you and/or your child want to withdraw from the study, tell the researcher.

If you consent to your child participation in this study, we will also seek your child's assent for participation.

The schools' officials are aware of your child's participation in this study. In any case, your child's participation, or decline to participate, will have no effect on their grades or relationship with the school in any way.

Risks or Discomforts

Although unlikely due to the nature of the interview, school experiences that your child might perceive as stressful may come up.

Benefits

By understanding the contribution of a nature based program to positive developmental

outcomes we might be able to ensure to continuous operation of this program and the establishment of new programs for more children to enjoy these benefits.

Confidentiality

The researcher will be the only person with access to identifiable data that will be kept secured with a passcode to keep your child information safe throughout this study. Your child's individual identity will be kept private when information is presented or published about this study.

The interviews will be audio recorded for the purpose of analyzing the transcriptions. Unless used for a follow up research, the records will be deleted once the study is done.

Some things we cannot keep private and must report to proper authorities. If you or your child disclose information about child abuse or neglect or that you or your child are going to harm yourself or others, we have to report that to the proper authorities as required by law.

The research records are held by researchers at an academic institution; therefore, the records may be subject to disclosure if required by law. The research information may be shared with federal agencies or local committees who are responsible for protecting research participants.

Questions

If you or your child have any questions about this project or your child's participation, please feel free to contact **Hagit Brandes** at **hago.bb@gmail.com** at any time. The Faculty Sponsor overseeing this project is **Andreas Rechkemmer** and may be reached at andreas.rechkemmer@du.edu. You may also contact Steven Klee, Associate Executive Director of Clinical and Medical Services at Green Chimneys at sklee@greenchimneys.org with any question.

If you or your child have any questions or concerns about your research participation or your research participant rights, you may contact the DU Human Research Protections Program by emailing IRBAdmin@du.edu or calling (303) 871-2121 to speak to someone other than the researchers.

Please take all the time you need to read through this document and decide whether you would like your child to participate in this research study.

Please **initial** audio recording permission below:

_____The researchers may audio/video record or photograph my child during this study.

Please **initial** data release permission below:

_____The researchers may have access and obtain my child's school data during this study.

If you agree to allow your child to participate in this research study, please sign below. You will be given a copy of this form for your records.

_____   _____

Parent/Guardian/LAR Signature   **Date**

_____

Name of Child allowed to participate in the study

List of questions included in the interview

- How long have you been at Green Chimneys?

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- What programs do you participate in?

- What do you like about Green Chimneys?

- What don't you like about Green Chimneys?

- What do you like about working with animals and plants?

- What don't you like about working with animals and plants?

- Do you feel like you have changed since you came to Green Chimneys? If so, what has changed? Why do you think it happened?

Child assent form

University of Denver
Assent Form for Participation in Research
Children

Title of Research Study: The potential of Green Care to promote Positive Youth Development with a One Health Lens

Researcher: Hagit Brandes, PhD candidate, University of Denver

Study Site: Green Chimneys

What is a research study?

A research study is a way to find out new information about something. We would like to learn more about how working with and learning about animals and plants, like you do here at Green chimneys, can help kids.

Why are you being asked to be part of this research study?

You are being asked to join the research study because you are a student at Green chimneys. About 20 children will be in this study.

If you join the research study, what will you be asked to do?

If you agree to join this study, you will be asked to meet with the researcher for about 30 minutes and share your daily experiences as a student at Green Chimneys. We will want to audio record you during your conversation with the researcher. This will take time during the school day and your teacher will give us time that you will be able to miss class.

Do you have to be in the study?

You do not have to be in this study. It is up to you. You can say okay now to be in the study and change your mind later. All you have to do is tell us when you want to stop. No one will be upset if you don't want to be in the study or if you change your mind later. You can take time to think about being in the study before you decide. Weather you decide to participate or not, it will not affect your grades or your relationship with anyone in the school.

Will the study help you or others?

We may learn something that will help other children like you some day.

Do your parents know about the study?

This study has been explained to your parent or guardian, and they said that we could ask you if you want to be in the study. You can talk this over with your parent or guardian before deciding if you want. You do not have to be in this study even if your parent or guardian thinks it is a good idea. It is up to you.

Will anyone else know that you are in this study?

The school's staff know you are in this research. We will not tell anyone else that you are in this

study. You do not have to tell anyone about the study or share your conversation with the researcher.

Who will see the information collected about you?

The information collected about you during this study will be kept safely locked up. Nobody will know it except the people doing the research.

Your individual identity will be kept private when we write our final report.

Some things we cannot keep private and must report to proper authorities. If you disclose information about child abuse or neglect or that you are going to harm yourself of others, we have to report that to the proper authorities as required by law.

What if you have questions?

You can ask any questions that you have about the study at any time. Just tell the researcher or your parent/guardian that you have a question. You or your parent/guardian can contact the researcher, Hagit Brandes, any time during the study by emailing hago.bb@gmail.com. Your parent/guardian already has all of the contact information for questions.

Table 0.1

Please take all the time you need to read through this document and decide whether you would like to participate in this research study.
Please **initial** below if you agree to be audio recorded:
_____The researchers may audio/video record or photograph me during this study.
If you agree to participate in this research study, please sign below. You will be given a copy of this form.
_____   _____
Participant Signature   **Date`**

Appendix C

Interview protocol

Hello, my name is Hagit, and I am here to learn about your experiences as a student at

Green Chimneys, so I can learn how to help other children. Our conversation will remain

confidential, meaning, I can share what is being said, but I cannot share who said what or

identify anyone by name. Our conversation will last about 30 minutes; however, if at any

point you want to stop, you may do so without any consequences or penalties. You are

free to share our conversation with anyone, and if at any point after the interview you feel

that you want to talk about it with me or anyone else at Green Chimneys, you can. I will

be recording our conversation so I can listen to it later and learn from it. I will also be

taking some notes as we talk.

- How long have you been at Green Chimneys?

- What programs do you participate in?

- What do you like about Green Chimneys?

- What don't you like about Green Chimneys?

- What do you like about working with animals and plants?

- What don't you like about working with animals and plants?

- Do you feel like you have changed since you came to Green Chimneys? If so,
  what has changed? Why do you think it happened?

Appendix D

Conceptually tying existing data to the 5Cs

Table D1

Conceptually tying existing data to the 5Cs

Competence Positive view of one's actions in domain specific areas including social, academic, cognitive, and vocational. Social competence pertains to interpersonal skills (e.g., conflict resolution). Cognitive competence pertains to cognitive abilities (e.g., decision making). School grades, attendance, and test scores are part of academic competence. Vocational competence involves work habits and career choice explorations.	**Confidence** An internal sense of overall positive self-worth and self-efficacy; one's global self-regard, as opposed to domain specific beliefs.	**Connection** Positive bonds with people and institutions that are reflected in bidirectional exchanges between the individual and peers, family, school, and community in which both parties contribute to the relationship.	**Character** Respect for societal and cultural rules, possession of standards for correct behaviors, a sense of right and wrong (morality), and integrity.	**Caring and Compassion** A sense of sympathy and empathy for others
Academic - attendance *(report card)*		Works independently and asks for help when needed *(report card)*	Appropriateness of behavior *(GLAS education)*	works, shares, plays with other respectfully *(report card)*
Academic - ELA, math, science, and social studies grades *(report card) + (GLAS education)*		works, shares, plays with other respectfully *(report card)*		relationship with peers: 1. Initiates and welcomes peer interaction; 2. Interacts positively with peers; 3. Engage in

				physical and verbal aggression *(GLAS education)*
Cognitive - demonstrating organizational skills *(report card)*		relationship with peers: 1. Initiates and welcomes peer interaction; 2. Interacts positively with peers; 3. Engage in physical and verbal aggression *(GLAS education)*		Antisocial behavior (severity & frequency); assaultive (severity & frequency); verbal aggression & degree of implied menace *(GLAS child care)*
Social - works, shares, plays with other respectfully *(report card)*		Relationship with authority: 1. Compliance with staff directions; 2. Response when interacting with or given directions by staff *(GLAS education)*		
Social - relationship with peers: 1. Initiates and welcomes peer interaction; 2. Interacts positively with peers; 3. Engage in physical and verbal aggression *(GLAS education)*		Running off campus *(GLAS education)*		
Social + cognitive –		Leaving program		

running of campus *(GLAS education)*		*(GLAS education)*		
Social + cognitive - leaving program *(GLAS education)*		Oppositional *(GLAS education)*		
Cognitive- need for supervision *(GLAS education)*				
Cognitive- Oppositional *(GLAS education)*				