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**Towards a Nature - Orientated Kindergarten Curriculum in Israel - a
Case Study Examining Social- Emotional Development of Young
Children Interacting with Animals**

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- Goldstein, T., Nature-Oriented Activities In kindergarten: A Literature Review of the Effects of Children- Animal Interaction, ERD 2017: Education, Reflection, Development, Fifth Edition.
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Abstract

Today, despite an ever-growing body of research pertaining to the developmental and educational advantages and benefits children receive from animal-contact oriented activities (ACOA), child-animal interactions and child-pet bond – a curriculum incorporating ACOA currently exists in only one kindergarten in Israel. The aim of the current study is to prove and demonstrate the distinct and significant contribution of Animal-Contact Oriented Curriculum (ACOC) to the social and emotional development of kindergarten children in Israel, as well as to examine the factors influencing kindergarten teachers' attitudes towards introducing animals into their institutes as an educational tool. To this end, the current study utilized mixed qualitative and quantitative methodologies: 40 kindergarten staff members throughout Israel filled in a questionnaire and 12 kindergarten students took part in video-captured scientific participant observations, which took place during the entire 2017-2018 schoolyear. Results showed distinct and significant contribution of ACOC to the acquisition and enhancement of verbal communication skills, social interaction skills, emotion adaptation and self-regulation skills, empathy and consideration towards peers and animals alike and pro-social behavior patterns, as well as the elimination of anti-social and violent behavior patterns. Additionally results showed the strongest Spearman correlation coefficient was between kindergarten teachers' willingness to incorporate ACOA in their kindergartens and its perceived benefits to their students ($r_s=0.467$, $P=0.005$). Thus, the study concluded that ACOC indeed has a significant contribution to kindergarten children's social and emotional development and that kindergarten professionals recognize these potential contributions, which leads to positive attitudes towards the incorporation of ACOC into additional kindergartens in Israel. Further global research is required in order to support the conclusion that similar benefits should be observed following the incorporation of ACOC into kindergartens outside of Israel.

Key words: kindergarten curriculum, child-pet bond, child-animal contact, social and emotional development.

Introduction

The current research aims to study, examine, analyze and interpret the social and emotional developmental effects and contributions of animal-contact oriented curriculum (ACOC), comprised primarily of animal-contact oriented activities (ACOA), to students of an Israeli nature oriented kindergarten (NOK).

Education is globally recognized as perhaps the most important field and feature in the individual's present and future (Gupta et al., 2014; Schleicher et al., 2017). In particular, as early childhood period (referring to the period between infancy and elementary school) is considered the most significant and influential to infants' and children's physical, cognitive and social development, early childhood education (in institutes such as preschools and kindergartens) is considered to be the most important and meaningful in a person's development process and general life (Follari, 2015; Van Laere, & Vandenbroeck, 2018; Weisbly, 2015).

In line with the post-modern era and the unique differentiating qualities of Generation Y and Generation Y, much public and academic criticism has arisen regarding classic pedagogies and the "teacher-centered" approach, deeming them outdated and even primitive (Ozuah, 2016; Yamagata, 2018). Consequently, numerous innovative "alternative" educational and pedagogical approaches have arisen, such as Inquiry-Based Learning (Veluchamy et al., 2017) and Experiential Learning (Zimbrotff, Taylor, & Houser, 2016), which primarily address the passive role reserved for students in traditional education facilities. These approaches allow for much higher levels of involvement and appliance in the learning process, stimulating both motivation and interest and curiosity and allowing for much more responsibility and independence for students (without jeopardizing the teacher's authority as an educator and an adult).

Another important contributor to early childhood education and development (albeit informal and far less academically and publicly recognized) are interactions and contact between children and animals, which occasionally result in what the literature defines as "animal connection" or "child-animal bond" (Fine, & Beck, 2015). This bond is characterized by a deep connection of both love, affection and support and responsibility and accountability between the child and their pet, which has been empirically proven to

have distinct positive effects on the child's physical health (Nermes, Endo, Aarnio, Salminen, & Isolauri, 2015), mental health and psychological-emotional wellbeing (Guthrie, Marshall, Hendrick, Hendrick, & Logue, 2018) and social competence (Robin, & Bensel, [1985] 2016; Veevers, [1985] 2016). However, despite these acute evidence, ACOA are seldom seen in most educational facilities, and according to current data no educational institute in Israel (or the rest of the world) incorporates ACOC.

The single exception is *Gan Teva*, an Israeli kindergarten in Kefar Ma'as (a rural mostly agricultural village near the city of Petah-Tikva). This educational institute for children between the ages of two and five utilizes a carefully planned and designed ACOC throughout the entire schoolyear, with most educational activities being ACOAs. Aside from the large animal corner in the kindergarten's yard, many animal species (including avian and barnyard animals) roam freely in the yard and each classroom is assigned a "class dog". The children are allowed (and indeed encouraged) to initiate contact and interactions with any and all animals throughout the school day and the lessons and activities formats focus on animal knowledge, care and empathy and consideration (Goldstein, 2014).

Due to the importance of early childhood developmental education and an aspiration to increase global awareness, the current research studies the distinct contribution of ACOC in *Gan Teva* NOK to children's social and emotional development. Additionally, the current research examines the attitudes of Israeli kindergarten teachers and staff towards incorporating ACOC into their institutes in the future.

Research Questions

General research question: How does a nature-oriented kindergarten (NOK) curriculum impact the emotional-social development of kindergarten children?

I.1.1 Research Questions:

1. What part does animal-contact play in the animal-contact oriented kindergarten curriculum and what are its distinct recognized contributions to the children' social and emotional development?

2. What are the attitudes of kindergarten teachers towards the incorporation of ACOA into their institutes' curricula and what are the main factors positively/negatively affecting their willingness to do so?

I.1.2 Research Goals and Aims

General research goal: To examine how a nature-oriented kindergarten curriculum impacts the emotional-social development of kindergarten children.

Subsidiary research goals:

- To examine how children's emotional-social aspect develops through their interaction with animals in kindergarten.
- To examine existing curricula regarding integrating interaction with animals in kindergarten.
- To examine existing perceptions among parents regarding integrating interaction with animals in kindergarten.
- To examine kindergarten teachers' perceptions regarding interaction with animals in kindergarten.

I.1.3 Research Hypotheses

1. Nature-Oriented kindergarten children will show more positive emotions (e.g. Empathy) towards their peers and teachers and will have higher levels of social responsibility.
2. Nature-Oriented kindergarten children will interact better socially with their peers and teachers.

I.1.4 Significance of the Research

The achievement of the research goals has the potential to thoroughly and distinctly improve the level and quality of early education in Israel, as it shall provide empirical data and objective conclusions concerning the distinct contribution of ACOA to kindergarten students' social and emotional development. Additionally, it shall show the willingness of kindergarten teachers to utilize and implement such activities in their curriculum and the factors and causes leading to positive or negative opinions on the

matter (providing the necessary theoretical and practical tool to influence them and encourage the implementation of ACOC in additional kindergartens).

I.2 Theoretical Fundamentals

I.2.1: Changes in Playing Environment of Children and the Need to Play

I.2.2 The Significance of Play in Children's Life

Although hard to define, Play is generally seen as the various activities and behaviors that children engage in which are enjoyable, fun, intrinsically motivated and self-directed (Ridgers, Knowles, & Sayers, 2012). Play for young children is essentially a way for them to explore their world, using their innate curiosity, a process that is both joyful for the children and prepares them for the missions they will perform later in life (Tullis, 2011).

Unlike common thought expressed at times by parents and teachers, children that engage in playing are not “doing nothing”, but conversely work hard at inventing scenes and stories, solve problems to achieve goals, negotiate social interactions, use their language skills, and use their imagination and creativity (Miller, & Almon, 2009).

Piaget (1951) in his book *Play, Dreams, and Imitation in Childhood* describes the importance of play, especially symbolic play. He argued that the child is required to constantly adjust to the world of adults, which sometimes he does not understand. Even during imitation he adjusts himself to reality and directs his behavior accordingly. During play he is required not to adjust to the reality of adults but rather the reverse: to change the reality according to his needs and imagination, in other words, to assimilate the reality and not to adjust himself to it. In symbolic play the child expresses himself through a system of symbols he creates as he wants. The symbols in his play imitate reality but the similarity between them and reality is small.

I.3 Children and Nature

I.3.1 Benefits of Playing in Nature

According to Capaldi, Passmore, Nisbet, Zelenski & Dopko (2015), the belief that has been part of many traditions that the bond between nature and people improves wellbeing is well established in western culture as well as other cultures, like in China. Kellert (2005) adds that parks and garden are seen in culture, legends and anecdotes as beneficial to the individual health and restore it, and provide humans many advantages like the opportunity to rest, relax, contemplate, and be spiritually inspired. That is the reason for many communities to preserve and build green spaces in urban building settings.

In spite of that, as seen before in the studies of Skår & Krogh (2009) and Charles & Louv (2009), children now spend less time in nature than their parents. In addition, Capaldi et al. (2015) report the number of people living in an industrial setting rises over times, and is now 81% in North America, while the number of people spending time in nature decreases: In economically wealthy, industrialized nations, less than 10% of each day, on average, is spent outdoors, and generally speaking – individuals are no longer connected to nature as in previous generations. Many scholars see that trend as problematic for children well-being and health, as would be described in this section.

Erickson, & Ernst (2011) define nature play as not every outdoor playing, but specifically – playing when in direct touch with the elements of nature in a natural space like woods, uncultivated fields, sources of water etc. They acknowledge the effort in preparing an urban child to such an experience, the risks of falling or injury and the fact that in some urban areas the wild nature is far, which makes the need for costly transformation. Nevertheless, they see the advantages of playing in nature as tremendous compared with the challenges.

I.4 Children-Animal Interaction in the Kindergarten

I.4.1 Impact of Interaction with Animals on Children

This chapter deals with kindergartens in which interaction with animals is part of the daily experience of the child. As described by Raz (2014), children in such kindergartens interact freely with animals, take care of them, and learn about them as part of knowing what treatment the animals need. Also, parents often give their children

animal companions with the expectation that looking for the animal would make their children more responsible, more social, and more emphatic towards others (Endenburg & van Lith, 2011). Parents see the pet as a source of companionship and amusement for who spend many hours alone as their parents work, as well as giving the child a feeling of security (Paz, Almog & Rudin, 2008).

Interaction with animals is also recommended by the National Research Council (NRC) in USA that states: “Students should be engaged in observing and caring for a wide range of organisms that can be housed in the classroom, with an emphasis on local plants and animals. Students should assist in feeding and rearing animals to understand their needs, their behavior, and their life histories” (Hachey & Butler, 2012).

But, do these expectations for benefits for kindergarten children interacting with animals have empirical evidence to back them? Endenburg, & van Lith (2011) had meta-analyzed research on this issue and their finding are that on the emotional development level – interaction with animal strengthens the child self-esteem, but only when the animal child bond was established in age less than six; the self-concept of the child (i.e. mental image or perception that one has of oneself) is better in children bonding with animals (Ibid), because animal are not judgmental about the child, never criticize him or ask him to do things he can’t and look up to him (Doron, 2000).

Bonding with animals makes the child more emotionally developed and stable. With regards to social development, it was found that children who grow up in a household with dogs exhibited greater social competence and developed into more socially competent adults than other children, and empathy (the perceived emotional experience of another person) is also more evident in children bonding with animals (Endenburg, & van Lith, 2011).

Also, children rate their relationship with their pet as the most intimate they have, except for their interaction with their parents, and get emotional support from their relationship with the pet: many of the children turn to their pets when they are upset for calming (Melson, 2003). Interaction with pets has found to decrease child’s anxiety and his

blood pressure, give him uncontained love, and make him proud of the relationship
(Doron, 2000).

I.5 Conceptual Framework

This research focuses on the influences of a nature oriented kindergarten curriculum on the social emotional development of young children. The research is based on the premise that while spending time and playing outdoors is considered to be and enjoyable and “fun” activity – it also includes several key benefits to their social and emotional development, which ultimately leads to an improved life in adulthood.

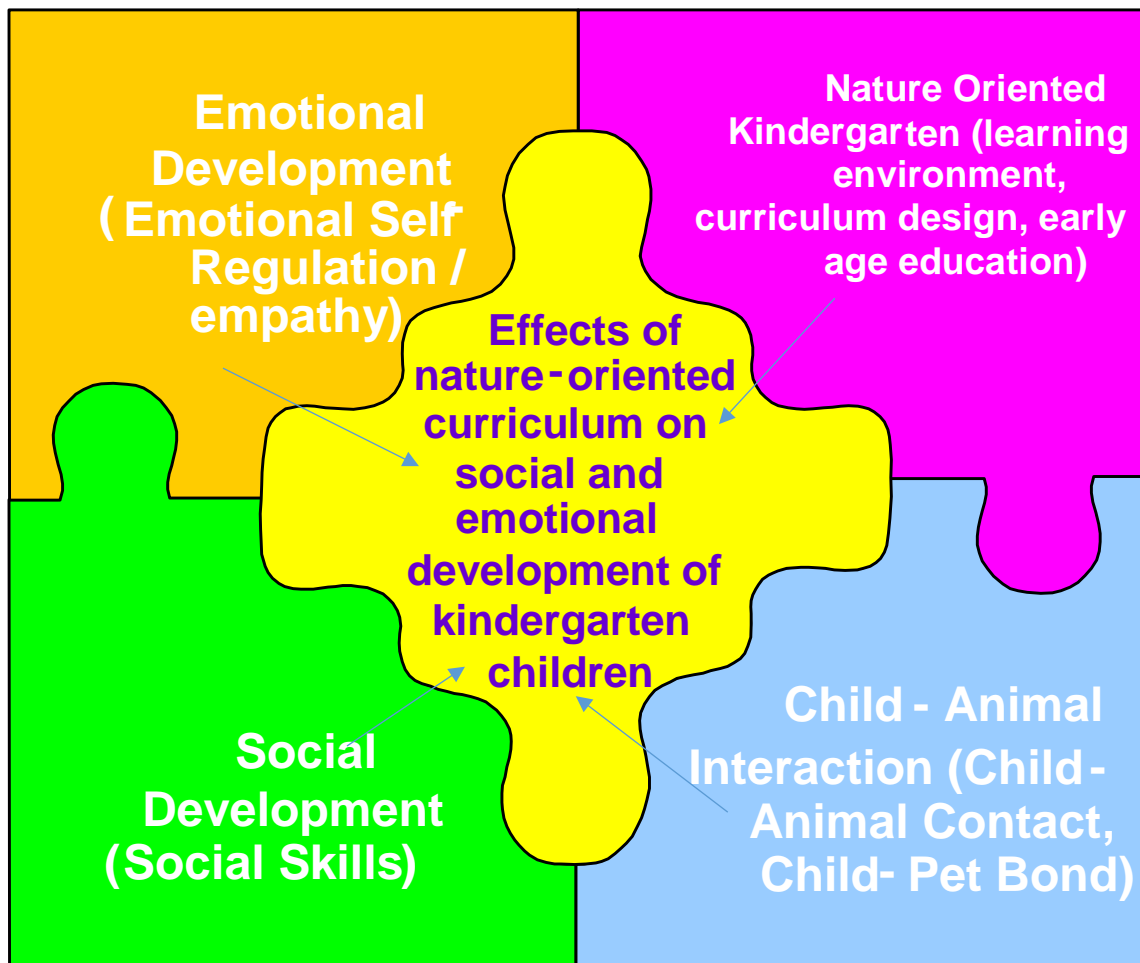
This research draws mainly on theories from the fields of Children Psychology and Developmental Psychology. Consequently, the conceptual framework of this research pertains particularly to Social Development (social skills), Emotional Development (emotion regulation and empathy), Nature Oriented Kindergarten (and theories regarding learning environment, curriculum design and early age education) and Child-Animal Interaction (child-animal contact and the child-pet bond).

Social Development / Social Skills conceptualization draws primarily from Piaget’s (1953) Social Development Theory, according to which social awareness and peer interaction are constructed based on the acquisition, comprehension and utilization of information that cannot be given to children by adults – but rather must be learned autonomously using individually constructed learning gained from assimilation and accommodation. Additional theories of which this conceptualization is comprised include Direct Experience Learning, according to which children choose their behavioral conduct according to their perception and interpretation of their behavior’s results and how it benefits or harms them (Erikson, 1994); and the Informative Function of Reinforcement, according to which children learn what manners of conduct and behavior are suitable, appropriate and beneficial based on internal and external positive and negative affirmations (Bandura, 1977; Bandura et al., 1961; Dulany, & O’Connell, 1963).

Emotional Development conceptualization draws primarily on Emotional Self-Regulation Strategies, which are skills and abilities (both conscious and subconscious) which individuals “activate” (whether proactively or passively and instinctually) in order to enhance, repress or balance their emotional states, experiences and extrovert behavioral expressions (Eisenberg, Spinard, & Smith, 2004; Morrison, Ponitz, & McClelland, 2010). The periods of kindergarten/pre-school and elementary school are crucial points in children’s emotional development, as these are the times when they learn to regulate their emotions independently, after being dependent upon their parents (especially mothers) to regulate their emotions for them throughout their time as infants and toddlers (Kopp, 1989). Another key factor of emotional development is empathy, which directs students towards prosocial conducts of thought and behavior (Hazard, 2005).

Nature Oriented Kindergarten is a kindergarten in which the pedagogical approach and didactic activities are defined by a preference towards nature, natural environments and the outdoors (Walker, 2016). In such a facility, the **learning environment** (the physical setting in which the learning, teaching and evaluation process takes place) is not the traditional classroom, but the great outdoors and any environment which can facilitate nature play, (which necessarily involves direct contact with nature’s components, such as sand and plants, in a natural space, such as woods and uncultivated fields) (Chawla, 2015). The **curriculum design** in such kindergartens includes field-trips and experiential learning in which the students come in direct contact with nature’s components (such as sand, plants and animals). Such an educational setting is mostly suitable for **early age education**, when children learn basic social and emotional skills through direct experience and play. Contrary to certain popular beliefs (mostly held by parents), the act of play is not “doing nothing”, but the most natural learning process for children. During play, children work hard at inventing scenes and stories, solve problems to achieve goals, negotiate social interactions, use their language skills, and use their imagination and creativity in ways which prepare them for the missions they will be later required to perform, and the situations with which they will be required to cope (Miller, & Almon, 2009; Ridgers, Knowles, & Sayers, 2012; Tullis, 2011).

Finally, the **child-pet bond** is characterized by being more than mere presence of pets in the child’s environment and basic animal-contact, but as a deep emotional connection between the two. This bond has been shown to encourage children’s self-esteem, self-efficacy, responsibility, and nurturing, empathy and emotional expression (Levinson, 1978; Poresky, Hendrix, Mosier, & Samuelson, 1987; Hazard, 2005). When assimilated into the curriculum, **child-animal interaction** has positive contributions both to the students’ cognitive development (Wandersee, 1986) and emotional development (Hachey, & Butler, 2012).



This conceptual framework model reflects a one-directional process, according to which the four components that are on the outside cycle of the “puzzle” comprise the effects of nature-oriented curriculum on kindergarten students. The model shows how each of these components potentially and conceptually contributes to these effects, as Nature Oriented

Kindergarten and Child-Animal Interaction contribute to the conceptualization and comprehension of nature-oriented curriculum, and Social and Emotional Development create the framework for comprehending the method of studying the extent of these effects.

Ultimately, the research will show how a nature-oriented curriculum utilizes the benefits of nature play, natural learning environments and child-animal contact in order to contribute to the social and emotional development of kindergarten students (measured by their social skills, level of empathy and emotional self-regulation ability). The next chapter presents the methodological considerations that underpin this research.

II. Research Methodology

II.1 Research Paradigm: Mixed-Methods Research

Drawing upon the Pragmatist paradigm's key characteristics, qualities and academic advantages, the current study utilizes a combined methodology implementing three research methods and approaches: the qualitative-interpretative approach, the quantitative approach and the case study method.

II.1.2 Qualitative-Interpretative Approach

The qualitative approach in academic research can be defined as a descriptive research drawing and inferring its necessary data from the natural setting (Tzabar Ben-Yehoshua, 1990). This definition can be essentially divided into its two main components: descriptive – a study dealing with the description of a given phenomenon and its distinctly relevant components, qualities and characteristics; and drawing and inferring data from the natural setting – i.e. from the natural occurrences and developments of occasions, scenarios and situations, rather than their resulting outcomes. This definition also facilitates the distinct differences between this approach and its quantitative “counter-approach”, which focuses mainly on measurements and statistical data (rather than descriptions and characteristics) and the quantifiable resulting outcomes of said processes, occasions, scenarios and situations (Dushnik, 2011; Ayres, 2007a, 2007b).

Qualitative research enables looking for alternative explanations to existing ones, and deals with participants' differing opinions, values and perceptions – it allows one to

identify characteristics and behaviors that are not necessarily understood from questionnaires and other quantitative briefings. In contrast, it is important to supervise a researcher's involvement in a study so that it will neither harm nor bias the results (Shakedi, 2007).

II.1.3 Research process

	Aim	Research Methods	Research Tool	Research Population	Data Analysis Method
Stage 1: Qualitative Research	To examine existing curricula regarding integrating interaction with animals in kindergarten	Documentary analysis of curricula	A Grid		Content analysis
	To examine existing perceptions among parents regarding integrating interaction with animals in kindergarten	Analysis of Parents' experiences and perceptions regarding integrating interaction with animals in their children's kindergarten	A set of criteria		Content analysis
	To examine how children's emotional-social aspects develops through their interaction with animals in kindergarten	Researcher's log	Analysis according to criteria	12 kindergarten children	Content analysis
Observations through video recording		Observation sheet & A checklist (Appendix 3)			
Stage 2: Quantitative Research	To examine kindergarten teachers' perceptions regarding interaction with animals in kindergarten	A Survey	Closed-ended questionnaire with a few open-ended questions	40 kindergarten teachers and assistant kindergarten teachers	Statistics

Table II.1 demonstrates the design of the research process according to stages and phases divided into research methodology (qualitative and quantitative), the research aim of each phase, the relevant sample and the data analysis method.

Qualitative research tools

Video footage

In order to both utilize the advantages of video recorded observations (allowing for thorough analysis of authentic data) (Asan, & Montague, 2015) and avoid the inevitable outcomes of the “Hawthorne/Observer effect” (due to which the very notion of being observed might subconsciously or consciously alter participants’ behavior) (Fox, Brennan, & Chasen, 2008; McCarney et al., 2007), the current study used carefully placed cameras in order to capture the behavior and activities of the kindergarten children on footage, so they were able to carry on with their authentic conduct unaware of being observed or studied.

Research diary

The current study paid heed to Newbury’s (2001) arguments (regarding the advantage and indeed the necessity of blurring the boundaries between the nominal and practical definitions of the research log, research notes and research diary), by writing a research diary that was indeed comprised of both a research log and field-notes. While subjective and interpretative additions were deliberately forced and added – they were similarly not be deliberately censured or eliminated. This is due particularly to the research diary’s relevance to the qualitative part of the current study, in which any such subjective notes and interpretations could not only prove beneficial for the qualitative data analysis, but also crucial.

Official and personal documents

The current study utilizes the analysis of both official documents (policies, standards and guidelines published by global governmental boards of education and education systems) and personal documents (personal letters written and delivered by parents of children in the kindergarten which utilized the animal-contact oriented curriculum during the schoolyear) (O’Leary, 2014). Virtually, all official policies referred mainly to ethical rules of conduct regarding the introduction of animals into educational institutes as

teaching aids, and all letters contained expressions of gratitude and positive emotional feedback regarding the distinct contribution of the curriculum to the children' social and emotional development and general behavior.

Data analysis method: Content analysis

Content analysis is a data analysis method used mostly by qualitative researchers, which involves the systematic reading or observation of texts and/or artifacts. The data is usually assigned different labels and categories (a process often referred to as “coding”) in order to indicate the presence or relevance to meaningful patterns and/or phenomena of academic interest (these of course vary according to the field, theme, aim and research question of each particular study) (Hodder, 1994).

Duriau, Reger, & Pfarrer (2007) add to that a definition according to which content analysis is a class of research methods which exists at the intersection of the qualitative and quantitative traditions, as it is promising for rigorous exploration of many important yet difficult to define study issues of interest in both accurate and social sciences. Accordingly, Elo, & Kyngäs (2008) argued that it is a method that may be used with either qualitative or quantitative data, and in an either inductive or deductive manner.

Content analysis is the defining method of data analysis for data collected through participant observations. Similar to the contents of information, ideas and categories emerging from the text, the observations offer content that can be defined as either nonverbal or both verbal and non-verbal, as they provide the researcher with data of both the communication and actions expressed by the participants (Nosowska, McKee, & Dahlberg, 2014).

The *video footage* was analyzed in a number of ways, the first being descriptive and aimed at providing an understanding of the background and infrastructure in which the studied behavior and interactions occurred. The second way was content analysis of the video footage and comparing the results the theoretical background presented in the Literature Review section of this study, in an attempt to find recurring emotional and behavioral characteristics in the participating children's behavior.

Furthermore, comparisons were made between themes that were found to be characteristic of children's behavior and emotions expressed during their stay in the animal-contact oriented kindergarten (i.e. the daily contact between the children and the animals, both contained to the kindergarten's animal corner and roaming freely in the kindergarten's yard and classrooms, as well as the activities based on it), whilst following the characteristics found in the report by Ravensbergen (2012), examining the following areas:

- **Awareness** - are the children sensitive to their natural environment?
- **Knowledge** - do the children understand their natural environment and experience it in a myriad of ways?
- **Attitudes** - do children have attitudes and feelings with regard to their natural environment?
- **Abilities** - do children have the tools to deal with their natural environment?
- **Participation** - are the children actively involved in resolving natural environmental problems?

Using the content analysis method in these ways for the *video-captured data* acquired from the participant observations allowed for an integrative recognition and description of the social and emotional characteristics in the participating children's behavior amongst themselves, with their peers, their teachers and the animals at the kindergarten's animal corner.

As for the *official and personal documents*, these were analyzed by utilizing a combination of two suitable and accommodating methods:

1. The "Interview" Technique – In this method of analysis, the researcher treats each document as an informant or respondent (interviewee) that provides the relevant necessary data and information. The analysis process is comprised first of questions the researcher "asks" the documents, and second of the answers the information with which the documents "respond" (which are specific words,

phrases, sentences and paragraphs the researcher highlights in each document) (O’Leary, 2014).

2. Categorization (Thematic Analysis) – Following the “Interview” technique, the researcher continues to treat the data and information in the documents as answers “given” by informants, and organizes them according to relevant and important recurring themes. In simplicity, after careful and focused reading and reviewing of the documents, this analysis takes emerging themes and makes them into categories used for further analysis, which allows for evaluation of the documents in such a way that empirical knowledge is produced, and understanding is developed (Bowen, 2009).

II.1.4 Quantitative Approach

Quantitative research deals with measurements, numbers and evidence and allows research to deal with arguments or hypotheses that have to be confirmed or refuted. It involves the use of scientific mathematical data to fully comprehend a problem or phenomenon. Through its search for causality, this research method is likely to allow the current study to predict future phenomena in everything to do with kindergartens utilizing animal-contact and children's emotional and behavioral development therein (Beckerman, 2006).

Quantitative research tool: Questionnaire

In order to examine the kindergarten teacher’s beliefs and attitudes towards the inclusion of animal-contact oriented curriculum activities in their educational facilities, the survey used by Lutzky-Cohen (2016) to examine beliefs and attitudes towards AAT was adapted to refer to animal-contact oriented curriculum, translated to Hebrew by the researcher and distributed amongst 40 kindergarten teachers throughout the country.

The survey starts with demographic questions (age and gender). The following section consists of questions regarding the participants’ past experiences with animals throughout their life and in the present (such as “Do you currently have pets in your home?” and “Did you grow up with animals in your house?”) and during their professional work as kindergarten teachers (such as “Do you have experience working or volunteering with animals?”). Next, participants answered questions regarding their current knowledge of

animal-contact oriented curriculum and their motivations to incorporate it into their educational facility (such as “How familiar are you with the topic of integrating animals into kindergarten?” and “To what extent are you motivated to integrate animals into the educational activities in your kindergarten?”). The following section required the participants to rate perceived benefits of, and barriers to, incorporating animal-contact in their educational facility’s curriculum (such as “Children can be more relaxed/calm in the presence of an animal” and “Children may cooperate more with the kindergarten teacher in the presence of an animal”). In creating these lists of benefits and barriers, items found in earlier studies as advantages of animal-contact oriented curriculum were included, such as the relaxing and pleasurable effect of animals on children (Goldstein, 2014). Finally, the participants were asked regarding their current academic and professional exposure to animal-contact oriented curriculum as well as their interest in receiving further information on it (such as “Are you willing to learn more about how to introduce animals into kindergarten as an educational tool?” and “How much, if any, exposure have you had introducing animals into kindergarten in your teacher training process?”).

The final survey consisted of 24 questions, including two demographic questions, two open ended questions, seven “Yes/No” questions, 10 multiple choice questions and three Likert-scale questions (where 1 indicated ‘strongly disagree’, 2 indicated ‘disagree’, 3 indicated ‘neutral’, 4 indicated ‘agree’ and 5 indicated ‘strongly agree’).

Data analysis method: Statistical analysis

The current study utilizes the t-test (which examines the relationship between two non-paired samples) in order to statistically measure and analyze the questionnaires distributed amongst kindergarten teachers. The results allow for a deeper understanding of kindergarten teachers’ perceptions of the contributions of an animal-contact oriented curriculum to the social and emotional development of kindergarten children, in a manner relevant and beneficial to answering the current study’s research questions and test its hypotheses.

II.1.5 Case Study Method

The case study method has been referred to using numerous terms throughout research history, including the case method, monographic study, monographic approach, case

history (particularly in studies in the field of psychology) and site method (Hamel, 1992; Miles, & Huberman, 1994). According to Tzabar Ben-Yehoshua (1990), a case study is essentially a qualitative methodology, as it is not a specific technique, but rather a method of organizing social information and data in a manner which preserves the studied objects' unique character. While it is in fact considered by many to be a qualitative research tool, and the very term is often used as reference to the research process and activity in qualitative study, this is in fact a misconception (or misinterpretation), as despite its popularity and frequent use in qualitative studies it can indeed include the use of quantitative (or mixed) data and findings (Flyvbjerg, 2011; Stake, 2005, 2008).

In summary, case study enables researchers to learn about human behavior (whether individual or organizational) and the processes occurring in the studied case. It is a combination of information inferred from scientific observations and data collection and the meanings by which researchers interpret and comprehends them, which construct the epistemologies and knowledge of social life and leads to the descriptive theory necessary for any given field in behavior sciences (Hamel, 1992; Stake, 1994, 2000; Yosefun, 2016). In that, it is particularly useful and beneficial for researches aiming to answer research questions comprised of “how” and “why”, rather than “what” or “how much” (Jary, & Jary, 1994).

In the current study, the case study method was in fact utilized in its qualitative context, through scientific participant observations of the kindergarten children. As stated by Yosefun (2016), these observations enabled the researcher to witness firsthand the effects of the animal-contact oriented curriculum in their kindergarten and during the duration of the inquiry.

II.2 Participants Profile

II.2.1 Children/Students Sample

The sample included 12 kindergarten children between ages of 2 and 5 years chosen from amongst the student population of *Gan Teva* (which has been utilizing and implementing ACOC for the past decade). In order to isolate the distinct effects of ACOC and its distinct contribution to the participants' social and emotional development, as well as account for continuous effects and contributions from prior years and past experiences

with ACOC, participants in the children/student sample were chosen from amongst new students (those who enrolled in *Gan Teva* at the beginning of the 2016-2017 schoolyear). The 12 kindergarten students comprising the children/student sample were assembled in order to serve as participants in the scientific participant observations as part of the qualitative component of the current study. All parents signed official documents of informed consent approving their children’s participation in the study and granting the researcher permission to acquire video footage of them, in accordance with state law and the academic code of ethics.

Table II.2 shows a list of the 12 children comprising the children sample, including key demographic

Name	Gender	Age
Ohad	Male	4
Ariel	Male	3
Uri	Male	2
Guy	Male	4
Yehonatan	Male	3
Aviv	Male	4
Alma	Female	5
Sagi	Male	5
Noya	Female	3
Alona	Female	2
Shira	Female	5
Yahli	Male	3

characteristics (gender and age).

II.2.2 Professional/Teachers Sample

The professional sample, which addressed all professionals working in kindergartens throughout Israel (some implementing animal-contact oriented activities into their curricula and some not), and was comprised of 40 kindergarten teachers, assistant kindergarten teachers and kindergarten educational counselors from 20 different kindergartens. The questionnaires filled in by professional staff members complement the scientific observations and provide statistical data regarding approaches towards

utilization and implementation of ACOC in Israeli kindergartens. All staff members comprising the professional sample were given a thorough review and explanation of the current study's aims and gave their informed consent to participate. In line with the academic code of ethics, all participants were informed that participation is voluntary and of their legal right to withdraw from the study at any given time, as well as guaranteed anonymity and protection of their privacy and personal details.

III. Summary of key findings

III.1 Qualitative Findings Emerging from Research Question 1

What part does animal-contact play in the animal-contact oriented kindergarten curriculum and what are its distinct recognized contributions to the children's social and emotional development?

Research Hypotheses

Nature-Oriented kindergarten children will show more positive emotions (e.g. Empathy) towards their peers and teachers and will have higher levels of social responsibility

- During the schoolyear, all participants have distinctly increased their knowledge of different animal species, their different characteristics and behaviors and their different care requirements.
- In the majority of cases, lack of empathy and consideration towards animals resulted not from cruelty but from lack of necessary knowledge in order to fully understand the different necessary behaviors and acceptable interactions with each animals.
- Most of the participants experienced the creation of child-animal bond with a certain animal, out of which few had such bonds with several animals or animals of a certain variety (for instance: Avian).
- Animal knowledge and empathy and consideration towards animals were found to mediate behavior and discipline problems. These problems

significantly decreased in both frequency and severity as the child improved their animal knowledge, empathy and consideration.

- Animal contact and interactions and resulting improvements in animal knowledge, empathy and consideration directly contributed to enhanced and improved social communication skills.

- Animal contact and interactions and resulting improvements in animal knowledge, empathy and consideration directly contributed to enhanced and improved social interaction skills.

- Animal contact and interactions and resulting improvements in animal knowledge, empathy and consideration directly contributed to enhanced and improved emotion adaptation and regulation skills (particularly due to animals becoming a source for emotional support and comfort).

- In conclusion, animal contact and interactions and resulting improvements in animal knowledge, empathy and consideration (key characteristics of *Gan Teva*'s animal-contact oriented curriculum and its daily activities) were found to **directly contribute to improved social and emotional development**. (See Appendix 3).

III.2 Quantitative Findings Emerging from Subsidiary Research Question 2.

What are the attitudes of kindergarten teachers towards the incorporation of ACOA into their institutes' curricula and what are the main factors positively/negatively affecting their willingness to do so?

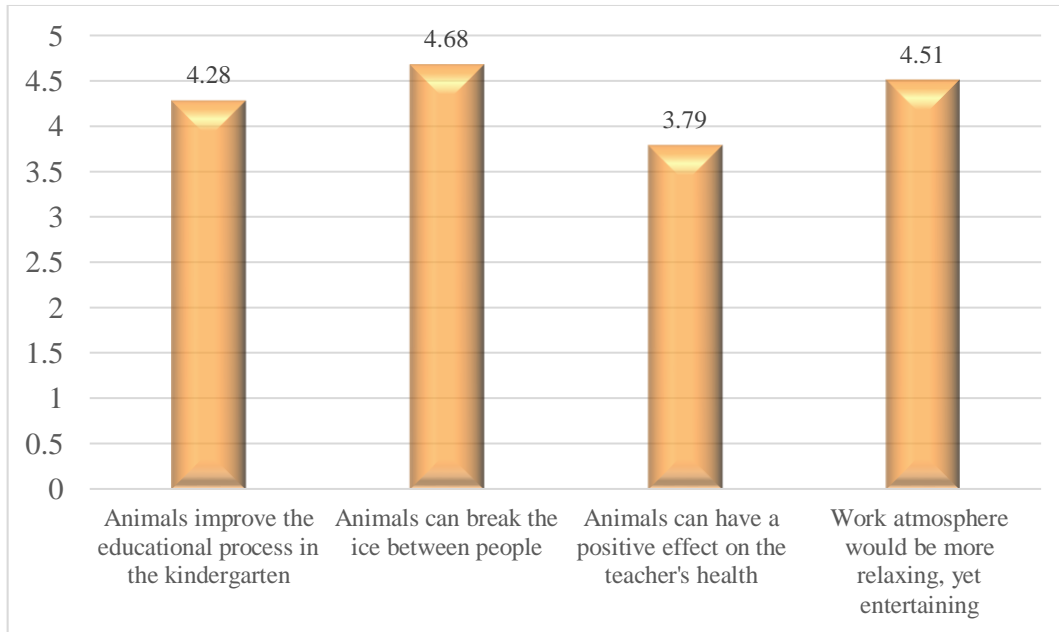
Research Hypotheses

Nature-Oriented kindergarten children will interact better socially with their peers and teachers.

Dependent variable - Willingness to introduce animals into kindergarten.

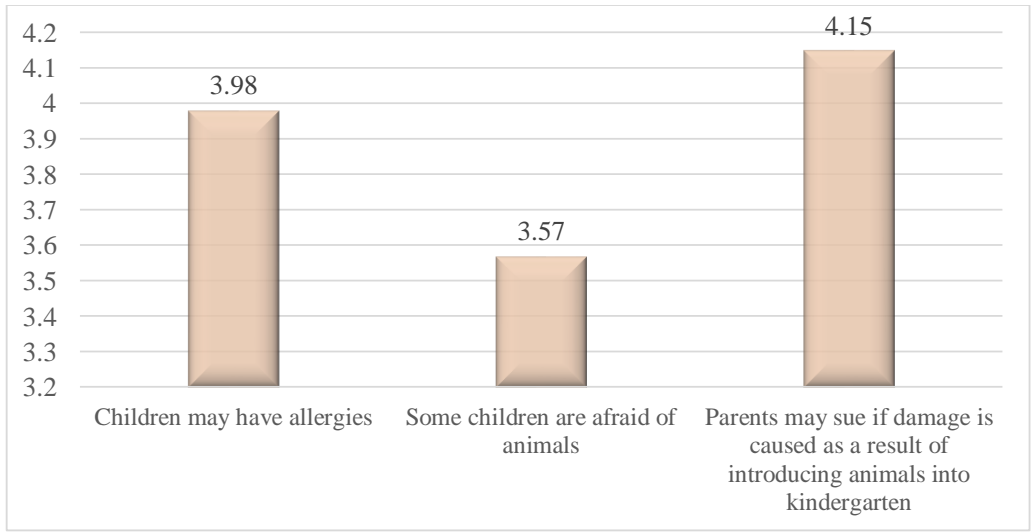
Independent variable – Kindergarten teachers' attitudes.

Figure I Benefits of Introducing Animals into Kindergarten



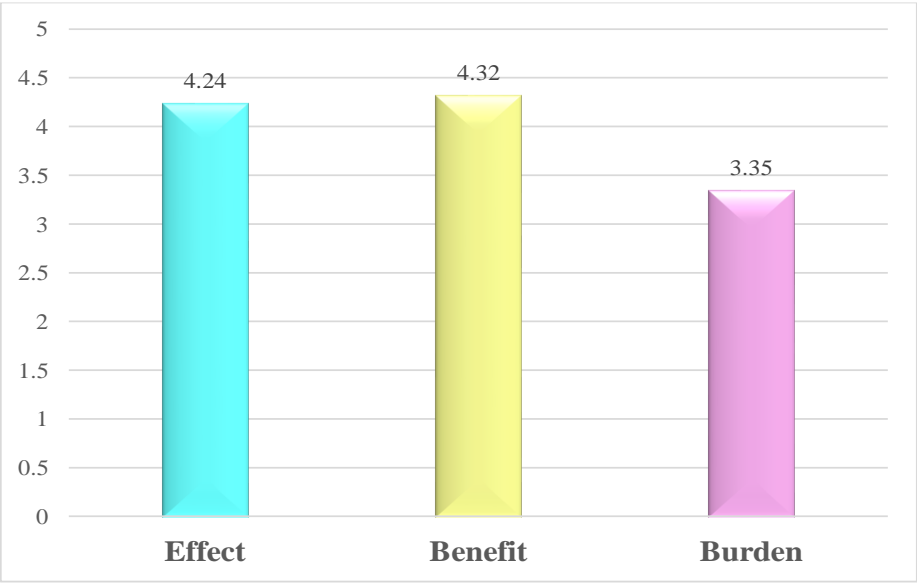
The four benefits, which got the highest, mean scores

Figure II: Burden Caused by Introducing Animals into Kindergarten



The three statements that received the highest mean score from amongst the potential burdens of introducing animals into kindergarten.

Figure III: Attitudes Regarding Introducing Animals into Kindergarten



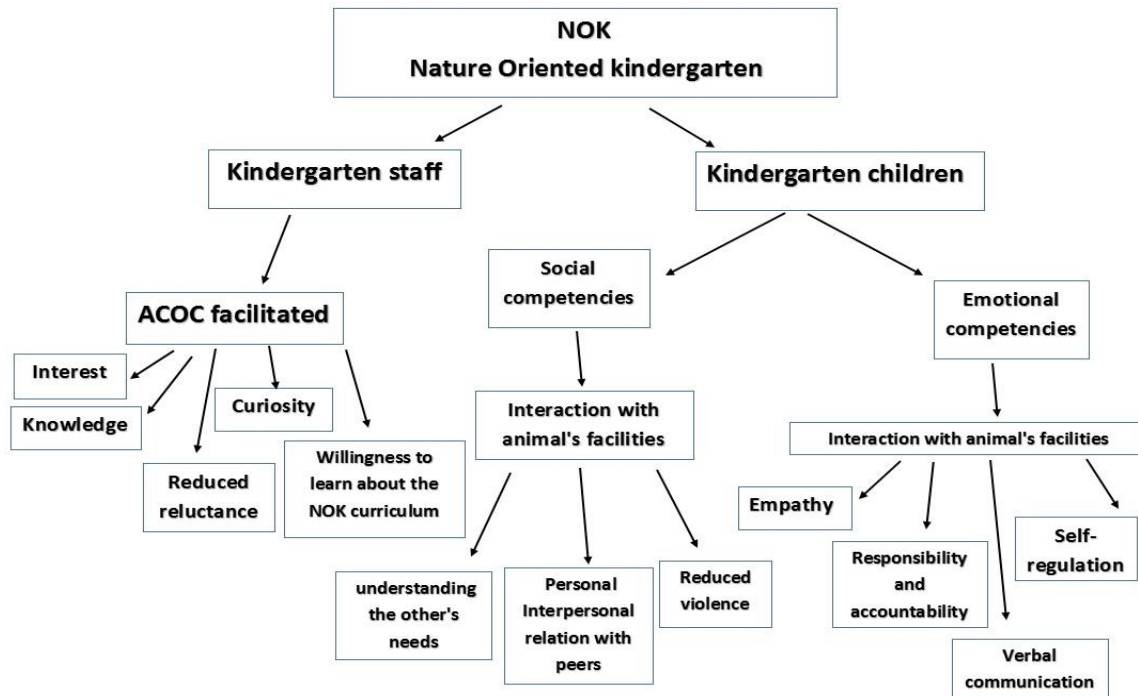
The mean score of each of the three variables comprising the overall attitudes of kindergarten professionals towards introducing animals into their kindergartens.

Most participants (62.5%) had a personal interaction with animals. Some of them had animals at home, some grew up with animals or farm animals, some participated in recreational activities or used animals for educational purposes in kindergarten

- Most participants (85%) experienced introduction of animals into kindergarten, were quite highly familiar with the topic (61.7%) and were exposed to relevant learning materials.
- Most participants (88.3%) wanted to integrate animals into their kindergarten activities.
- Most participants identified a positive effect in introducing animals into kindergarten both personally and for the children, both socially and in terms of the atmosphere in the kindergarten.
- According to the participants, most of the possible burden appears to be attributed to the concern that some children may be allergic or afraid of animals and parents who may sue in case of damage caused by introducing animals into kindergarten.
- All participants expressed a certain extent of willingness to learn more about the introduction of animals as an educational tool in kindergarten, with 63% of the respondents expressing a high extent of readiness.
- All participants identified topics that interested them to learn, the most popular topics were: how to integrate animals into the work of a kindergarten teacher, how to start a program of introducing animals and how deal with issues of insurance and responsibility before introducing animals into kindergarten.
- Most of the subjects (82.5%) did not study the subject of integrating animals into kindergarten during their training.
- The more positive the attitudes regarding the effect of introducing animals into kindergarten, the higher the willingness to introduce animals into kindergarten.
- The more positive attitudes towards the benefits of introducing animals into daily activities in kindergarten, the higher the willingness to introduce animals into kindergarten.

The higher the attitudes towards the possible burden caused by introducing animals into kindergarten the lower the willingness to introduce animals into kindergarten.

IV. Conclusions



IV.1 Factual Conclusions Relating to Subsidiary Research Question 1

What part does animal-contact play in the animal-contact oriented kindergarten curriculum and what are its distinct recognized contributions to the children's social and emotional development?

On the factual level, the conclusion emerging from this discussion is that the NOK is perceived as facilitating the children's social skills. Additionally, the NOK is perceived as a pedagogical strategy that can enhance children's willingness to contact with animals and overcome shyness or timidity. In this respect, the continuous and constant integration of animals into the curriculum bears potential to developing empathy among children with violent behavior which later on was copied to their behavior towards their peers in

the kindergarten. Thus, empathy that was directed at the animals in the kindergarten was transmitted to the children's relations with their peers.

As for the emotional competencies, the research shows that ACOC is characterized as achieving very high emotional results in children's self-adaptation and emotional regulation and builds emotional adjustment skills that enable the children to be integrated into regular education and not in special education institutions only. Furthermore, the evidence shows that ACOC contributes to accelerating the process of developing the ability to be separated from the significant figures in the child's life and leads to independence and development of the individual and overcoming the sense of fear from being alone. In this view, the conclusions points to the importance of diversity in the types of animals in the curriculum, including different sizes (large dog, small rabbit) and allowing each child to relate to an animal that gives him the confidence he needs.

Moreover, the ACOC is perceived as contributing to the expansion of basic knowledge about animals and is a tool that teaches and develops children's judgment in understanding the different needs of different animals and improving knowledge that leads to increased levels of empathy. The study shows that the ACOC is perceived as bearing potential to help to deal with children who have come up with different stereotypes about different animals and the personal experiences created by their interaction with the animals have led them to develop consideration and respect for the animal regardless of the negative or positive views of the animal, such as that the animal is 'dirty', 'smelly', or 'too large' they came with. Also, the NOK is characterized by the ability to provide a daily contact with animals which models learning about their needs and leading to the empowerment of empathy among them and helping to create social interactions and consideration for each other.

IV.2 Factual Conclusions Relating to Subsidiary Research Question 2

What part does animal-contact play in the animal-contact oriented kindergarten curriculum and what are its distinct recognized contributions to the children' social and emotional development?

On the factual level, the conclusion emerging from this discussion is that the NOK is perceived as facilitating the children's social skills. Additionally, the NOK is perceived

as a pedagogical strategy that can enhance children's willingness to contact with animals and overcome shyness or timidity. In this respect, the continuous and constant integration of animals into the curriculum bears potential to developing empathy among children with violent behavior which later on was copied to their behavior towards their peers in the kindergarten. Thus, empathy that was directed at the animals in the kindergarten was transmitted to the children's relations with their peers.

As for the emotional competencies, the research shows that ACOC is characterized as achieving very high emotional results in children's self-adaptation and emotional regulation and builds emotional adjustment skills that enable the children to be integrated into regular education and not in special education institutions only. Furthermore, the evidence shows that ACOC contributes to accelerating the process of developing the ability to be separated from the significant figures in the child's life and leads to independence and development of the individual and overcoming the sense of fear from being alone. In this view, the conclusions points to the importance of diversity in the types of animals in the curriculum, including different sizes (large dog, small rabbit) and allowing each child to relate to an animal that gives him the confidence he needs.

Moreover, the ACOC is perceived as contributing to the expansion of basic knowledge about animals and is a tool that teaches and develops children's judgment in understanding the different needs of different animals and improving knowledge that leads to increased levels of empathy. The study shows that the ACOC is perceived as bearing potential to help to deal with children who have come up with different stereotypes about different animals and the personal experiences created by their interaction with the animals have led them to develop consideration and respect for the animal regardless of the negative or positive views of the animal, such as that the animal is 'dirty', 'smelly', or 'too large' they came with. Also, the NOK is characterized by the ability to provide a daily contact with animals which models learning about their needs and leading to the empowerment of empathy among them and helping to create social interactions and consideration for each other.

IV.3 Conceptual Conclusions Relating to the General Research Question

What part does animal-contact play in the animal-contact oriented kindergarten curriculum and what are its distinct recognized contributions to the children' social and emotional development?

On the factual level, the conclusion emerging from this discussion is that the NOK is perceived as facilitating the children's social skills. Additionally, the NOK is perceived as a pedagogical strategy that can enhance children's willingness to contact with animals and overcome shyness or timidity. In this respect, the continuous and constant integration of animals into the curriculum bears potential to developing empathy among children with violent behavior which later on was copied to their behavior towards their peers in the kindergarten. Thus, empathy that was directed at the animals in the kindergarten was transmitted to the children's relations with their peers.

As for the emotional competencies, the research shows that ACOC is characterized as achieving very high emotional results in children's self-adaptation and emotional regulation and builds emotional adjustment skills that enable the children to be integrated into regular education and not in special education institutions only. Furthermore, the evidence shows that ACOC contributes to accelerating the process of developing the ability to be separated from the significant figures in the child's life and leads to independence and development of the individual and overcoming the sense of fear from being alone. In this view, the conclusions points to the importance of diversity in the types of animals in the curriculum, including different sizes (large dog, small rabbit) and allowing each child to relate to an animal that gives him the confidence he needs.

Moreover, the ACOC is perceived as contributing to the expansion of basic knowledge about animals and is a tool that teaches and develops children's judgment in understanding the different needs of different animals and improving knowledge that leads to increased levels of empathy. The study shows that the ACOC is perceived as bearing potential to help to deal with children who have come up with different stereotypes about different animals and the personal experiences created by their interaction with the animals have led them to develop consideration and respect for the animal regardless of the negative or positive views of the animal, such as that the animal

is ‘dirty’, ‘smelly’, or ‘too large’ they came with. Also, the NOK is characterized by the ability to provide a daily contact with animals which models learning about their needs and leading to the empowerment of empathy among them and helping to create social interactions and consideration for each other.

V. Practical Implications and Recommendations

1. It is recommended to have the findings and conclusions of the current study brought to the attention of local authorities and reviewed by representatives of relevant offices, in order to for them to understand the significance and distinct contribution of the program to the enhancement of kindergarten children’s social and emotional competencies.
2. It is recommended for teacher training programs in local academic institutes to consider the evidence gathered by the current study and incorporate and utilize its findings and conclusions in their curricula and lesson designs, in order to benefit the new generations of kindergarten teachers by facilitating the comprehension of the program’s contribution to their future students.
3. It is recommended for the local educational system to encourage additional kindergartens to move to NOK models and incorporate ACOC as a pedagogical strategy, in order to make it available to more kindergarten children nationwide and enable them to benefit from its distinct social and emotional contribution.
4. It is recommended for parents of children who are diagnosed with social and emotional deficiencies and other such difficulties to register their children at NOKs utilizing ACOC, in order to enable the children to benefit from its distinct contribution to the enhancement of social and emotional competencies.
5. It is particularly recommended to Special Education institutes for elementary school children to incorporate ACOC and ACOAs in their general educational daily conduct, as these children are often diagnosed with delayed development and other social and emotional development facilities (making their general social and emotional development level little different than that of kindergarten children).

6. It is recommended to have the evidence gathered by the current study brought to public knowledge globally and made available to authorities and educational systems abroad, in order to enable kindergarten children in other countries to benefit from the program's distinct contribution to social and emotional development.

7. It is recommended to attempt to incorporate ACOC in educational institutes for older ages (particularly elementary schools), as the evidence gathered by the current study prove that older children as well can benefit to a large extent from the program's key components. Particularly, it is recommended to incorporate ACOAs as key components of elementary schools curricula and for the educational system to publish official documents concerned more with the program's benefits than with its ethical and practical complications.

8. Finally, it is recommended to any and all households with children to adopt pets (particularly dogs, as the evidence gathered by the current study show that child-animal bond is most easily achieved with dogs) in order to facilitate their children's acquisition of pro-social values and emotion adaptation and self-regulation skills, as well as the enhancement of other social and emotional competencies.

VI. Contribution to Knowledge

As originally aspired by the researcher, the findings and conclusions of the current study have indeed offered an important and significant contribution to existing body of knowledge regarding pedagogical strategies for early education and the positive effects and contribution of child-animal contact and child-pet bond.

Firstly, prior to the current study no research similar in essence and proportion has been conducted regarding ACOC and its distinct and significant contribution to kindergarten children's social and emotional development and competencies. On account of its findings and conclusions, the current study has demonstrated the advantages, benefits and efficiency of ACOC and ACOA to kindergarten children (particularly those experiencing social and emotional deficiencies), thus bridging important knowledge gaps in existing literature and research.

Secondly, the conclusions of the current study lead to a change in perception regarding both the importance of animals, animal-contact and child-pet bond to young children and the ability to utilize these factors in order to facilitate the acquisition and enhancement of verbal communication skills, self-confidence, self-esteem, social competence, emotion adaptation and self-regulation skills and empathy and consideration towards peers and animals alike, as well as the illumination of anti-social and violent behavior patterns for the benefit of the children, their peers, their teachers and parents and society as a whole.

Thirdly, the current study has shown that rather than familiar interventions and Special Education programs and facilities, many children with hindered or otherwise deficient social and/or emotional development or competence could greatly benefit from NOKs incorporating ACOC. If brought to the knowledge of proper authorities, these findings and conclusions could change the manner in which these authorities and the entire population perceive developmentally-hindered children and the professional solutions to their deficiencies, difficulties and challenges, thus leading to a nationwide change in policy regarding these children and the entire kindergarten children population.

Additionally, the current study has been conducted through an academically original process, based on an original conceptual framework drawing from the combination of theories seldom addressed in the same research (theories of social development and emotional adaptation and self-regulation and empathy as an emotional factor). This, along with combined paradigms, methodologies and tools of both the qualitative and quantitative persuasion have designed an original research process which could be duplicated in the future and extended to different related and unrelated fields and topics.

Finally, the current study demonstrated a new level of innovation by examining an original and groundbreaking pedagogical strategy and curriculum never before tested in Israel or abroad. ACOC combines existing strategies seldom incorporated into kindergarten curricula in order to create a new independent strategy proven to be efficient, beneficial and of high distinct and significant contribution. By examining the effects of this strategy on social and emotional development of kindergarten children, the current study offers innovative findings, conclusions and knowledge pertaining to an

innovative strategy, which has now been proven suitable and beneficial and can be incorporated into every kindergarten in the international community.

VII. Future Research

Following the current study, future research is hereby recommended in order to mediate the effects of research limitations on the current study's finding and conclusions and enhance its contribution to existing knowledge. While currently no additional NOKs incorporating ACOC to similar extents have been found to operate in Israel or abroad, some of these recommendations must unfortunately be considered theoretical at best.

First and foremost, it is recommended to conduct a similar research based on similar research questions and hypotheses, but using far greater, broader and more demographically and socio-economically heterogeneous samples.

Further, it could be beneficial to include the perspectives and individual subjective experiences of the kindergarten children themselves by conducting in-depth interviews with those who have experienced ACOC throughout one full school year. This would allow the researchers access to valuable data and information regarding the social and emotional contribution of ACOC to kindergarten children according to the children's own interpretations.

Additionally, it could be of interest to examine the gender differences in the contribution of ACOC to social and emotional development of kindergarten children by separately analyzing and interpreting its effects on male and female students. The current study has not concerned itself with such differences (or lack thereof) and obtaining such knowledge could prove highly beneficial to education systems.

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APPENDIXES

Appendix 1: Questionnaire

MOTIVATION TO USE ANIMALS IN KINDERGASRTEN ACTIVITIES

Greetings,

In the framework of my doctoral studies, I am conducting research, I am conducting research among kindergarten teachers, regarding animals in kindergarten I would be most grateful if you could spend a few minutes and answer the following questions. The research is anonymous, and you do not have to identify yourself in the questionnaire. There are no right or wrong answers, and therefore we would like you to please answer the questions in a way that reflects your attitudes or experience.

Thank you in advance for your cooperation.

Background information

Age: _____

Female

b. a. Male

Gender:

1. Do you currently have pet(s) in your home?

[You can mark more than one answer]

1. Cat
2. Dog
3. Bird
4. Fish
5. Reptile
6. Rodent
7. Other _____

0. I do not have animals at home

2. Did you grow up with animals in your house?

than one answer] [You can mark more

1. Cat
2. Dog
3. Bird
4. Fish
5. Reptile
6. Rodent
7. Other _____

8. I do not have animals at home

3. Did you grow up with farm animals? which one(s)?

1. Chickens
2. Sheep
3. Goats
4. Ducks/geese
5. Cows
6. Horse
7. Other _____

8. I did not grow up with farm animals

4. Do you have experience working or volunteering in a setting with animals?

No___ Yes___

5. If you did have experience working with animals:

[5.1 If yes, in what capacity?

[5.2 How long was the work/volunteering experience?

[5.3 Which animals did you work with?

_____]

6. Have you ever participated in sport or leisure activities with animals?

1. Yes, What type of activity: _____

2. No

7. Have you ever experienced or participated in integrating animals into educational activities in Kindergarten?

1. Yes,

2. No

Questions 8-11 for those who have experienced introduction of animals into kindergarten

Informed Consent Form to participate in the Research

Participant's Name: _____

Research Topic: _____

Main Researcher and contact Information:

Research Team Members: _____

- 1) I agree to participate in the research detailed in the information sheet attached to this form. I understand my role in this research, and I have received appropriate answers to all my questions.

- 2) I am aware that I am free to withdraw my participation in the research at any time, for any reason and without prejudice.
- 3) I am aware that I am guaranteed full confidentiality with regard to information I have provided.
- 4) I am free to ask any question I wish at any time – before, during and after the research.
- 5) I have received a copy of this form and the information sheet.

Saving information: I agree to the university's data processing process and the processing of data I provided for the purpose of the current research as was explained to me.

Signed:

Participant	Signature	Date
_____	_____	_____
Witness	Signature	Date
_____	_____	_____

If you wish to withdraw from the research, please fill the form below and return to the main researcher whose contact information is listed above.

Research topic: _____

I would like to withdraw from the research

Signature _____ Date: _____

Appendix 3: A Set of Criteria indicating empathy

Name of child	Criterion
Ohad, 4 years old	Confidence
	Communication
	Social interaction
	Increase in empathy and responsibility
	Interaction with class dog
	Enjoy the animals attention
	Emotional regulation
	Creating bond between him and the dog

	Leadership skills
	Adaptation and regulation skills
Ariel, 3 years old	unconfident with older pupils
	Overconfidence with his peers
	Emotional regulation
	Social skills
	Decreased behavior and disciplinary issues
	Verbal communication skills

	Empathy and consideration during animal contact
	Awareness of animals' needs
Shira, 2 years old	Self confidence
	Confidence and social skills
	Child-animal bond
	Social interaction
	General social behavior through the school year
	Emotion regulation
	Empathy towards her brother and the dog
Guy, 2 years old	Confidence during social interaction with peers
	Leadership skills
	Knowledge
	Charisma
	Communication and social interaction
	Empathy and consideration towards the kindergarten's dogs
Yehonatan, 3 years old	Child – animal bond with empathy and consideration
Aviv, 4 years old	Pro-social behavior
	Emotion regulation
	Communication
	Empathy towards other human beings
Alma, 5 years old	Empathy and consideration towards dogs and all other animals
	Expresses high level of knowledge regarding their needs and wishes
Sagi, 5 years old	Emotion regulation patterns
	Improved personal confidence
	Emotional adaptation and regulation
	Knowledge of animals' needs
	Empathy and consideration
	Communication
Noya, 3 years old	Empathy and consideration
	Interacts differently with different animal sizes
	Contact with large dog

	Improved animal knowledge, empathy and consideration
Uri, 2 years old	Improved self confidence
	Improved verbal communication
	Empathy and consideration
	Participating in animal corner activities
	Emotion regulation
Na'ama, 5 years old	Knowledge about animals' needs
	Empathy
Yahli, 2 years old	Social communication
	Empathy and consideration towards animals
	Knowledge about animals' needs
	Bond with birds

