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How Do Visitors from Different Cultural Backgrounds Perceive the Messages Conveyed to Them by Their Local Zoo?

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ABSTRACT

As educational institutions, zoos provide an informal, free-choice learning environment. To understand the complex processes of learning in the zoo we must therefore take into account the visiting family's culture. The study presented here, conducted in the Tisch Family Zoological Gardens in Jerusalem, investigates how visitors from different cultural backgrounds experience the zoo and interpret its intended messages. We found that, ultimately, the zoo is perceived *similarly* by the Arab and Jewish visitors as an educational institution, although what they come there to learn is different. Moreover, with regards to the message of conservation, *neither* population sees it as a major, prominent message. Despite the overall similarity in our participants' response to the zoo as an enjoyable, cultural educational institute, there were some differences in the experiences of Jewish vs. the Arab visitors, reflected primarily in their animal preferences, and also in the types of messages that they suggest the zoo is conveying to them.

Keywords: cultural backgrounds, zoo messages

INTRODUCTION

According to the American Zoo and Aquarium Association (AZA), there are over 10,000 zoos worldwide. 238 accredited zoos and aquariums in 12 countries are members of the AZA, an organization that requires high standards of animal care, science, and conservation. They aim to assist in the conservation of animals, foster positive attitudes towards wildlife, and highlight the importance of maintaining biodiversity and promoting sustainable development. (Tribe & Booth, 2003). So far, zoos have indeed managed to achieve these aims by sustaining small populations of endangered animals. The California Condor, Black-Footed Ferret the Karner Blue Butterfly, the Egyptian Oryx, the Desert Antelope and the Mexican Wolf are just some of the examples of zoo conservation work (Patrick & Tunnicliffe, 2013). Some zoos involve the public in their conservation programs, like the toad-watch campaign run by the Durrel Wildlife Conservation Trust, or the Wild Conservation Society (WCS), which is working with Indonesian farmers in southern Sumatra to develop peaceful coexistence with local elephants (Patrick & Tunnicliffe, 2013).

This avowed commitment to conservation and sustainability reflects the significant change that zoos have undergone since the late 19th century (Hancocks, 2001). As part of this new prioritization of the animal experience over that of the visiting humans, many zoos define themselves as centers of educational activity, declaring education for nature conservation as one of their primary goals (Randler, Kummer, & Wilhelm, 2012). As Wijeratne et al. (2014) point out, "Though it may be important for the long-term viability of a site to satisfy visitors' hedonistic motivations and encourage a 'feel-good' factor that promotes repeat and extended patronage, it is equally, if not more important from a conservation/education perspective for zoos to promote behavior change from visitors in relation to the environmental impact of human

interaction with flora and fauna" (p. 150).

One of the factors that influence the public's connectedness to nature and their environmental behavior is their experience with nature. When animals are perceived as kin they may provide people with a bond to the natural world, and this may influence their ability to acknowledge the importance of showing consideration and attentiveness towards wildlife (Kalof, 2003; Schultz & Tabanico, 2007). It is estimated that, by 2030, 70% of the world's population will be living in cities, and that as a consequence, attractions such as zoos and aquariums will be at the forefront of offering nature-based visitor experiences and education about the importance of biodiversity (Ballantyne, Packer, Hughes, & Chelsea, 2018, p. 98). Zoos provide a safe and comfortable atmosphere for people - particularly people who live in urban environments - to connect, learn, and develop attitudes and behavior towards wildlife and the wellbeing and protection of living organisms (Schultz & Tabanico, 2007).

As educational institutions, zoos provide an informal, free-choice learning environment. Such informal learning environments can contribute substantially to science and environmental education, and have the advantage of being able to reach a wide range of populations with varying levels of interest and knowledge (Fenichel & Schweingruber, 2010). There is, however, another element that, though not unique to zoos, is nevertheless central to the zoo experience. This is the fact that zoos are visited largely by families. This means that from an educational point of view, zoos must be considered under the double heading of free-choice learning and family learning. Engagement with science practice and content in everyday family life is abundant and plays a critical role in children's development of science knowledge and skills, interest, and identity. Vedder-Weiss (2018) suggested taking the family to be a community of practice, in which children are novices participating in scientific practices alongside their parents (or siblings), who may act as experts. Through such shared participation, the children learn the family's science practice and shape their science identities.

As sites not just of learning, but of enjoyment, zoos must find ways of being vehicles for conservation messages while still being entertaining (Sterling, Lee, & Wood, 2007). Studies have shown, moreover, that the educational focus of the zoos' agenda is not necessarily being communicated successfully to their visitors, and that the visitors' reasons for coming to the zoo can diverge strongly from the zoo administrators' reasons for wanting them there (Clayton et al., 2009; Davidson et al., 2010; Jensen, 2014). In light of this potential gap between the zoo's educational intentions and the visitors' perceptions and experiences, it is important to determine the extent - and the manner - in which the zoo's intended conservational messages to the public are being understood.

In Israel there are six federated zoos that are members of the Israel Zoo Association and EAZA (European Association of Zoos and Aquaria). Among them is the Tisch Family Zoological Gardens in Jerusalem, which is the subject of this study. This Zoo also faces the unique challenge of responding to the distinct needs of Jerusalem's highly heterogeneous population, including Christians and Muslims as well as ultra-orthodox, orthodox and secular Jews. The study presented here investigated how visitors from all different cultural groups and backgrounds perceive the zoo as an educational institution that teaches about the animals it houses, and how they reflect on its mission statements.

LITERATURE REVIEW

Visitors' Learning in Zoos

Understanding the goals and meanings that visitors associate with zoos is a challenging endeavor, since studies have shown that these can differ not just between individuals, but between two visits undertaken by a single individual in different contexts (Ram, Björk, & Weidenfeld, 2016). Thus, for instance, an individual may come to the zoo one day in order to educate her child, on another day to divert and amuse a visiting relative, and on a third day to enjoy a quiet stroll in a pleasant and pastoral environment. This means that much of the visitors' perception of their experience may depend more on the personal motivations with which they arrived than on the messages that the zoo's educational materials are attempting to convey.

Despite its potential variety, the zoo experience can nevertheless be classified according to several different factors: cognitive, affective and social. Moreover, some of these factors have been shown to be more dominant than others. Thus, for instance, while visitors do acknowledge the zoo as a place for education, their visits are primarily motivated by a desire to enjoy themselves (Rees, 2011). Zoo visits are perceived as positive, and associated with feelings of relaxation, restoration, and happiness (Clayton & Myers, 2009, p. 110, 85-86; Clayton et al., 2009). Zoos are also perceived as venues for social experience (Fraser & Sickler, 2009; Reading & Miller, 2007). This suggests that zoo visitors are receptive to learning, but only insofar as it fits their goals of enjoyment and social interaction (Clayton et al., 2009).

Experiences in informal environments (like zoos) are typically characterized as learner motivated, guided by learners' interest, voluntary, personal, ongoing, contextually relevant, collaborative, nonlinear, and open ended (Falk & Dierking, 2000). The visitors' experiences in the zoo

can therefore be interpreted through the lens of the contextual model of learning, which suggests that learning in informal settings is a never-ending dialogue between the personal context, the individual's physical context, and the sociocultural environment (Falk & Dierking, 2012). In this study, the physical context is the zoo, which mediates its educational messages through its animals, its exhibits, and various interpretative means, such as different types of animal shows, explanatory talks and public feedings.

Zoo visitors are exposed to educational messages first and foremost through the exhibits. The term 'exhibit' is taken from the museum world. In the case of the zoo, it refers to the enclosure or setting of a group of animals, or a single animal displayed with a linking theme. Exhibits in zoos display mostly live specimens, and may incorporate more than one species in one exhibit (Patrick & Tunnicliffe, 2013).

The factors influencing visitors' interest are many and complex. The physical character of the exhibit is an important factor to some of the audience – for instance, visitors have been shown to spend more time at more complex exhibits that strive to emulate the animals' natural environment than at simpler, smaller and less 'natural' enclosures (Ballantyne et al., 2007; Bitgood, Patterson, & Benefield, 1988; Tofield et al., 2003; Tofield et al., 2003; Wilson, Kelling, Poline, Bloomsmith, & Maple, 2003). The aesthetics of the architecture, the vegetation, and its dimensions are factors that affect the amount of time visitors stay at the exhibit and their satisfaction with it (Bitgood et al., 1988; Tofield et al., 2003; Shettel-Neuber, 1988). Animal visibility and proximity are also important features that affect visitors' interest and satisfaction (Bitgood et al., 1988; Moss, & Esson, 2013; Shettel-Neuber, 1988; Tofield et al., 2003; Wilson et al., 2003). Another major factor is animal activity, which influences visitors' interest and empathy. Mammals that are highly active and interact either with the visitors or with other individuals are attractive, and visitors feel that active animals are happier (Bitgood et al., 1988; Swanagan, 2000). Thus, for instance, exhibits of otters and capuchins have been shown to be attractive to visitors, despite the exhibits' physical unattractiveness (Tofield et al., 2003). In addition to aesthetics, exhibits are often enriched by techniques that stimulate species' specific behavior. These behaviors give the visitor an insight into how captive animals behave in the wild (Ballantyne et al., 2007; Tofield et al., 2003; Tofield et al., 2003). Research also suggests that the rarity, size, symbolic status and endangered status of the animal influences visitor satisfaction. Many fall into the category of 'charismatic megafauna', a term coined by E. O. Wilson to describe animals (e.g., pandas) that are highly symbolic (Ballantyne et al., 2007; Bitgood et al., 1988; Wilson et al., 2003).

Live animals elicit emotional engagement and provide visitors with a rich experience that encourages further learning that may be enhanced by enjoyment (Fraser & Sickler, 2009). The zoo experience also offers an aesthetic experience that people seek out for a variety of reasons, including its sensory, emotional, cognitive, and transcendent dimensions (Packer, 2006). Bruni et al. (2008) found that the zoo experience increased visitors' implicit connectedness to nature.

In general, zoos provide visitors with rich and varied positive emotional experiences, eliciting feelings such as respect, wonder, peacefulness, caring and attraction (Clayton & Myers, 2009, p. 110; Clayton et al., 2009; Myers et al., 2004a). Some animals are more likely than others to evoke emotional responses (Ballantyne et al., 2007; Clayton et al., 2009; Tofield et al., 2003; Myers et al., 2004a), and many responses are a result of anthropomorphism (Clayton et al., 2009). Some argue that the most important factor in determining our attitudes towards animals is the degree to which we feel similar to them (Kalof, 2003, p 162). For example, it is generally accepted that primates are well-liked because they exhibit similar emotions and behavior to humans (Ballantyne et al., 2007; Myers et al., 2004a). Another affective element is neotony - the positive reaction to protecting the young. Young animals often elicit emotional responses (Ballantyne et al., 2007). Negative feelings such as fear also reflect a type of fascination. Negative feelings are common towards spiders and snakes, where they are related to Biophobia (Ulrich, 1993, p. 76-78) and prompt interest and learning, as shown in the reptile exhibit of the Wilhelma Zoo in Stuttgart (Randler, Kummer, & Wilhelm, 2012).

Studies of zoo visits show that no matter what type of exhibit configuration they use, they have the capacity to stimulate visitor curiosity (Clayton et al., 2009). Zoos promise a combination of recreation and education, and a place where visitors can "absorb much valuable knowledge of wildlife without effort on their part" (Hanson, 2002, p 40; Jensen, 2014). And yet, though they are an environment that seems to encourage learning, looking for learning outcomes in zoos is elusive work (Storksdieck et al., 2005).

The Zoo Experience as seen from a Cultural Perspective

According to the contextual model of learning, learning processes are highly dependent on prior knowledge and experience, with learning reinforcing mental models and prior knowledge (Dierking et al., 2004; Falk, Moussouri, & Coulson, 1998; Patrick & Tunnicliffe, 2013). The prior knowledge people bring with them into zoos can include the everyday experiences they have with nature. They can

carry some 'universal' knowledge about biology - "folk biology" - that has deep contextual connections to culture and place (Patrick & Tunnicliffe, 2013, p. 139-141) and additional prior knowledge acquired through their life experiences (Storksdieck et al., 2005).

Most research on family science learning focuses on family visits to informal structured environments, which are designed for specific science learning objectives, such as museums. This research offers important insights into the learning processes that occur in such settings and the ways in which family members participate within them. For example, Szechter and Carey (2009) show that in science museums, parents tend to engage in disciplinary talk (describing evidence, directing, explaining, connecting to past experience, and predicting) more than children do, whereas children initiate more engagement with and manipulation of the exhibits. Parents often use talk as a general strategy for facilitating what children notice. They ask questions to draw a child's attention to scientific features and processes and to elicit what the child already understands (Ash, 2004). They read interpretive text out-loud and introduce abstract principles (Crowley et al., 2001). Thus, family science engagement can establish a basis for scientific thinking and practice and can provide resources to draw on during future scientific activity (Ash, 2003, 2004; Crowley & Jacobs, 2002).

To understand the complex processes of learning in the zoo we must therefore take into account the visiting family's culture. This includes both the internal culture of each individual family – the visitors' goals as a family, their traditions of dialogue, the role each member plays during the visit, and their prior knowledge and experiences – and the broader cultural background of which they are a part. This sociocultural approach to learning assumes that learning is the result an individual's interaction with his or her environment, and that our thoughts, knowledge, and behavior are embedded in and mediated through social and cultural activities (Zimmerman et al., 2013). This mediation is achieved by means of "cultural tools" or "artifacts," which can be physical tools, like magnifying lenses or calculators, or "conceptual tools" like conversation, visual symbols or metaphors. These cultural tools serve as an accessible means of knowing, communicating and utilizing resources, and in doing so, influence individuals' actions and thoughts, mediating their relation to the world (Zimmerman, Reeve, & Bell, 2010).

Some cultural attributes that play a role on the zoo experience, such as religiosity or language, are explicit, while others, like gender, are more implicit. For example, Garner and Grazian (2016) conducted observations in a zoo and identified three instances in which families accompanying children make use of the zoo's specific spatial and symbolic resources to transmit socialization messages to girls and boys according to "naturalized" models of hegemonic gender difference. First, they found that adults attribute gender to zoo animals by projecting onto them human characteristics associated with feminine and masculine stereotypes. Second, they observed that adults mobilize zoo exhibits as props for modeling their own normative gender displays in the presence of children. Third, they noted that adults discipline boys and girls differently in the context of the zoo's built environment, and in doing so, they communicate socialization messages to children regarding how to behave in conventionally gendered ways.

Unfortunately, studies that explore family visits in the zoo under cultural lens are exceptionally rare. Spannring (2017) notes that most studies of informal settings such as zoos and aquariums refer to experiences of white middle-class Westerners, be they "children in a kindergarten on a university campus, people who participate in programs and institutions with at least some educative intent, or even adults who can afford a safari" (p. 70). She adds that much could be gained from more explicit diversity in such studies with respect to social class, gender, ethnic and religious background, and place of residence (e.g. urban/rural, affluent/struggling neighborhoods etc.), arguing that there is an "urgent need for more intercultural and international research that maps the possibilities and limits afforded by particular cultural traditions and geo-political conditions" (p. 70).

The study presented here investigated how different cultural groups perceive the zoo as a cultural institute, and what they think its goals and mission statements are.

More specifically, we asked:

- What messages do visitors think the zoo is trying to convey to them?
- How is the cultural background of different visitors reflected in their zoo experience?

METHODOLOGY

Site and Setting

The site chosen for the research is the Tisch Family Zoological Gardens in Jerusalem (TFZ). The TFZ is suitable for this study for two main reasons. The first is that since the TFZ is accredited by EAZA (Tisch 2012), it is committed to developing and conducting educational activities and outreach programs meant to cultivate the values of nature conservation and wildlife protection in the general public, to enhance public awareness of environmental issues and to encourage a love of animals. The second reason is that because of its location in Jerusalem, the

zoo's visitor population includes different cultures and religions, as well as different degrees of religiosity. From the 677,799 people who visited this zoo on 2019, 43,502 belong to the subscribed members community that visits the zoo at least three times a year. (Tisch family zoological gardens in Jerusalem, 2020).

Study Population

One of the Zoo's major challenges is dealing with its vastly heterogeneous visitor population. The populations chosen for the study were therefore designed to reflect local cultural diversity both in terms of ethnic-national background (Jewish and Arab-Palestinian), and in terms of different degrees of religiosity within the Jewish population (practicing religious, semi religious/'traditional' and secular). Three researchers collected the data over the course of two years (observations were conducted mainly on Fridays, Saturdays and holidays). One of the researchers is a native Arabic speaker who works in the zoo and familiar with the Arabic visitors' culture. The researchers approached families (at least one parent and one child) who stood near different exhibits within the zoo. They explained to the families about the study (including the data collection tools) and were asked to give verbal consent to participate. The questionnaires were offered in both Hebrew and Arabic to accommodate the native languages of the various groups. In most cases, the more religiously orthodox Jewish or Arab-Palestinian visitors chose not to participate in the study, and are therefore not part of the research population, which included visitors who identified as either practicing religious, semi religious or secular.

Not many studies have been conducted on ethnicity and the zoo experience, although zoos are usually situated in urban areas and receive diverse ethnic audiences (Reading & Miller, 2007). The choice of population in this research allowed us to investigate this aspect. Other background factors, including education and occupation, are also diverse and were taken into consideration.

The data for this study was collected by means of the "Zoo Message Open Questionnaire,", which was answered by a total of 508 casual and subscribed adult visitors, most of whom were on the visit with their children All of the respondents were adults, and most were parents that come to the zoo with their children. The visitor population ranged from casual visitors who visit the zoo less than three times a year to subscribed members who visit the zoo more than three times a year and have been members at least two years. This provided the study with a continuum of attitudes to the zoo, ranging from great familiarity to responses to a one-time experience.

Data Collection

The "Zoo messages open questionnaire". The data for this study was collected by means of the "Zoo Message Open Questionnaire,"., that was divided into two parts. The first part consisted of an introductory questionnaire, in which respondents were asked to provide the detailed data that are necessary to answer the second research question. This section asked about the respondents' background, including: religion and degree of religiosity, language spoken, family status, community affiliation, nature of education, frequency of visits to nature resorts and zoos, and viewing of nature programs on television. The second part of the questionnaire was phrased as follows:

"One of our goals in the zoo is to adjust the messages to the interests of the different visitors. To succeed with this we need your help. We would be very happy if you could: choose three animals that you saw in the zoo and describe what, in your opinion, is the message that the zoo is trying to convey, and what the zoo wants you to remember through each one of the animals."

The questionnaire was open-ended in order to allow us to capture the "fine grain" richness of the themes and connections from the visitor's point of view. It was designed to establish a connection between the animals, exhibits and the messages the zoo conveyed, and to determine whether and how the zoo's messages of nature conservation were being understood from the visitor's perspective. The use of open questions is particularly well suited for capturing authentic answers and minimizing the risk of participants merely telling the researchers what they want to hear. All questionnaires were conducted as short personal interviews that were conducted face to face at the zoo.

Questionnaire Analysis

The visitors' answers to the second part of the questionnaire were analyzed by combining qualitative (thematic) analysis and quantitative analysis.

Thematic qualitative content analysis. Thematic analysis is a search for themes that emerge as being important to the description of a given phenomenon. The process involves the identification of themes through "careful reading and re-reading of the data" (Rice & Ezzy, 1999, p. 258). It is a form of pattern recognition within the data, where emerging themes become the categories for analysis. To ensure credibility, the coding was done by three researchers in multiple iterations, in which the meaning of the utterances and the categories were continually evaluated and rethought. The analysis was conducted in stages. First we conducted a thematic analysis

(Boyatzis, 1998) in order to obtain the main themes that arose from the answers. All Arabic utterances received from the Arab-Palestinian visitors were first translated into Hebrew. The second stage was obtaining the codes from the thematic analysis. This was done according to "grounded theory" analysis (Corbin & Strauss, 2008) and included coding the answers according to codes that are modified until saturation. In the third stage, the codes were validated, both by peers that were involved in the research, and by external researchers in the field informal environmental education (Creswell & Miller, 2000). According to the validation process, the codes were refined again. In the fourth stage we refined the codes and produced the final categories, and then proceeded to recode all the questionnaires according to the new code scheme. This process of the coding scheme is a measure of the level of intercoder reliability. We then used the method of negotiated agreement to reconcile the remaining differences. We repeated this process for a third round of reliability checks, which yielded similar results.

Data analysis of animal preference and demographic variables. In order to examine if and how culture is expressed in the visitors' animal preference, a quantitative statistical analysis of the data with the animal preference and cultural variables was conducted, beginning with frequency analysis of animals, followed by a one-way nonparametric chi square test to see if there are significant differences between animal preference categories across cultural background variables.

Data analysis of perceived zoo messages and culture. The analysis was conducted on the categories and sub-categories of the messages that were reported by the respondents in the questionnaires. In order to establish if and how different zoo visitors perceive its messages, a quantitative statistical analysis of the data was conducted with the category and code schemes, beginning with frequency analysis of codes and categories, followed by a one way nonparametric chi square test strengthened by a Mantel-Haenszel Chi-Square to test if there are significant differences between codes and categories across cultural variables. The cultural aspect highlighted in this section is the visitors' religion or national ethnic origin, and the degree of religiosity among the Jewish Hebrew-speaking population.

RESULTS

The presentation of the results is divided into two parts, according to the two research questions.

Question #1: What messages do visitors think the zoo is trying to convey to them?

This section relays how the visitors perceive the messages that (in their opinion) the zoo wants to convey and how they perceive the role of the zoo. It is divided according to the five primary categories that emerged from the findings.

Cognitive themes. Findings suggest that zoo visitors see the zoo first and foremost as an institution that intends to teach about animals. This claim is strengthened by the fact that 74% of the visitors mentioned 'teaching about animals' as a message at least once. The major topics that visitors mention in this context are basic knowledge about animal behavior and morphological features, while the more complex and less concrete topics such as habitat and ecology are less frequent.

Table 1 explains, elaborates and gives examples of the primary category "Cognitive". Visitors see the zoo as a place to learn about the behavior of animals (28%), about their morphological features (25%), and as a place to acquire general knowledge about the existence of a species and how to identify them (23%). The complex topics, e.g. habitat (7%) and ecology (5%) are not frequently noted.

Affective themes. Table 2 explains, elaborates and gives examples from the primary category "affective". Findings reveal that visitors think that raising feelings and sentiments is an intended goal of the zoo. They also emphasize the importance of this aspect in conveying zoo messages. This claim is strengthened by the fact that more than half (55%) of the visitors thought the zoo is trying to convey messages that are related to the affective aspect, raising feelings and sentiments for the animals. Visitors develop positive feelings towards animals in the zoo and that is what they feel the zoo is conveying to them. Dislike and fear are evident in the zoo experience to a much lesser extent. Conveying feeling toward the animals was the topic of 19% of the themes mentioned by participants.

Themes related to environmental values and conservation. Table 3 explains, elaborates and gives examples on the primary category "conservation". Findings suggest that conservation is a message that the zoo is conveying, but it is not a dominant message. All in all, conservation was referred to in only 13% of the responses.

Themes related to animal welfare in the zoo. Visitors see the zoo is an institute that intends to teach about the welfare of its animals and animals in general (Table 4). This is not seen a major message by the visitors (9%). In general, the visitors perceive the zoo as a positive place

Table 1. Explanations and examples of the "cognitive themes" uttered by visitors in the questionnaires.

	Sub category	Explanation	Examples
Cognitive	Geographical knowledge	Learning about specific geographical locations.	(Elephant) "It's from Asia not Africa" (A). (Syrian Bear) "So that people will see it, because bears today don't live in Israel. In Turkey there are bears" (A).
	Habitats	Noting the name of a habitat, or the conditions and uniqueness of that habitat.	(Cheetah) "It needs the Savannahs, its need for space"(J).
	Food and foraging	Noting what an animal eats and how it gets its food.	(Red panda) "The special diet he needs"(J). (Rhinoceros) "The Rhino is vegetarian. It needs to eat a lot of grass." (A).
	General	Statements that do not specify what is learned but mention learning.	(Red panda) " To get to know unknown species" (J). "There are different kinds of snakes. The goal is to give us information about each snake so we are familiar with it" (A).
	Animal behavior	Any specific behavior or behavior in general, including social and breeding related behaviors	(Bears) *" Fight over territory"(J).* (Lions) "It's interesting to know what the lion does and the female lion is more industrious than him. The lion is not the strongest animal in nature" (A).
	Morphology and dimensions	Any mention of body features and parts, colors, size and weight.	(Elephant) "They're huge, just to see their size" (A).
	Ecology and evolution	Reference to relations between species, the food web and the habitat. How the animal came to be.	(Frogs) "Very diverse you can see how they adapt and develop" (J).

Table 2. Explanations and examples of the "affective themes" expressed by visitors in the questionnaires.

	Sub category	Explanation	Example
Affective	Care and respect	The zoo is trying to convey the importance of caring and respecting the animals by actions.	(Elephant) "To learn to respect and love them, that's what happens when you see them"(J)
	Closeness	Showing that relationships between humans and animals are intimate and provide a feeling of kinship.	(Chimpanzees) " They're not different from us, I can feel we're close"(J)
	Evaluative	Messages that convey how to treat the animals.	(Bears)" Treat with respect they can be dangerous." (J)
	Cultural	Messages that are received in a cultural context and are influenced by faith, mythologies and folk biology, including how to behave towards and treat animals.	(Oryx)" A connection to the bible and what was there at that time" (J) "The Leopard is a carnivore. We need to keep away from it and it's in the zoo so we can see it"(A). (Burmese Snake) "Snakes are very dangerous. They're scary and if they stay in nature they could hurt people. That's why they keep them in the zoo"(A). "To see the snake up close, because outside we're afraid of it and we kill it because it's harmful"(A).

that treats animals with concern, care and respect. The majority of themes in this category relate to positive messages about animal welfare.

Themes addressing human to human relations. The findings suggest that visitors do not see the zoo as conveying messages that concern relations between humans. But the zoo is seen as an institute of leisure and njoyment,

Table 3. Explanations and examples of the "conservation themes" uttered by visitors in the questionnaires.

	Sub category	Explanation	Example
Conservation	The concept	Any mention of the association of the zoo to general nonspecific concepts of conservation.	(Amphibians) "They're disappearing from the world"(J). (Bears) "They're endangered. People hunt them for their fur"(A). (Elephants) "This animal needs to be in a special place to keep it safe, and also to protect people from it – to protect animals from the danger of extinction" (A).
	The importance	Any statements that note that the zoo is emphasizing why conservation is important and the reasons for it from ethnocentric, bio-centric and value driven aspects.	(Cheetah) "They're endangered and it's important to protect them, that what we learn in the zoo, why it's important"(J).

Table 4. Explanations and examples of the "animal welfare" category uttered by visitors in the questionnaires.

	Sub category	Explanation	Example
Animal welfare	Exhibit conditions	Positive or negative expressions of caring for animals and attitudes toward the animals, including the fact of the animals being in captivity.	(Giraffe) "The exhibit is similar to nature; they have lots of space to roam" (A). (Monkey) "He has no privacy in that cage, poor thing!" (J) (Lion) "He can't hunt here and make use of his natural characteristics" (J).
	Animal mood	Positive or negative expressions that are conveyed through the visitors' perception of animal mood.	(Lemurs) "They climb and play and interact, you see that they're happy" (J). (Elephant) "He's bored and he can't make use of his intelligence in captivity" (J).
	Zoo caretaking	The zoo visitors' perception of how the zoo cares for its animals and the importance of welfare conditions.	(Monkeys general) "You see how they take care of them, the way they pay attention to each individual" (J).
	General respect and care for the animals	Positive and negative statements about how the zoo conveys messages about care and respect for animals.	(Tiger) "You can see the keeper loves him and really cares for him" (A).

almost as frequently as an educational institution. Visitors see the zoo as a place to relax and enjoy themselves, and also agree that this is one of the roles of the zoo as an institute. The findings show that most of the themes relating to human-human relations included the ways in which the zoo conveys itself as a place to relax and enjoy the place together (79%) and as a place to be with the family. Table 5 explains, elaborates and gives examples of the primary category "human to human relations."

Question # 2: How is the Cultural Background of Different Visitors reflected in Their Zoo Experience?

a-The relationship between cultural background and animal preference. All in all, 1497 animal choices were made by the 508 participants that answered the questionnaires (N=508). There were N=376 Jewish Hebrew-speaking participants who chose n=1108 animals, and N=132 Arab Arabic-speaking participants who chose n=389 animals. The visitors' questionnaires included references to a wide variety of animals (a total of 71 different species) that reflected the richness and diversity of the zoo. However, certain groups of animals seem to have left a stronger impression on the participants, while others seem to be almost forgotten. The primary categories show that the big predators, monkeys, elephants and penguins were the most popular, while amphibians and raptors were least popular.

Our findings suggest that cultural background is an important factor in visitors' animal preference. There are noticeable and significant differences between the Jewish and Arab population in most of the animal choices. Table 6 show that apes, elephants and penguins are chosen significantly more by the Jewish participants, while reptiles, grazers and animals in the children's zoo are chosen significantly more by the Arab participants. Big predators

Table 5. Explanations and examples of the category "human to human relations" uttered by visitors in the questionnaires.

Category	Sub category	Explanation	Example
Humans to humans	Tolerance towards other ethnic groups	Noting that the zoo conveys messages of tolerance to a variety of ethnic groups because it enables a comfortable and secure meeting place.	(Lion) "Nice to look at other visitors looking at the animals"(J).
	Family interaction	Noting that the zoo enables positive family interactions and quality time between parents and children.	(Raptors) "Love to watch and show the children" (J). (Sheep) "They're a domesticated animal. My children like to pet them" (A).
	Leisure and enjoyment	Noting that the zoo is a place of leisure.	(Elephant) "It's just relaxing to watch" (J). (Tiger) "An amazing animal. I really like to come to the zoo especially to see the tiger" (A).

and raptors (also predators) are chosen similarly by both populations (Table 6).

b-The relationship between cultural background and perceived zoo messages. Regarding 508 participants who answered the questionnaires, there were N=376 Jewish Hebrew speaking participants who produced n=1653 the zoo's messages and N=132 Arab Arabic speaking participants who produced n=589 the zoo's messages.

Our findings revealed noticeable and significant differences between the Jewish and Arab populations in most of the perceived messages. Table 7 show that the themes 'animal welfare' and 'social human-to-animals' were raised significantly more by the Jewish participants, while the 'affective,' 'cognitive' and 'social human-to-human' were raised significantly more by the Arab participants. Notably, however, the perceived conservation messages were mentioned to an identical degree by both the Jewish and the Arab participants.

The "cognitive message" category revealed differences between how Arab and Jewish participants perceive the cognitive content the zoo is trying to convey. Jewish participants noted that the zoo is a place to learn about animal behavior significantly more than the Arab participants did. The Arab participants, in contrast, described the zoo more prominently as a place to receive general information about the animals, to identify different species, to learn about the morphological features of the animal and about ecology, all significantly more than the Jewish participants.

DISCUSSION

In this section, we present the two main conclusions of this study, each of which addresses one of the two research questions.

Conservation is not being Perceived as a Prominent Message by Visitors to This Zoo

All in all, the present study shows that the visitors from all backgrounds perceive the zoo as an educational institution that teaches about the animals it houses. Furthermore, their presence and willingness to participate in the study, and their positive attitudes when answering the open questionnaire, imply that they have positive feelings towards the zoo as a cultural educational institution. Our findings thus reflect those of Haywood's (2018a) study of families from different backgrounds in Kew Gardens, where she notes that "the experience of beauty has shaped evolution and religion, and continues to be a pervasive element of cultures across the world," and that the combination of learning with aesthetic experiences can therefore be a unifying element that transcends cultural difference (p. 1087).

Another finding that applied to participants from all backgrounds, however, is that visitors to this zoo do not perceive the conservation message as prominent. This differs from findings in the literature that suggest that visitors believe zoos to play an important role in conservation education and animal care (Clayton et al., 2009; Falk et al., 2007; Patrick & Tunnicliffe, 2013, p 46; Reading & Miller, 2007). They do, however, reflect the findings of other studies, which have also shown gaps between the zoo's educational efforts and the visitors' attitudes. Thus, for instance, in Colorado, where there is a wolf restoration program, zoo visitors nevertheless do not believe wolves play an important role in maintaining a healthy ecosystem (Reading & Miller, 2007). Such disparities reflect the fact that the concept of conservation is complex and abstract, and the zoo visitors' attitudes are influenced by a variety

Table 6. Chi square test of significance of animal primary category choices made by Jewish (n= 1108) and Arab participants (n=389), **p≤0.01, *p≤0.05.

Category	Examples of mentioned animals (species)	% Jewish choices	% Arab choices	Significance and Chi Square values
Amphibians	Frogs , Cane toad, African clawed frog	2%	0%	(χ^2(1, n=25)=6.235, p≤0.01)
Australian animals	Australian bats, Kangaroo, Wallaby, Southern cassowary	3%	1%	(χ^2(2, n=40)=4.976, p≥0.05)
Avians	Geese, Swans, Parrots, Pelicans, Flamingo	7%	8%	(χ^2(2, n=112)=0.849, p≥0.05)
Big predators	Lion, Cheetah, Sumatran Tiger, Persian Leopard	27%	27%	(χ^2(3, n=405)=1.250, p≥0.05)
Children's zoo	Roaming Chickens, Goats, Sheep, European Rabbit	2%	6%	(χ^2(2, n=42)=15.995, p≤0.01)
Elephants		15%	10%	(χ^2(1, n=201)=8.666, p≤0.05)
Grazers	Rhinoceros , Giraffes, Zebras, Hippopotamus	6%	12%	(χ^2(3, n=113)=18.118, p≤0.01)
Israeli fauna	Gazelle, Ostrich, Arabian Oryx, Ibex, Persian Fallow Deer	3%	4%	(χ^2(1, n=49)=2.542, p≥0.05)
Apes (Monkeys)	Chimpanzees, Mandrills, Lemurs Squirrel Monkey	19%	10%	(χ^2(3, n=252)=22.659, p≤0.01)
Penguins		7%	4%	(χ^2(1, n=96)=8, p≤0.01)
Raptors	Egyptian Vultures, Eagle, Owl	1%	1%	(χ^2(1, n=20)=0.01, p≥0.05)
Reptiles	Snakes, Python, Nile crocodile, Tortoises	4%	12%	(χ^2(2, n=91)=40.281, p≤0.01)
Small animals	Five striped palm squirrel, Large hairy armadillo, Butterflies	4%*	3%*	(χ^2(2, n=51)=6.936, p≤0.05)

Table 7. Chi square test of significance of message primary category choices made by Jewish (n= 1653) and Arab participants (n=589).

Primary category	% of Jewish visitor choices	% of Arab visitor choices	Significance and Chi Square values
Cognitive	34%	43%	(χ^2(1, n=820)= 9.093, p≤0.01)
Affective	18%	24%	(χ^2(1, n=435)=8.179, p≤0.01)
Conservation	13%	13%	(χ2(1, n=292)=0.088, p≥0.05)
Animal welfare	16%	6%	(χ2(1, n=296)= 36.219, p≤0.01)
Social human to human	17%	7%	(χ2(1, n=324)=16.965, p≤0.01)
Miscellaneous	2%	6%	(χ2(1, n=75)=7.350, p≤0.05)

of factors, of which the zoo's educational efforts are but one.

Our findings regarding the conservation message may also be due to the fact that studies on conservation education in zoos often make two assumptions about environmental and conservation education in zoos, of which their visitors are not necessarily aware. First, they assume that caring for, empathizing with and loving animals will lead to environmental sensitivity, and second, they assume that knowing and caring for an individual animal or limited part of the living world leads people to care about habitats, systems and environmental quality (Myers et al., 2004a; Myers, Saunders, & Garrett, 2004b; Schultz, 2000).

Issues such as knowing and caring more about specific animals were noted by the zoo visitors in their answers to our questionnaire. But, though the implicit connections between these topics and environmental conservation may be clear to the zoo's designers and educators, they are not so easily drawn by visitors, who therefore do not associate them with the zoo's environmental education. Haywood (2018b) noted a similar phenomenon in her study of how families talk about and understand science in a botanic garden. Her interviews with families showed that they did not recognize the botanic garden as a setting in which to engage with and learn about science, even though evidence from observations of their visits suggests that they did talk about what experts would describe as scientific principles. Her study, like ours, showed that informal learning environments can contain elements that are intended by the environment's designers as part of the educational experience, but are not recognized by the visitors as such.

This possibility was also addressed by Ballantyne et al. (2018), who noted that "attractions such as zoos and aquariums are perfectly placed to raise visitors' awareness of species extinction, conservation projects, animal behavior, and habitat destruction," but that "a visit to such an attraction is often not enough in itself" (p. 114). They therefore suggested that the impact of zoo visits can be enhanced through the use of "post-visit action resources" (such as specially designed knowledge integration websites) that reinforce, complement, and extend zoos' on-site conservation messages and support visitors' translation of environmental behavioral intentions into actions. Spannring (2017) made a similar point, noting that we cannot assume that a sense of awe and respect for nonhuman animals will necessarily and automatically lead visitors to commitment and pro-animal or pro-environmental action. Developing a politicized ethic of care for all life, she adds, "takes time and effort and cannot be fostered through a stand-alone experiential activity" (p. 68).

Culture Affects Animal Choice and Animal Choice Matters

Despite the overall similarity in our participants' response to the zoo as an enjoyable, cultural educational institute, there were nevertheless some differences in the way that the Jewish and the Arab visitors experienced the zoo. One prominent finding is that Jewish and Arab populations that visit the zoo tend to remember/emphasize different animals, suggesting that cultural variables may affect animal preference, and therefore the zoo experience. The findings also suggest that visitors of different cultural groups perceive the intended formal messages conveyed by the zoo in different ways. For example, though the responses of both groups reflected cognitive themes in the zoo's message, within that category, the Jewish participants saw the zoo more often as a place that conveys conceptual cognitive messages and intends to teach principles in biology, while the Arab visitors described it as a place that conveys basic perceptual messages, general information about species and their morphological features. Moreover, the Jewish visitors noted details regarding the animals' welfare and social human to animal relations significantly more often than the Arab participants. Such differences are in agreement with the literature, which suggests that learning in informal environments depends, among other factors, on differences in cultural capital (Claussen & Osborne, 2013) or "funds of knowledge" (Tan & Barton, 2010).

Discovering the precise socio-cultural elements that may underlie differences between these visitor groups is a task far beyond the scope of our paper. Previous studies in Israel have found differences in environmental attitudes and perceptions between Arab and Jewish youth (Negev, Sagy, Garb, Salzberg, & Tal, 2008) and between Jewish and Arab educators (Alkaher & Tal, 2011), but both these studies state that further investigation is needed to understand how environmental views are related to culture and ethnicity. Moreover, what concerns us here is less why the visitors' experiences are different, and more how these differences impact the parts of the zoo that they see and how they remember them.

Since one major difference that we found between the Jewish and the Arab visitors was in their choice of which animals to visit and to focus on, zoo designers must take into account the possibility that not all exhibits are being visited by everyone, and that cultural background may play a part in visitors' exhibit choice. Different visitors may be consistently focusing on certain exhibits and neglecting others, and this may impact the messages to which they are being exposed. Zoos must therefore consider the question of how important messages about topics such as species conservation and animal welfare are currently being distributed amongst their exhibits. If a visitor were to skip certain key exhibits, what sorts of messages might they miss and why? How might these messages be incorporated into other exhibits as well?

One factor that can influence the messages conveyed by an exhibit, for instance, is its design. In our study, the Jewish visitors more prominently sought out the apes, while the Arab visitors more prominently visited the grazers. In this zoo, the grazers can only be seen from a distance, from bridges running over their habitat, while the apes can be observed much more closely. Even such an incidental difference can affect what a visitor is able

to learn from their experience, since elements like social behavior are much more accessible in the smaller ape exhibit than in the much larger grazer exhibit, which houses a mix of grazer species, with only two or three individual representatives of each.

Studies have also shown that messages about topics like animal welfare can depend on the type of animal being viewed by visitors. Packer, Ballantyne and Luebke, (2018), for instance, studied the factors that influence zoo visitors' judgement regarding the health and happiness of the animals they see in the zoo, focusing specifically on visitors' responses to gorillas. They noted that the visitors "were using their own environmental preferences, either consciously or unconsciously, to make judgments about animal happiness" (p. 68). In other words, visitors were basing their perception of how well the animal liked their living environment on how well they themselves would have liked it. The researchers also noted that the visitors' perceptions of the animals' physical condition suggested that they were "applying knowledge of their own pets to make judgments about the health and level of care of a different species" (ibid). Packer, Ballantyne and Luebke pointed out that even in the case of gorillas, whose relative similarity to humans makes such unconscious comparisons more applicable, such judgements could "lead to misconceptions," with visitors judging inactivity that, according to experts, was "typical of a gorilla of that age, even in the wild" as "a sign of unhappiness" (p. 69). They suggested that, to compensate for these misconceptions, zoos should provide explicit information about what constitutes "normal" behavior for this animal (in terms of factors like activity or solitude that humans interpret as representative of wellbeing), and about how visitors might recognize signs of good or ill health. Such information could be even more valuable in exhibits focused on animals with which human visitors have even less common ground on which to base accurate intuitive judgements.

A second question that zoos must consider is how the cultural background of their visitors might be influencing their perception of certain animals. One element that arises from our own results, for instance, is that the Arab visitors to the zoo associate snakes with danger and fear, noting that keeping them in the zoo prevents them from "hurt[ing] people." At the same time, they also showed more interest in the snakes than the Jewish visitors did, noting reptiles three times as often in their questionnaires. Not all the specific preferences have explicit explanations, but in the case of the Arab population's interest in snakes at the zoo there may be one. The snake is a dominant animal in Islamic mythology. It is mentioned in the Hadith proverbs and legends and in the Hayat al-Hayawan – a zoological encyclopedia written by Al-Damiri between 1341-1401 A.D. Its pages give unexpectedly disproportionate prominence to many animals generally thought of as useful, rapacious, or destructive to humans. The serpent tops the list by far, surpassing even the horse and the camel, while the scorpion trails far behind (Mundkur, 1980, p 213). Snakes also feature in local superstitions, according to which, for instance, anyone who sees a snake in their dreams must beware of their enemies. Finally, they are associated with the notion of "torment after death," where they are thought to wrap themselves around the bodies of the dead until they rise from the grave on judgement day.

Negative feelings are common towards spiders and snakes, where they prompt interest and learning, as shown in the reptile exhibit of the Wilhelma Zoo in Stuttgart (Randler, Kummer, & Wilhelm, 2012). Negative feelings such as fear also reflect a type of emotional engagement and fascination. Markwell et al. (2019), for instance, explored the perceptions of visitors and zoo staff regarding emotional engagement with an endangered species at an Australian zoological park, focusing specifically on the Tasmanian devil. Their findings show that pre-visit (mis)conceptions about the Tasmanian devil, created from popular culture depictions of the species, may motivate visitors to visit the Tasmanian devil exhibit, but that - ironically – they may also inhibit engagement. It is possible that a study conducted in the Jerusalem zoo would reveal a similar pattern in Arab visitors' experience with snakes.

The practical implications for this may be that cultural considerations as well as socio-cultural and historical approaches to learning should be applied to the design of the environment and the mediation means, including human mediation. When designing the information signs and labels, it may be useful to consider that some of the animals have a symbolic importance or emphasis in certain cultures, as the snakes do to Muslims. This information should be acknowledged in the signs, or by other, possibly mobile means.

Acknowledging the prior knowledge and experiences of the visitors is known to be important in promoting interest and connection (Luebke et al., 2016; Perdue, Stoinski, & Maple, 2012). The findings of Markwell et al.'s study suggest emotional engagement can be enhanced and indeed may be particularly important for subject matter (species, artifacts, events) in which visitors lack preexisting interest or empathy. They propose that eliciting positive emotional responses, including empathy should become a goal for visitor interactions with a range of species that do not share charismatic characteristics. Deliberate "emotional management," whereby positive emotions towards particular species are deliberately facilitated or encouraged,

can be achieved through exhibit design and the use of zoo staff to create interactive experiences.

Furthermore, offering direct experiences can lead to more positive attitudes, more knowledge and reduced misconceptions. For example Tomažič et al, (2020) recommend that students should be offered as many first-hand experiences with live poisonous and venomous animals as possible mainly through informal learning environments, such as zoos. Amphibians are one of the most threatened animal groups; however, attitudes and emotions toward them are mostly negative. Nevertheless, direct experience with animals has great influence on lowering negative feelings students have toward animals. Tomaži ˇc, and Šorgo, (2017) revealed that reported direct experiences lower negative feelings toward toads and heightens interest in studying these animals for lower and upper secondary school students.

Collins et al. (2020) focused on children's intended actions regarding zoo animals. Given the lack of information surrounding the impact of education at zoos and aquariums on children's learning, the specific aims of their study were to investigate the effect of a visit to Fota Wildlife Park or Dingle Aquarium on children's knowledge, attitude, and behavior. Interestingly, the treatment groups at Fota Wildlife Park were the most likely to show an increase in knowledge scores. These results indicate that the naturalistic environment at Fota and the purposefully designed educational intervention maximized learning. Future studies should continue to explore the effect of enclosure design on visitor learning and develop curriculum to engage visitors emotionally with hands-on interactive experiences.

Finally, attention to socio-cultural diversity amongst visitors can help zoos promote their environmental education goals by encouraging place attachment. Place attachment represents individuals' emotional bonds to geographic areas, including their own neighborhood and physical environment. Ram, Björk and Weidenfeld (2016) pointed out the close relationship between authenticity and place attachment, arguing that that to the latter can be fostered in visitor attractions at zoos by connecting them to sources of authenticity. Examples of such initiatives could include the attempt of the Jerusalem zoo to display biblical animals, thereby adding a sense of authenticity linked to the city's biblical ambience (Jerusalem's Zoo Official Site, http://www.jerusalemzoo.org.il/). More generic actions applying to increased authenticity in different types of visitor attractions can include engaging signage and innovative interpretations designed to enliven attractions by uncovering stories in a unique and authentic way.

CONCLUSIONS

Zoo visitors see the zoo first and foremost as an institution that intends to teach about animals. The major topics that visitors mention in this context are basic knowledge about animal behavior and morphological features, while the more complex and less concrete topics such as habitat and ecology are less frequent.

In general, the visitors perceive the zoo as a positive place that treats animals with concern, care and respect. The majority of themes in this category relate to positive messages about animal welfare.

Our study revealed noticeable differences between the Jewish and Arab populations in most of the perceived messages. Interestingly, the themes 'animal welfare' and 'social human-to-animals' were raised significantly more by the Jewish participants, while the 'affective,' 'cognitive' and 'social human-to-human' were raised significantly more by the Arab participants.

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Appendix 1: The "Zoo Messages Open Questionnaire"

Part A: One of our goals in the zoo is to adjust the messages to the interests of the different visitors in the zoo. To succeed with this we need your help. We would be very happy if you could describe these facts:

1. My native language is: Hebrew / Arabic / Russian / English / French / Yiddish / Amharic / other_____.
2. In my family I am: single (bachelor) with no children / parent of one child / parent of two / parent of more _____.
3. I live in a: city / village / kibbutz / community town.
4. During the present year I have visited the zoo: never / once / twice / three times / more.
5. In my visit I prefer to spend about: two hours / three hours / four hours or more.
6. After I finished school I studied: _____.
7. I got to the zoo by means of a: private car / taxi / public bus / other_____.
8. I own a subscription card to a zoo in Israel: yes / no.
9. My religion is: Jewish / Muslim / Christian / other_____.
10. My culture is: secular / semi-religious / religious / orthodox.

Part B: One of our goals in the zoo is to adjust the messages to the interests of the different visitors in the zoo. To succeed with this we need your help. We would be very happy if you could answer these questions:

Choose three animals you saw in the zoo and describe what, in your opinion, is the message that the zoo is trying to convey, and what the zoo wants you to remember through each one of the animals.

a. The animal I choose is -
The message:
b. The animal I choose is -
The message:
c. The animal I choose is -
The message:

Appendix 2: Demographic and Other Relevant Visitor information

Gender	**Frequency**	**Percent**
Male	205	40.4
Female	303	59.6
Total	508	100.0
Living area	**Frequency**	**Percent**
Urban	305	60.0
Moshav	126	24.8
Kibbutz	17	3.3
Community town	60	11.8
Total	508	100.0
no. of visits to zoo	**Frequency**	**Percent**
0	20	3.9
1	127	25.0
2	108	21.3
3	94	18.5
> 3	159	31.3
Total	508	100.0
Visit duration	**Frequency**	**Percent**
2h	128	25.2
3h	144	28.3
4h	93	18.3
5h+	143	28.1
Total	508	100.0
Culture/ nationality	**Frequency**	**Percent**
Jewish population	376	74.0
Palestinian population	132	26.0
Total	508	100.0
Jewish degree of faith	**Frequency**	**Percent**
Secular	186	36.6
Semi-religious	73	14.4
Practicing religious	117	23.0
Total	376	74.0
System	132	26.0
Palestinian degree of faith	**Frequency**	**Percent**
Secular	6	1.2
Semi-religious	49	9.6
Practicing religious	73	14.4
Total	128	25.2
System	380	74.8
Occupation and education	**Frequency**	**Percent**
Education	106	20.9
Social and humanitarian studies	35	6.9
Natural sciences	40	7.9
Art sciences	19	3.7
Academic profession	146	28.7
Other profession	79	15.6