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Shelley J. Rank

New Knowledge Organization Ltd. and Wildlife Conservation Society, srank@wcs.org

John Voiklis

New Knowledge Organization Ltd., jvoiklis@newknowledge.org

Rupanwita Gupta

New Knowledge Organization Ltd. and City University of New York, rgupta@newknowledge.org

John R. Fraser

New Knowledge Organization Ltd, Indiana University–Purdue University Indianapolis and University of Southern California, jfraser@newknowledge.org

Kate Flinner

New Knowledge Organization Ltd., kflinner@newknowledge.org

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Understanding Organizational Trust of Zoos and Aquariums

SHELLEY J. RANK^{a,b}, JOHN VOIKLIS^a, RUPANWITA GUPTA^{a,c}, JOHN R. FRASER^{a,d,e}, & KATE FLINNER^a

^a*New Knowledge Organization Ltd.*

40 Exchange Place, Suite 1403, New York, NY 10005

USA

srank@wcs.org, jvoiklis@newknowledge.org, rgupta@newknowledge.org, jfraser@newknowledge.org,

kflinner@newknowledge.org

^b*Wildlife Conservation Society*

2300 Southern Boulevard, New York NY 10460

USA

^c*Animal Behavior and Conservation Program, Department of Psychology*

Hunter College, City University of New York

New York, NY 10065

USA

^d*Earth Science*

Indiana University at IUPUI

Indianapolis, IN 46202

USA

^e*The Normal Lear Center, Annenberg School for Communication and Journalism*

University of Southern California

Los Angeles, CA 90089

USA

ABSTRACT: Zoos and aquariums play a pivotal role in wildlife conservation, including educating the public. Nevertheless, media depictions of Zoos and aquariums that emphasize animal captivity may erode public trust. We report on the first systematic survey of organizational trust in Zoos and aquariums, contrasting how people perceive the current performance of ZAs against people's expectations for establishing trust. The largest disparities between perceptions and expectations were for items that assessed the ethical integrity of Zoos and aquariums – how well they maintain and communicate about animal welfare. ZAs can fully earn public trust by adjusting their practices and/or their messaging related to ethical integrity.

KEYWORDS: aquariums, ethical integrity, conservation, organizational trust, zoos

1. INTRODUCTION

Zoos and aquariums first appeared in European capitals in the mid-1800s (*cf.*, Baratay & Hardouin-Fugier, 2002; Kisling, 2001). Like the royal menageries these institutions replaced, zoos and aquariums were established to entertain the public and satisfy human curiosity about terrestrial and aquatic wildlife. At the same time, these institutions also served as sites for informal science education, creating and disseminating zoological knowledge. That educational role has expanded in recent decades, during which zoos and aquariums have increasingly played a pivotal role in wildlife conservation—preserving endangered species,

maintaining genetic diversity of captive populations, and educating the public about the importance of maintaining wildlife and wild places.

Evident from the large number of people who visit zoos and aquariums, the American public appears to value these leisure venues and informal science-learning facilities (Falk & Dierking, 2000). In fact, studies over the past several years have documented consistently high favorability towards zoos and aquariums (Fraser & Sickler, 2008) with respondents citing the important role these organizations play in conservation and animal care (Falk, Reinhard, Vernon, Bronnenkant, Heimlich, & Deans, 2007). Nevertheless, media depictions of zoos and aquariums that emphasize animal captivity, while downplaying commitments to animal welfare, have the potential to erode public trust in these institutions.

A recent decline in favorability towards zoos and aquariums (Bergl, 2016) may suggest a concomitant decline in trust. However, there is limited evidence linking favorability directly to trust for zoos and aquariums, and no systematic research on how that organizational trust relates to the affordances of the zoo and aquarium experience (e.g., as a source of knowledge or information, social interaction, animal care, etc.). With the present study, we aim to bridge that gap in knowledge with the first such systematic survey of institutional trust in zoos and aquariums.

Specifically, we contrast how people perceive the current performance of zoos and aquariums against the level of performance people would require for earning their trust. We focus on the opinions of those we call the “movable middle,” i.e., people who might be persuadable because they report neither the highest nor the lowest levels of pre-existing favorability towards zoos and aquariums. We use Caldwell and Clapham’s (2003) seven dimensions of trust as a starting point for adapting and developing survey items to examine the beliefs and attachments that inform the public’s trust for zoos and aquariums.

2. THE DIMENSIONS OF ORGANIZATIONAL TRUST

Trust, at the most intuitive level, is the expectation that the people one encounters will behave cooperatively (or at least not uncooperatively). This is the trust one requires to “risk” moving through everyday life. At deeper levels of social engagement, “[t]rust is an expression of faith and confidence that a person or an institution will be fair, reliable, ethical, competent, and nonthreatening” (Carnevale, 1995, p. xi). This is the trust one requires to “risk” relying on others for some personal benefit or common good (cf. Caldwell & Clapham, 2003). Looking at trust from an industrial and organizational standpoint, Caldwell and Clapham (2003) identify seven “duties” or dimensions that underly and engender trust. Table 1 lists these seven dimensions of organizational trust along with Caldwell and Clapham’s original definitions and the adapted definitions for the present study.

For this study, we adapt Caldwell and Clapham’s definitions of these seven dimensions to make them applicable to zoos and aquariums (Table 1, third column). We use the adapted seven dimensions to organize and adapt survey items from previous studies that assess opinions about particular aspects of zoos and aquariums (Ballantyne & Packer, 2016; Bergl, 2016; Fraser & Sickler, 2008; Choi, 2008, 2009, 2010a, 2010b, 2011a, 2011b, 2012a, 2012b, 2013, 2014, 2015, 2016). The resulting survey instrument allows us to explore whether and how the affordances of the zoo and aquarium experience— as a source of knowledge or information, social interaction, animal care— contribute to organizational trust for zoos and aquariums.

Table 1. Previously-defined and adapted definitions of the seven dimensions of trust.

<i>Dimension</i>	<i>Caldwell & Clapham's (2003) Definition</i>	<i>Adapted Definition for Zoos and Aquariums</i>
<i>Competence</i>	Competence includes the level of knowledge and ability to achieve results associated with the purposes of an organization.	The knowledge and ability to teach the public about animal species, their habitats, and conservation, as well as effectively manage animals in human care.
<i>Financial balance</i>	Financial balance includes the ability of the organization to achieve both efficiency and effectiveness in accomplishing organizational results.	The ability to balance the costs for staff, animal care, conservation, and commercial activities.
<i>Quality assurance</i>	Quality assurance addresses the extent to which standards of quality are understood and adhered to on a continuous basis to achieve desired outcomes.	Adherence to government and professional regulations.
<i>Responsibility to inform</i>	Responsibility to inform incorporates the level of communication provided to stakeholders who have an interest in organization objectives and outcomes.	The level of communication provided to the public about animals in human care and environmental issues.
<i>Interactional courtesy</i>	Interactional courtesy encompasses the degree of respect and courtesy shown to others in performing organizational duties.	The degree of respect and courtesy shown to visitors, the public, and both allied and opposing organizations.
<i>Legal compliance</i>	The degree to which applicable laws are understood and followed.	Adherence to legislation on animal care and visitor/staff safety.
<i>Procedural fairness</i>	The extent to which stakeholders are fairly given the opportunity to participate in the processes and systems associated with the formal and informal practices of the organization.	The extent to which stakeholders and the public are fairly given opportunities to participate in events and experiences at zoos and aquariums.

3. METHOD

3.1 Instrument Design

The present study assesses the trust gap between how people perceive the current performance of zoos and aquariums and the level of performance people would require to trust zoos and

aquariums. Therefore, in addition to fitting items to the seven adapted dimensions of trust, we also manipulated the Framing of the survey items in order to contrast how people perceive the current performance of zoos and aquariums (Framing = current Perceptions; i.e., “how much do you agree or disagree with the following...”) against the level of performance people would require to earn their trust (Framing = Trust expectations; i.e., “how important is each of the following for you to trust a zoo/aquarium...”). Finally, because people may harbor different opinions about zoos versus aquariums, we further manipulated whether the survey items queried participants about one or the other type of Facility. The resulting survey instrument had a 2 x 2 factorial design, crossing Framing (Perceptions vs. Trust) and Facility (Zoos vs. Aquariums). Figure 1 offers a graphical representation of the survey design.

3.2 Participants

The trust gap is likely very small for people who look at zoos and aquariums with high favorability. Likewise, the trust gap might be insurmountable for people who look at zoos and aquariums very unfavorably. Therefore, the present study surveys the opinions of those we call the “movable middle,” people who harbor moderate levels of pre-existing favorability towards zoos and aquariums and, therefore, might be persuaded to trust facilities that make and/or publicize small changes in their practices. All references to the “public” in this report refer to this moderate sub-population.

We asked several pre-screening questions, to filter participants whose favorability towards zoos and aquariums did not fall into the extreme ends. In addition to collecting age and other demographic data, the screening questions asked how favorable they feel toward the target facility, the recency of the participant’s last visit to the target facility (as well as other informal science-learning facilities, such as national parks and science museums), and how frequently they visit.

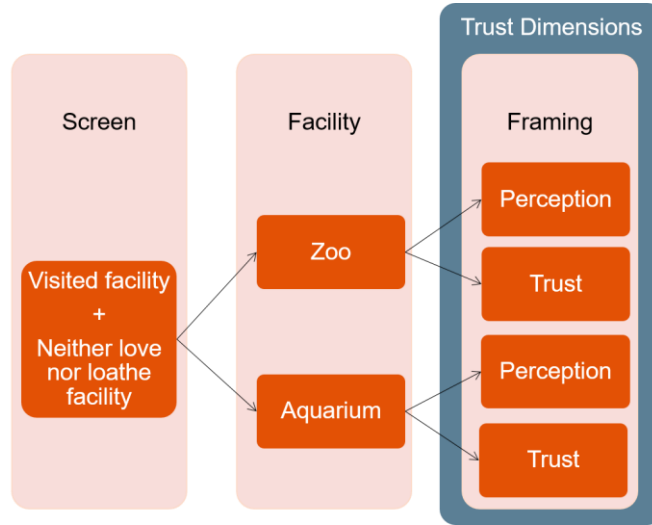
A total of 1,150 participants completed the pre-screening survey through Amazon’s Mechanical Turk. Pre-screened participants who reported feeling very un/favorable towards zoos and aquariums were not invited to participate, along with 27 pre-screened participants (2.3%) who had never been to a zoo and 54 pre-screened participants (4.7%) who had never been to an aquarium. In other words, we excluded minors, those who had never experienced a zoo or aquarium, and those who either loved or loathed zoos and aquariums. Table 4 shows the distribution of extreme un/favorability ratings. Ultimately, 484 pre-screened participants (36.8%) were eligible and invited to complete the full survey and 342 (7.7%) of those participants completed the full survey.

Table 2. Frequency of pre-screened participants reporting extreme favorability towards zoos and aquariums.

	Zoo <i>n</i> (%)	Aquarium <i>n</i> (%)
<i>Very unfavorable</i>	47 (4.1%)	25 (2.2%)
<i>Very favorable</i>	453 (39.4%)	538 (46.8%)

We divided the 342 returning participants into four groups (Figure 1). First, we divided our sample into a zoo group and an aquarium group; that is all questions in the survey asked either about zoos or about aquariums. Then, both these groups were further divided into two more groups. One subgroup was asked to think about their current perceptions of zoos or aquariums, (i.e. “how much do you agree or disagree with the following...”), while the other subgroup was asked to think about zoos or aquariums through the lens of prospective trust (i.e. “how important is each of the following for you to trust a zoo/aquarium...”).

Figure 1. Survey flow



3.3 Analysis

As described above, the present study seeks to reveal and characterize the trust gap between how people perceive the current performance of zoos and aquariums and the level of performance people would require to trust zoos and aquariums. Accordingly, the survey manipulated three factors: Trust Dimensions (the seven adapted dimension of organizational trust), Facility (zoos vs. aquariums), and Framing (perceptions vs. trust). Additionally, we measured the pre-existing favorability towards the surveyed facility, and assessed ten demographic characteristics (age, gender, race and ethnicity, etc.).

To test whether and to what extent the three main factors (Trust Dimensions, Framing, and Facility) affected the ratings for the survey items (both as simple effects and interaction effects), we used Analysis of Covariance (ANCOVA) on ratings with Facility and Framing as between-subjects factors, Trust Dimensions as a within-subjects factor, and with pre-existing favorability and demographic factors as covariates. We also controlled for the obvious rating differences attributable to answering different questions.

To achieve a parsimonious explanation of the ratings data, we used a model comparison approach to prune factors and covariates from the ANCOVA model. In a model comparison, one builds the ANCOVA model incrementally, adding one factor at a time and testing whether the resulting model explains the data significantly better than the preceding model (*cf.*, Maxwell, Delaney, & Kelley, 2018).

In the present case, the model comparison showed that the Framing—current perceptions versus expectations for trust—of survey items was the most influential factor on survey ratings. All other factors, including the contrast between zoos and aquariums (Facility) and the seven Trust Dimensions yielded statistically significant (i.e., $p \leq .05$) but vanishingly small effects, on average, explaining less than 0.5% of the variance in the data.

In the results, we report only on the ANCOVA and underlying regression on ratings with Framing as a between-subjects factor, Questions as a control variable, and Framing by Question interaction term. The interaction term allowed us to explore, at the survey item level, which dimensions of organizational trust produced the largest trust gap. Given that dimensions of organizational trust adapted from Caldwell and Clapham (2003) failed to yield a notable effect on rating, this exploration of the trust gap included a Principal Component Analysis (PCA) to discover alternative dimensions of trust in the pattern of ratings data. PCA assesses patterns of correlation in the data to find a small number of "conceptual" dimensions that "organize" the data into clusters of similarly rated items (Dunteman, 1989). We discuss how one of these unanticipated conceptual dimensions (the Ethical Integrity of zoos and aquariums) characterizes the trust gap in section 4.1.

4. RESULTS

This study assessed how the movable middle (i.e., people who have visited a zoo or aquarium, and who feel moderate favorability towards these facilities) rates specific topics related to organizational trust in either zoos or aquariums. Participants reported either their current perceptions of these specific topics, or they reported how important the topic was to establishing trust that zoos or aquariums address that topic adequately.

As described above, we analyzed these ratings using an Analysis of Covariance (ANCOVA) on item ratings with Framing (current Perceptions vs. Trust expectations) as between-subjects factors and Question as a covariate. Table 3 shows the output of the ANCOVA and the effect sizes (η_p^2).

Table 3. ANCOVA on item ratings with Framing (current Perceptions vs. Trust expectations) as between-subjects factors and Question as a covariate. Includes effect sizes.

	<i>DF</i>	<i>Sum of Sq.</i>	<i>M Sum Sq.</i>	<i>F</i>	<i>p</i>	η_p^2
<i>Question</i>	93	18565.06	199.62	104.28	< .001	.23
<i>Framing</i>	1	904.08	904.08	472.29	< .001	.01
<i>Question : Framing</i>	93	1848.25	19.87	1.38	< .001	.03
<i>Residuals</i>	31866	60999.89	1.91			

On average, participants tended to rate items higher when framed through the lens of trust expectations ($M = 5.60$, $SD = .49$, $n = 168$) than when framed as current perceptions of existing practices ($M = 5.25$, $SD = .51$, $n = 173$). As apparent in the ANCOVA output, this difference was highly significant ($F_{(1)} = 472.29$, $p < .001$), but the effect size was small ($\eta_p^2 =$

.01, explaining 1% of the variance in the data). Instead, the effects of framing appear to depend on the question participants answered. The Question by Framing interaction term was also highly significant ($F_{(93)} = 1.38, p < .001$), and explained 3% of the variance in the data ($\eta_p^2 = .03$). The significant interaction term suggests that we should explore Framing effects in relation to particular survey questions.

When one looks at the regression that underlies the ANCOVA, the largest ($\beta \geq 1$, i.e., an average difference in ratings of 1 or more) and most significant ($p < .005$) disparities between the perception of current performance and expectations for trust were for items that assessed the capacity to meet the physical and emotional needs of animals, transparency about the welfare of animals, and whether facilities set standards that exceed regulations. Table 4 presents the items that contribute to the trust gap. The table shows the mean ratings and estimated differences when survey items were framed in terms of trust expectations as opposed to current perceptions. The table also shows the strength of the relationship between the items and the Ethical Integrity component that was revealed in the Principal Components Analysis (on which we report in the next section). Specifically, the table shows correlations (loadings) between the items and the first component (PC1) that was revealed in the Principal Components Analysis; loadings ≥ 0.5 indicate a strong relationship with the component.

Table 4. Survey items that represent the trust gap— items with the largest rating discrepancies between Framing conditions (current perceptions vs. trust expectations).

	<i>Estimate</i>	<i>M Perc.</i>	<i>M Trust</i>	<i>r</i> (PC1)
<i>The Facility has the space to meet the physical needs of the animals in their care.</i>	2.38	4.46	6.71	.77
<i>The Facility has the facilities to meet the needs of the animals in their care.</i>	1.71	5.19	6.73	.83
<i>The Facility has the expertise to meet the emotional needs of the animals in their care.</i>	1.64	4.98	6.48	.76
<i>Sets standards for itself that far exceeds government regulations for animals in their care.</i>	1.35	5.00	6.28	.72
<i>Shares information when certain animals die.</i>	1.32	4.13	5.40	.38
<i>Shares information about their animals' welfare.</i>	1.20	5.13	6.20	.58
<i>Provides opportunities for visitors to see behind the scenes.</i>	1.14	4.60	5.61	.44
<i>Animals are provided with appropriate diets.</i>	1.11	5.68	6.71	.84
<i>Animals are provided with proper medical care.</i>	1.11	5.77	6.71	.87
<i>Has strategies to maximize safety for the animals living in the facility.</i>	1.10	5.66	6.60	.79
<i>Shares information about the illegal wildlife trade.</i>	1.09	4.50	5.47	.26
<i>Shares information about deforestation.</i>	1.09	3.98	5.00	.13

<i>The facility cares about their animals' welfare.</i>	1.04	5.76	6.65	.82
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4.1 Alternate Dimensions of Trust: Ethical Integrity Defines the Trust Gap

As reported in the previous section, the seven dimensions of organizational trust that we adapted from Caldwell and Clapham (2003) explain a negligible proportion of the variance in the rating responses to survey items. Moreover, the survey items with the largest rating discrepancies between current perceptions and trust expectations were derived from four of the seven adapted dimensions: Quality Assurance, Responsibility To Inform, Legal Compliance, and Financial Balance. These results suggest that a different conceptualization of trust may have informed the item ratings of survey respondents.

In order to reveal such a conceptual structure of trust we used a Principal Components Analysis (PCA) on rating responses to the survey items. We estimated the potential number of dimensions using a parallel analysis simulation (Zwick & Velicer, 1986); the simulation suggested that eight components or dimensions summarized the correlations between ratings for the various survey items. The full results of the eight-component PCA solution are available upon request. Here we focus on the first and strongest component (i.e., explaining 15% of the variance in the data) that unites most (10 of 14) items representing the “trust gap” with nine additional items that also correlate strongly ($r \geq 0.5$) with that first component (see Table 5).

Table 5 Additional survey items that strongly relate to the ethical integrity component (PC1).

	<i>Estimate</i>	<i>M Perc.</i>	<i>M Trust</i>	<i>r_(PC1)</i>
<i>The animal keepers care about the welfare of the animals in their care.</i>	.87	5.96	6.69	.79
<i>Complies with government regulations as adequate standards for keeping animals.</i>	.84	5.82	6.51	.76
<i>Has strategies to maximize safety for the people that work at the facility.</i>	.53	5.88	6.26	.64
<i>Manages their budgets responsibly.</i>	.93	5.19	6.10	.63
<i>Is knowledgeable about keeping animals.</i>	.59	5.97	6.46	.59
<i>Has strategies to maximize safety for their visitors.</i>	.35	6.02	6.24	.55
<i>Shares information about where their animals were born.</i>	.92	5.07	5.84	.55
<i>The caregiver staff respectfully answer visitor questions.</i>	.39	5.91	6.16	.54

These nine additional items also exhibit a significant ($.05 < p > .005$) though less extreme ($\beta < 1$) trust gap. Taken together with the more extreme items, the topics for all of these items appear to address the ethical integrity of a zoo or aquarium— that is, the care and respect shown for animals, staff, and visitors. For this reason, we argue that the first principal

component represents an ethical integrity dimension of organizational trust in zoos and aquariums.

4. DISCUSSION

This first systematic study of organizational trust in zoos and aquariums reveals a trust gap for topics relating to ethical integrity. Specifically, when people assess the performance of zoos and aquariums on topics relating to the care and respect shown for animals, staff, and visitors, their perceptions of current performance fall short of their expectations for establishing trust.

Ethical integrity was not among the seven dimensions we adapted from Caldwell and Clapham's (2003) model of organizational trust when designing items for our survey on zoos and aquariums. In fact, the items that we found that constituted an ethical integrity dimension spanned all seven of their dimensions. This suggests that considerations of ethical integrity might be specific to zoos and aquariums. Unlike most public and private organizations that are the target of organizational trust, zoos and aquariums do not only affect more or less autonomous people; the performance of zoos and aquariums impacts the lives and wellbeing of animals that are completely dependent on the care of these facilities. This added ethical burden may overwhelm any conceptual distinctions—e.g., between quality assurance and legal compliance—that people might otherwise recognize when considering whether they trust a other organizations, such as a manufacturer or software company. The specificity of an ethical integrity dimension to trust in zoos and aquariums may also hold when comparing them to natural history museums or other informal science-learning institutions—facilities with nonliving exhibits.

While ethical integrity might be integral to understanding people's trust in zoos and aquariums, the apparent trust gap on topics related to ethical integrity does not necessarily reflect on their actual performance in relation to these topics. For example, the single largest disparity between perceptions of current performance and trust expectations was for the item assessing whether zoos had the space to meet the physical needs of animals (mean difference $\beta=2.38$). This result points to a public misconception about animal welfare science. In particular, romantic notions of "the wild" as a vast unbound space can mislead ordinary people to wrongly intuit that animals need a lot of space for their wellbeing. However, studies have repeatedly shown that the welfare of different species depends on different combinations of physical and mental stimulation that do not necessarily rely on space (Clark, 2013; Samuelson, Lauderdale, Pulis, Solangi, Hoffland, & Lyn, 2016; Shepherdson, Lewis, Carlstead, Bauman, & Perrin, 2013).

Similarly, participant responses exhibited a gap between perceptions of current performance and trust expectations for whether Association of Zoos and Aquariums (AZA) accredited zoos and aquariums meet ($\beta = 0.84$) or exceed ($\beta = 1.35$) government standards for animal care. Accreditation criteria for the AZA are much more stringent than government standards for animal care. This apparent misconception reinforces previous findings that the public does not appreciate the full extent and rigor of the criteria to become an AZA accredited facility (Bergl, 2016). Together, these misconceptions may yield the misperception that animals are held captive in cramped and substandard conditions. These misperceptions about space and practices can explain the trust gap on the array of items relating to ethical integrity—people do not see the high standards and ethical practices to which zoos and aquariums adhere in caring for animals.

Transparency about high standards and ethical practices seems to be the obvious way for zoos and aquariums to help people see past their misconceptions related to ethical integrity. New signage and behind-the-scenes programming could provide zoos, aquariums, and their advocates opportunities to honestly discuss animal welfare science and best practices with visitors. The same messages could also be disseminated to the general public through mass media. Those with ideological objections to zoos and aquariums may not listen to information that contradicts their mistaken preconceptions (for review of confirmation bias, see Nickerson, 1998). However, the present study focuses on “movable middle,” people who report middling levels of pre-existing favorability towards zoos and aquariums; their lack of commitment to their misconceptions may allow this group to be moved by transparent messages about the ethical integrity of zoos and aquariums.

5. CONCLUSION

People care deeply about animals in zoos and aquariums. They expect zoos and aquariums to care for their animals with the highest standards and with the best interests of the animals in mind. Such strong expectations make animal welfare an ethical issue (for more on expectations and ethical norms see Bicchieri, 2005), and failing to meet these expectations would violate public trust in zoos and aquariums. AZA-accredited zoos and aquariums do, in fact, meet the highest available standards of animal care (Bergl, 2016). However, the present study shows that visitors to zoos and aquariums cannot see this. Zoos and aquariums may consider publicizing their high standards of care and making their ethical practices more transparent.

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