DOCUMENT RESUME

ED 360 456 UD 029 412

AUTHOR Kahn, Peter H., Jr.; Friedman, Batya
TITLE Environmental Views and Values of Children in an Inner-City Black Community.
SPONS AGENCY Texas Education Agency, Austin.
PUB DATE Mar 93
NOTE 28p.; Paper presented at the Biennial Meeting of the Society for Research in Child Development (March 1993).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Black Students; Children; Conservation (Environment); Disadvantaged Youth; Ecology; Elementary Education; *Elementary School Students; *Inner City; Knowledge Level; Moral Values; Poverty; *Student Attitudes; Urban Problems; *Urban Youth; Water Pollution
IDENTIFIERS *Environmental Attitudes; Houston Independent School District TX; Pollutants

ABSTRACT

The understandings of and interest in the environment of children in an inner-city black community were studied. To investigate their environmental moral reasoning, children's evaluations and supporting justifications were assessed regarding a hypothetical scenario that involved polluting a local waterway. Seventy-two children, 12 males and 12 females from each of 3 grade levels (1, 3, and 5), from a Houston (Texas) elementary school were interviewed. Virtually all were black, and most received the free lunch program. Subjects' general environmental knowledge and attitudes were evaluated, and questions were asked about the hypothetical polluting of a bayou near the school. Results confirm the personal and moral importance that the environment has for these inner-city children. They have talked about environmental issues in their homes and are aware of the problems of pollution. Environmental harm matters to these children, and they view polluting the bayou as a violation of a moral obligation. The constraints of living in the inner-city have not diminished their appreciation for nature. Four tables present student interests and characteristics. Contains 43 references. (SLD)

# ENVIRONMENTAL VIEWS AND VALUES OF CHILDREN IN AN INNER-CITY BLACK COMMUNITY

Peter H. Kahn, Jr. and Batya Friedman

Colby College

Paper Presented at the March 1993 Biennial Meeting of the

Society for Research in Child Development



Thanks are extended to Ann McCoy for assistance with data collection, and Tracey Hardman and Daniel Howe for assistance with analysis, coding, and reliability. Thanks also to Sara Brose who assisted with statistical analyses. This research was supported, in part, by funding from the Texas Education Agency, in cooperation with the Houston Independent School District, and from the Clare Boothe Luce Foundation. Authors' addresses: Peter H. Kahn, Jr., Department of Education and Human Development, Colby College, Waterville, ME 04901. Electronic mail: phkahn@colby.edu. Batya Friedman, Department of Mathematics and Computer Science, Colby College, Waterville, ME 04901. Electronic mail: b_friedm@colby.edu.

# ENVIRONMENTAL VIEWS AND VALUES OF CHILDREN IN AN INNER-CITY BLACK COMMUNITY

It is often said that environmental concerns are the product of a white, economically-privileged class of people, and that people of color, especially in the inner-cities, have little interest in such matters. Our research addressed such widely held perceptions.

This study examined how children in an inner-city Black community have understandings about, interest in, and potentially moral concern for the natural environment. Numerous issues were examined: (1) children's interest in and care for animals, plants, parks, water, and landscape aesthetics; (2) children's awareness and knowledge of environmental problems that exist generally and that affect them directly; (3) whether, and if so how, children talk about environmental issues or problems with other family members; and (4) the behaviors that children and their families engage in that help the natural environment. Through such investigations, it was expected that children would have awareness of and interest in certain sorts of environmental issues, albeit attenuated in ways by their economic status, race, and urban setting.

In addition, this study sought to provide an initial foray into characterizing the structure of children's environmental moral reasoning. Most of the psychological research on children's moral development has investigated moral issues and situations which exist between people (e.g., Arsenio, 1988; Damon, 1977; Eisenberg, 1982; Gilligan, 1982; Killen, 1990; Kohlberg, 1984; Laupa, 1991; Nucci, 1981; Selman, 1980; Smetana, 1982; Tappan, 1989; Thorkildsen, 1989; Turiel, 1983; Wainryb, 1991; Youniss, 1980). But in what ways does it make sense to talk about a moral relationship not with other people, but with nature? Such a question is puzzling for the criteria that usually help establish human ethics are not present, or at least not fully present, in the natural environment. For instance, when we say we have a moral obligation not to harm other people (e.g., physical assault), we recognize that other people, like ourselves, are capable of feeling pain and are the holders of certain rights (e.g., to life and liberty). But what then does it mean to say that we have an obligation not to harm the natural

environment? Does the natural environment feel pain? Does it have rights? Or is moral obligation an inappropriate construct by which to understand the moral relation of humans with nature?

Toward investigating such questions, we distinguished between obligatory and discretionary moral judgments. Following a good deal of philosophical theory (Gewirth, 1978; Kant, 1785/1964; Rawls, 1971) and psychological research (Kohlberg, 1971; Turiel, 1983), an obligatory moral judgment is one which requires an act of a moral agent (prescriptivity), even if that person lives in a different geographical location with different customary practices (generalizability). A discretionary judgment is one where performing a moral act, while not required of an agent, is nevertheless conceived of as morally worthy and admirable (see Williams, 1985; cf. Eisenberg, 1982, 1989). Both types of judgments appeared in an earlier study by Kahn and Turiel (1988) on children's conceptions of trust. In this study, children consistently viewed violations of trust involving deception as violations of moral obligations. A contrasting set of findings were obtained for violations of emotional support. Typically, in this latter situation, children said that while the friend in the story should help the other (because of the other's need for psychological aid), the friend is under no obligation to do so. In other words, a moral course of action was recommended but not required (discretionary morality). Another study by Kahn (1992) provided further evidence that children as young as second grade make distinctions between moral acts that are morally obligatory for an agent to perform, and moral acts that are left to the agent's discretion. Such judgments were also shown to be sensitive to the degree of cost to the agent, and were applied differentially to the type of act, positive or negative.

It was expected that understanding and characterizing the structure of environmental reasoning could be advanced by distinguishing between obligatory and discretionary moral judgments. Supporting indications come from noting societal views and environmental practices. For example, based on considerations of property rights and harm to other's welfare, presumably it is morally obligatory for an industry not to dump its polluted discharge in a public park. But this is not to say that polluting the environment is categorically wrong. After all, we all pollute some when we drive our cars, or heat our homes with oil; indeed societally we seem to be moving to the idea that pollution quotas can be created,

and then sold and traded as commodities. Thus polluting the environment, while usually viewed negatively, does not always seem to have the categorically obligatory features usually ascribed to such prototypical immoral acts like stealing, rape, and murder. Thus to investigate such forms of children's environmental moral reasoning, children's evaluations and supporting justifications were assessed regarding a hypothetical scenario that involved polluting a local waterway. Conditions were then systematically varied in five ways to present different customary practices within and across cultural boundaries.

## Methods

Subjects. Seventy-two children were interviewed, 24 children (12 males and 12 females) in each of three grade levels: 1, 3, and 5. Children came from an inner-city elementary school in Houston, Texas. Virtually all of the students attending the school were Black (>99%) and most received the free lunch program (91%). Based on TEAMS assessment, more than 60% of the students were considered low-performing.

Procedures and Measures. Each child was individually administered an interview that lasted approximately 40 minutes. The interview focused on how beliefs and practices play a part in the children's lived lives (cf. Ogbu, 1977, 1992), and on detailed assessments of their reasoning (cf. Damon, 1977; Piaget, 1929/1960; Turiel, 1983; Turiel, Hildebrandt, & Wainryb, 1991). The interviews were tape-recorded and later transcribed for analysis.

First, children were asked about their views and values toward animals (e.g., Are animals an important part of your life? If so, how? If not, do you have any pets? Do you ever think about animals or ever get a chance to play with animals? Why are animals important or not important?) Similar questions followed about children's views and values toward plants and parks. Second, children were asked whether they were aware of any environmental problems in general, and then specifically asked to comment on whether they were aware of problems related to air pollution ("smelly air"), water pollution ("bad tasting or unclean drinking water") and garbage. Children were also asked whether any environmental problems affected them directly, and then also probed specifically for air pollution, water

pollution, and garbage. Third, children were asked about possible conversations they might have with family members about environmental issues (e.g., Does your family talk about the environment much? If so, what kinds of things do you talk about?). Fourth, children were asked aoout any current practices they or their family engage in to help the environment, and how they came to do those things. Then children were specifically asked about whether they and their family recycle cans, bottles, or newspapers.

After this point in the interview, questions shifted to a hypothetical scenario of polluting a bayou: "The Case of the Polluted Bayou." A bayou (small river) runs within about one mile of the children's school. Initially, children were asked to judge whether it was all right or not all right for a person to throw his or her garbage in the local bayou. The child's own gender was used to refer to the hypothetical protagonist. At the outset, it was unclear to us what form -- obligatory or discretionary -- children's moral reasoning would take. Given that the bayous in Houston are quite poiluted, and that garbage, litter, and broken glass is evident throughout the children's community, it seemed plausible that children would not believe that adding to the bayou's pollution was wrong in a stringent (e.g., obligatory) sense. On the other hand, it seemed equally plausible that since pollution harms the environment and indirectly harms human welfare that the children would view pollution as categorically wrong. Thus, to assess the form of children's reasoning, a series of five additional questions were asked.

Children's initial judgments about throwing garbage in the bayou were first pitted against social conventions that legitimated the practice under discussion ("Let's say that there is a neighborhood in which everyone throws their garbage in the bayou; is it then alright or not alright for a person to throw garbage in the bayou?"). Second, children were asked to judge the validity of such conventional practices ("Is it alright or not alright for the whole neighborhood to throw their garbage in the bayou?"). Third, children were asked whether their judgments about individual practices generalized to a different geographical location ("Let's say that in X [named by the child as the place farthest away that he or she knew of] there was a bayou, and people in X don't usually throw their garbage in their bayou. Is it alright or not alright for someone to come along and throw garbage in this bayou?). Fourth, children

were asked to judge the validity of the individual practice of polluting in a different geographical location where the social conventions legitimated the practice ("Let's say that in X many people do throw their garbage in this bayou. It is like a way of life there. Is it alright or not alright for someone to throw their garbage in the bayou?). Fifth, children were asked to judge the validity of such conventional practices when they occur in a different geographical location ("Let's assume that whole neighborhoods in X throw their garbage in the bayou. That's one of the ways that they handle their garbage. In this case, do you think it is alright or not alright for whole neighborhoods to throw their garbage in the bayou?). For all of the children's evaluations, they were also asked to explain their reasons. Multiple reasons were encouraged.

In the last part of the interview, this study investigated ways in which children might believe that throwing garbage in a local bayou would harm other parts of the natural environment. Questions were asked that directly pertained to birds ("Do you think that throwing garbage in the bayou has harmful or not harmful affect on the birds that live around the bayou?"), aesthetics (on the view of the bayou), the water, insects, and local people. Moreover, after each of these questions, children were probed for whether it mattered to them if such harm occurred.

Coding and Reliability. A coding manual was first developed from the responses of 50% of the children, a total of 36 children, with 12 from each age group. The coding manual was then applied to the responses from the other 50% of the children. The results from both groups were combined for analyses. Three types of responses were coded. Dichotomous evaluation responses (yes/no; matters/does not matter; harmful/not harmful), content responses (e.g., animals, plants, parks, garbage, pollution, and drugs), and justifications for their evaluative responses. Parts of the justification coding system drew on coding systems developed elsewhere (Davidson, Turiel, & Black, 1983; Kahn & Turiel, 1988; Kahn, 1992). Summary descriptions on the most general level of the justification coding system are presented in Table 1.

An independent coder trained in the use of the coding manual recoded 18 interviews (25%), three randomly chosen from each of six groups comprised by grade and gender. In total, 360 evalua-

tions, 230 content responses, and 349 justifications were recoded. Where multiple responses were possible (content responses and justifications), agreement was scored on the basis of the total number of responses provided. For example, if one coder decided that a subject provided two justifications to a single question, while the other coder coded only one justification, and assuming that there was agreement on the one justification coded by each coder, then reliability was assessed based on one match out of a possible two matches: 50%. The difficulty in determining the total number of justifications to code per response limits reliability. The advantage of this sort of analysis is that it is sensitive to extensive and diverse forms of reasoning for each subject (cf. Friedman, 1989; Madden, 1992; Kahn, 1992).

For evaluations, intercoder agreement was 91%. For justifications on a more fine-grained level than as reported in Table 1, intercoder agreement was 77%. Determining agreement for content responses is still in progress.

Results

Non-parametric tests (e.g., Marascuilo & McSweeney, 1977) were used for tests of statistical significance of the categorical data. Virtually no gender differences were found across hundreds of individual tests; thus gender data were collapsed. Age differences were found where reported. When appropriate, categorical data was converted to score data, and then analyzed by analysis of variance.

Children's Interest in Nature. As reported in Table 2, numerous results support the proposition that children have an interest in nature. For example, when asked initially whether they think about the natural environment, only 4% said no. The other children's considerations to this open-ended question included animals (59%), plants or trees (54%), various types of pollution (20%), and garbage (20%). Seven percent of the children said that drugs and human violence were environmental issues that they thought about. When specifically asked, 84% of the children (Binomial $Z = 7.57$, $p < .01$) said that animals were an important part of their life, 87% for plants ($Z = 9.62$, $p < .01$), and 70% for parks ($Z = 3.65$, $p < .01$).

Children's interest in nature extended into aspects of their family life and activities. For example, 72% ($Z = 4.20$, $p < .01$) of the children said that they talk about the environment with family members. As reported in Table 2, children reported on conversations that included litter or garbage (47%), air pollution (25%), plants (23%), water pollution (17%), drugs (17%), and animals (13%). Roughly half of the children (57%) have themselves started such conversations. Though not statistically significant, there was some indication that children engage in more talk about the environment with increasing age: 1st grade (54%), 3rd grade (79%), and 5th grade (83%). In addition, 86% of the children ($Z = 8.45$, $p < .01$) said that they or their family do things to help the environment. Based on specific questioning, 74% said they recycle cans and/or bottles, and 25% recycle newspapers. When asked if they do anything else to help the environment, 53% of the children said they pick up litter. It is worth noting that recycling centers in the children's neighborhood pay people for cans and bottles, but do not always accept newspapers, and rarely pay for them.

Children's Awareness of and Care for Environmentally Harmful Effects. Three different types of pollution were systematically investigated: water pollution, air pollution, and garbage. For each type of pollution, McNemar tests were conducted between students' understanding of the idea of such pollution in general, and their beliefs about whether they directly encountered such pollution in Houston. In other words, the McNemar statistic tests whether children changed their evaluations across questions. The findings show a consistent pattern. As shown in Table 2, 60% of the students understood about air pollution in general, but only 36% believed that they encountered air pollution in Houston. $X^2_M = 17.00$, $p < .005$. 73% understood about water pollution in general, but only 28% believed that encountered water pollution in Houston. $X^2_M = 33.00$, $p < .005$. Finally, 57% understood about the problem of too much garbage and litter, but only 29% believed that they encountered a problem with garbage and litter in Houston. $X^2_M = 20.00$, $p < .005$.

Children were also asked to imagine that people in their entire community threw their garbage in the local bayou. As shown in Table 3, results showed that the large majority of children believed that harmful effects would result for birds (94%), water (95%), insects (80%), local people (91%), and the

view (92%). In addition, children said that it would matter to them if such harm occurred to birds (89%), water (91%), insects (77%), local people (83%), and the view (93%).

Children's Environmental Profile. To provide an overall assessment of these children's environmental orientation, and to test in one place for effects of age, an environmental profile was constructed. The environmental profile comprises eleven of the above questions, cutting across four dimensions: Whether children are (1) aware of environmental problems; (2) discuss environmental issues with their family; (3) value aspects of nature; and (4) act to help the environment. For each question to which children responded affirmatively, they received a score of 1. Results showed that out of a possible score of 11 (the most pro-environmental score), first graders mean score was 7.7, third graders 9.6, and fifth graders, 9.5. Combining third and fifth graders together, these results were analyzed with an one-way analysis of variance. Results showed a significant effect for age: $F(1,70) = 8.02$, $p < .01$.

Children's Moral Judgments about Nature: The Case of the Polluted Bayou. Virtually all of the children interviewed (96%, Binomial $Z = 19.24$, $p < .01$) judged the individual act of throwing garbage in a neighborhood bayou to be wrong. Children maintained their judgments not to throw garbage in a waterway even in circumstances where local conventions legitimated the practice, for an individual (96%, $Z = 18.31$, $p < .01$ ) and the community (94%, $Z = 15.42$, $p < .01$). Moreover, children maintained that it would similarly be wrong for an individual in a different geographical location to throw garbage in a bayou (96%, $Z = 19.24$, $p < .01$) even when a different cultural convention legitimated the practice, for an individual (87%, $Z = 9.14$, $p < .01$) and for the entire community (91%, $Z = 12.18$, $p < .01$).

To assess whether children's reasoning reflected a moral obligation, stringent criteria were used: an evaluation that it is not alright to pollute the bayou in all six conditions. Results showed that 87% of the children viewed polluting a bayou as a violation of a moral obligation ($Z = 8.94$, $p < .01$). Developmentally, 68% of the first graders provided judgments of moral obligation, compared to 91% of

the third graders and 100% of the fifth graders. A Dunn planned contrast between first and fifth grades was significant: $Z = 3.15$, $p < .02$.

Children's Environmental Justifications. Children were probed for their reasons on nine of their evaluations. The first three evaluations involved whether animals, plants, and parks/open spaces played an important part in their life. The remaining six involved "The Case of the Polluted Bayou." Children's justifications were coded with the categories reported in Table 1. The resulting justification percentages for each of the nine questions are reported in Table 4. Averaging across all nine questions, results showed that the majority of justifications were Homocentric (74%), followed by Unelaborated Harm to Nature (22%), and then Biocentric (4%). Under the Homocentric category, on average children's reasoning included concerns for human welfare (28%), personal interests (19%) and aesthetics (16%).

From a developmental perspective, several findings were suggestive. Collapsing across all nine questions, results showed that first graders used the aesthetic category relatively seldom (14%) compared to 3rd graders (42%) and fifth graders (44%). In addition, even though biocentric justifications were seldom used, there was some indication of a directional change. Collapsing biocentric justifications across all nine questions (total justifications = 27), the results showed first grade (7%), to third grade (37%), to fifth grade (56%). Moreover, not one first grader provided a single intrinsic value or rights-based biocentric justification.

To provide a fuller sense of the justification data, and the types of concerns and issues that children brought to bear in their environmental moral reasoning, it shall help to flesh out a bit the homocentric and biocentric categories. Attention is paid to biocentric categories, even given their low use, because it is possible that the biocentric categories reflect the leading edge of the developmental progression from fifth grade onward.

As noted in Table 1, in homocentric reasoning, an appeal is made to how effects to the environment affect humans beings. In other words, the natural environment is given consideration only

because harm to the environment can cause harm to people. For example, consider the following justifications children provided about why it is wrong to pollute a waterway:

> [It's not alright to pollute the bayou] because if it's dirty I might get sick. (5F)[1]

> [It's not alright] because some people that don't have homes, they go and drink out of the rivers and stuff and they could die because they get all of that dirt and stuff inside of their bodies. (5M)

In these responses, children say that the underlying reason why environmental degradation is wrong lies in the environment's harmful effect on human welfare: sickness and death.

A less direct form of homocentric reasoning can be seen in aesthetic justifications. Here an appeal is made to ways in which the natural environment can render pleasure to humans in terms of its beauty.

> [It is not alright to throw trash in the local bayou because] the bayou, it should look beautiful...Because like if my relatives or something come over, I could take them to the bayou and see, and show them how beautiful it is and clean. (5M)

> A better one [bayou] is a cleaner one, is the best because...if you live around dirtiness then it won't look good around your house. (5M)

This reasoning appears to turn centrally on how humans appreciate the aesthetic experience of the natural environment. Thus, for example, the first child reasons that it is not alright to throw trash in the bayou because a bayou should look beautiful, and that other humans (his relatives) would also like to see a beautiful bayou.

In contrast to homocentric reasoning, biocentric reasoning highlights that the natural environment has a moral standing that is at least partly independent of its value as a human commodity. For example, children occasionally argued that nature has intrinsic value, and they established that value by means of what could be called a naturalistic fallacy in its most literal form.

> Because water is what nature made; nature didn't make water to be purple and stuff like that, just one color. When you're dealing with what nature made, you need not destroy it. (5M)

> I think that neither one should throw their trash in the bayou because the bayou has been clear for a whole lot of years. (5M)

---

[1]The number signifies the child's grade level (e.g., 5 for 5th grade) and the letter signifies gender (e.g., F for female).

Both children highlight that what is ("what nature made") ought to remain ("you need not destroy it"). Thus an "ought" is derived from what "is".

A second form of biocentric reasoning focuses on rights for nature. Two ways of establishing such rights appeared. In one way, natural objects (usually animals) are compared directly with humans:

> Bears are like humans, they want to live freely...Fishes, they want to live freely, just like we live freely...They have to live in freedom, because they don't like living in an environment were there is much pollution that they die every day. (5M)

Thus an animal's desire ("to live freely") is viewed to be equivalent to that of a human's desire, and because of this direct equivalency animals merit the same moral consideration as do humans. In turn, a second way of establishing rights for nature occurs through establishing indirect compensatory relationships:

> Fishes, they don't have the same things we have. But they do the same things. They don't have noses, but they have scales to breathe, and they have mouths like we have mouths. And they have eyes like we have eyes. And they have the same co-ordinates we have....A co-ordinate is something like, if you have something different, then I'm going to have something, but it's going to be the same. Just going to be different. (5M)

Here the child struggles, quite eloquently, with the idea of a "co-ordinate" by which he seeks to explain that while animals are in some respects not the same as people (they don't have noses like people do), that in important functions (such as breathing and seeing) they are the same. In other words, this child moves beyond a reciprocity based on directly perceivable and salient characteristics to be able to establish equivalences based on functional properties.

The third form of biocentric reasoning highlighted that one had a relationship with nature that thereby engendered interest and care for nature, and sometimes moral responsibilities on the part of humans. For example, a few children focused on taking care of some aspect of the natural environment, not unlike one would take care of another person:

> I have a dog and he's like, he's my child or something. I take care of him. I think he's more important than anything in the world to me. (5F)

One can notice a degree of homocentrism in this care-taking perspective, for there is a way in which the child's relationship to her dog is self-centered: the dog is important to her. But there is also a movement

here to understand and accept the dog in its own right, which constitutes a fuller notion of a relationship than does one which is characterized instrumentally in terms of an agent's psychological welfare.

In addition, children occasionally focused on taking care of the natural environment in some long-term, less personal, sense. Here are two responses from the same child:

> [Plants are important] because we're supposed to keep -- take care of all the plants and everything like people have plant stores and they take care of plants. (5M)

> [I care about animals because] those are animals that everyone must take care of...Because God put the animals on earth for people to, like for pet stores. To keep and take care of them. (5M)

We can note here an influence of the economically impoverished inner-city environment. It is not surprising that this child's understandings of the natural environment are closely tied up with such city constructs as plant stores and pet stores. Wide open farm lands and wilderness are not centrally part of his experience. But even given the constraints of the city, one can see a beginning sense of stewardship for the land -- that humans are responsible for the wellbeing of plants and animals.

Discussion

The results from this study speak to the importance -- personally and morally -- of environmental issues in the lives of Black children in the inner city. Animals, plants, and parks, for example, play an important part in the lives of the majority of the children we interviewed. The children have talked about environmental issues with their family members, and engaged in certain sorts of environmentally helpful behavior such as recycling cans and bottles. They were also aware that water pollution can harm birds, water, insects, people, and landscape aesthetics. Moreover, such environmental harm mattered to these children. In addition, children believed that one should not pollute a bayou; and they maintained this judgment even when individual and customary practices differ, locally and in geographically distant locations.

Based on the latter assessments that pertain to prescriptivity and generalizability, it can said that these children viewed polluting a bayou as a violation of a moral obligation. This finding was perhaps surprising. After all, littering is not uncommon in the inner cities, and these children already live amidst a good deal of pollution. Thus at the outset of this study it had seemed plausible to us that additional

pollution, while not necessarily viewed as desirable, could nonetheless be viewed as permissible (discretionary morality). That this was not the case suggests that children can bring to bear on environmental issues obligatory moral reasoning. At the same time, we still propose that distinguishing between obligatory and discretionary moral judgments can help advance analyses of environmental reasoning. Future studies, for example, could pursue children's views on whether it is obligatory or discretionary to recycle newspapers, pick up litter, or clean up a polluted bayou. Such acts that help, in contrast to degrade, the environment would presumably draw more on discretionary moral reasoning, and be sensitive to the cost to the actor for helping (Kahn, 1992).

Two overarching forms of environmental reasoning emerged from the data: homocentric and biocentric. Homocentric reasoning focused on the interest of humans to justify protecting the environment, and included appeals to personal interests, aesthetics, and the physical welfare of humans. Biocentric reasoning focused on a larger ecological community of which humans may be a part. In several suggestive ways, the data supports the proposition that biocentric reasoning integrates homocentric reasoning into a more comprehensive environmental structure. While homocentric reasoning cut across the ages, biocentric reasoning, although limited in its use, was used primarily by older children. This developmental finding suggests that biocentrism emerges after homocentrism. In addition, when children accorded rights to animals, such reasoning was not in contradiction to according rights to humans, but rather enlarged the scope of what has moral standing (e.g., "bears are like humans, they want to live freely"). Moreover, it is possible that the development of an aesthetic sensibility provides a bridge between homocentrism and biocentrism. Recall that we defined aesthetic reasoning as an appeal to preservation of the environment for the viewing or experiencing pleasure of humans. Framed in this way, it is a homocentric justification. But it also seems plausible that many biocentric concepts -- such as those that focus on the intrinsic value of nature -- depend on valuing the natural environment in some experientially aesthetic way (cf. Kellert, in press). Indeed, our results showed that the use of the aesthetic justification category increased with age. Further research is needed with an older population of children to explore these tentative propositions.

Kellert's survey research on children's attitudes toward nature provides an interesting counterpart to our data. Over a number of years, Kellert (e.g., 1983, 1985, 1991, in press) has empirically refined a typology of nine categories of attitudes toward nature (particularly toward animals): utilitarian, naturalistic, ecologistic-scientific, aesthetic, symbolic, humanistic, moralistic, dominionistic, and negativistic. Some of these attitudes may have found expression in our justification categories. For example, the utilitarian attitude focuses on ways that nature provides humans with the physical means for sustenance, protection, and security (not unlike our "welfare" justification); and the humanistic attitude involves feelings of deep emotional attachment for individual elements of nature (not unlike our "relational" biocentric justification).

Though Kellert's research has a richness and breadth that escapes easy summary, there is for purposes here a particularly interesting comparison. Kellert found that the moralistic attitude (that involves judgments about right and wrong treatment of animals, with strong opposition to exploitation or cruelty toward animals) increased significantly between the 8th and 11th grades. Kellert (1985) also found that in comparison to White children and children in a rural context, Black children revealed less affection and general interest in animals. Our own findings with Black children, however, point in a somewhat different direction. Not unlike Kellert, we found an increase in children's morally obligatory reasoning that opposed polluting a bayou, but the shift appeared much earlier: between first graders and fifth graders. Along similar lines, third and fifth graders scored higher on our environmental profile than did first graders. But our main point is this: Even the first graders had an environmental moral orientation that appeared pervasive across a wide range of measures.

To say that the children we interviewed are aware of and morally concerned about environmental issues is not to negate ways in which their economically impoverished social class and inner-city geographical context impacted their environmental views, values, and behaviors. For example, while it is true that 74% of the children said that they or their families recycle cans and bottles, children consistently told us that local recycling centers offered reasonable monetary compensation for recycling

cans and bottles, but seldom for newspapers. Only 24% of the children said they or their families recycled newspapers. Thus economic incentives appeared to help motivate environmental behavior.

Children's environmental reasoning also often reflected the reality of the inner-city experience. When asked, for example, what they thought about in terms of nature, 7% of the children responded with issues pertaining to drugs and human violence. Moreover, when asked about what environmental issues they talk about with their families, 17% of the children responded with issues pertaining to drugs and human violence. These findings surprised us when interviewing, since we ourselves had not thought to classify drugs and human violence in this way. Or consider the following short segment of an interview with a first grade girl, where we first sought to establish that she knew what a bayou was before we proceeded with the hypothetical scenario that pertained to a bayou.

> TELL ME TRINA [A PSEUDONYM], DO YOU KNOW WHAT A BAYOU IS? Yes...It's where turtles live and the water is green because it is polluted. People -- some people need to um, some people are nasty. Some people, you know, like some people go down there and pee in the water. MM HMM. Like boys, they don't have no where to pee, and drunkers, they'll go do that, too. OKAY. And sometimes they'll take people down and rape them, and when they finished, they might throw 'em in the water or something. SO, WHAT DOES IT LOOK LIKE? HOW WOULD YOU DESCRIBE IT? A BAYOU? It's big and long and green and it stinks...And turtles live in it.

Trina clearly knows what a bayou is, and provides a vivid description of its polluted state ("It's big and long and green and it stinks"). But such environmental knowledge is interwoven with how such "natural" states are used in the inner city: people such as boys and drunks urinate in the bayou, rapes occur alongside it, and bodies are thrown in it.

It is well known that Houston, Texas is not the most environmentally pristine of cities. Local oil refineries contribute not only to the city's air pollution, but to distinct oil smells during many of the days. Several bayous run through the city of Houston (one about a mile from the children's school) and are all quite polluted. "Treated" sewage is discharged into it, and by this means the sewage is transported to the ocean. The bayou often smells of pollution (as Trina notes above), and is not safe for swimming or wading. Around the children's immediate community, inner-city poverty is reflected in the debilitation of the houses, and scattering of garbage, glass, and litter. Within this context, our results showed that two-thirds of the children we interviewed understood about ideas of air and water pollution

in general. However, only one-third of the children believed that environmental issues affected them directly. How could this be? How could children who know about pollution in general, and live in a polluted city, be unaware of their own city's pollution?

One possible answer, and an area for future research, is that to understand the idea of pollution, one needs to compare existing polluted states to those that are less polluted. In other words, if one's only experience is with a certain amount of pollution, then that amount becomes not pollution, but the norm against which more polluted states are measured. If we are right about this, then it would speak to the importance of keeping environmental preserves, refuges, and parks close to (and even within) cities, and of providing means for children to experience these areas (cf. Orr, 1992). Indeed, what we perceive in the children we interviewed might well be the same sort of psychological phenomenon that affects us all from generation to generation. People may take the natural environment they encounter during childhood as the norm against which to measure pollution later in their life. The crux here is that with each ensuring generation, the amount of environmental degradation increases, but each generation takes that amount as the norm -- as the non-polluted state. Researching such "generational amnesia" may help provide a psychological account of how it is that our world has moved toward an environmentally precarious state.

It is within this broader context that we seek to place our findings. Increasingly, scientists argue that to help check the increasing environmental destruction of our planet, vigorous research is needed across many disciplines that bear on understanding nature, and the human relation therein (Kellert & Wilson, in press; Nelson, 1983; Ulrich, 1983, in press; Wilson, 1984, 1992). This study provides a structural-developmental psychological approach in this direction. Moreover, the results from this study provide some basis for hope. It would appear that the serious constraints of living in an economically impoverished inner-city community cannot easily squelch these children's diverse and rich appreciation for nature, and moral responsiveness to its preservation.

## References


Arsenio, W. F. (1988). Children's conceptions of the situational affective consequences of sociomoral events. Child Development, 59, 1611-1622.

Damon, W. (1977). The social world of the child. San Francisco: Jossey-Bass.

Davidson, P., Turiel, E., & Black, A. (1983). The effect of stimulus familiarity on the use of criteria and justifications in children's social reasoning. British Journal of Developmental Psychology, 1, 49-65.

Eisenberg, N. (Ed.). (1982). The development of prosocial behavior. New York: Academic Press.

Eisenberg, N. (1989). The development of prosocial values. In N. Eisenberg, J. Reykowski, and E. Staub (Eds.), Social and moral values. Hillsdale, N.J.: Lawrence Erlbaum.

Friedman, B. (1989, March). Social reasoning about computer hacking, electronic information, and privacy in adolescence. Paper presented at the meeting of the American educational Research Association, San Francisco.

Gewirth, A. (1978). Reason and morality. Chicago: University of Chicago Press.

Gilligan, C. (1982). In a different voice. Cambridge: Harvard University Press.

Kahn, P. H., Jr., & Turiel, E. (1988). Children's conceptions of trust in the context of social expectations. Merrill-Palmer Quarterly, 34, 403-419.

Kahn, P. H., Jr. (1992). Children's obligatory and discretionary moral judgments. Child Development, 63, 416-430.

Kant, I. (1964). Groundwork of the metaphysic of moral (H. J. Paton, Trans.). New York: Harper Torchbooks. (Original work published 1785)

Kellert, S. (1980). Contemporary values of wildlife in American society. In W. Shaw & I. Zube (Eds.), Wildlife Values (pp. 31-37). Ft. Collins: U.S. Forest Service.

Kellert, S. (1983). Affective, cognitive and evaluative perceptions of animals. In I. Altman and J. Wohlwill (Eds.), Behavior and the natural environment (chap. 7). NY: Plenum.

Kellert, S. R. (1985). Attitudes toward animals: Age related development among children. Journal of Environmental Education 16, 29-39.

Kellert, S. R. (1991). Japanese perceptions of wildlife. Conservation Biology, 5, 297-308.

Kellert, S. R. (in press). The biophilia hypothesis: A theoretical and empirical inquiry. To appear in S. R. Kellert & E. O. Wilson (Eds.), The Biophilia hypothesis: Empirical and theoretical investigations. Washington, D.C.: Island Press.

Kellert, S., & Wilson, E. O. (in press). The Biophilia hypothesis: Empirical and theoretical investigations. Washington, D.C.: Island Press.

Killen, M. (1990). Children's evaluations of morality in the context of peer, teacher-child, and familial relations. Journal of Genetic Psychology, 151, 395-410.

Kohlberg, L. (1971). From is to ought: How to commit the naturalistic fallacy and get away with it in the study of moral development. In T. Mischel (Ed.), Psychology and genetic epistemology (pp. 151-235). New York: Academic Press.

Kohlberg, L. (1984). Essays in moral development: Vol. II. The psychology of moral development. San Francisco: Harper & Row.

Laupa, M. (1991). Children's reasoning about three authority attributes: Adult status, knowledge, and social position. Developmental Psychology, 27, 321-329.

Madden T. (1992). Cultural factors and assumptions in social reasoning in India. Unpublished doctoral dissertation, University of California, Berkeley.

Marascuilo, L. A., & McSweeney, M. (1977). Nonparametric and distribution-free methods for the social sciences. Monterey, CA: Brooks/Cole.

Nelson, R. K. (1983). Make prayers to the raven: A Koyukon view of the northern forest. Chicago: University of Chicago Press.

Nucci, L. P. (1981). The development of personal concepts: A domain distinct from moral and societal concepts. Child Development, 52, 114-121.

Ogbu, J. U. (1977). Racial stratification and education: The case of Stockton, California. IRCD Bulletin, 12, 1-26.

Ogbu, J. U. (1992). Understanding cultural diversity and learning. Educational Researcher, 21, 5-14.

Orr, D. W. (1992). Ecological literacy: Education and the transition to a postmodern world. New York: State University of New York Press.

Piaget, J. (1969). The moral judgment of the child. Glencoe, IL: Free Press. (Original work published 1932).

Rawls, J. (1971). A theory of justice. Cambridge: Harvard University Press.

Selman, R. L. (1980). The growth of interpersonal understanding. New York: Academic Press.

Smetana, J. (1982). Concepts of self and morality: Women's reasoning about abortion. New York: Praeger.

Tappan, M. (1989). Stories lived and stories told: The narrative structure of late adolescent moral development. Human Development, 55, 527-536.

Thorkildsen, T. A. (1989). Pluralism in children's reasoning about social justice. Child Development, 60, 965-972.

Turiel, E. (1983). The development of social knowledge. Cambridge: Cambridge University Press.

Turiel, E., Hildebrandt, C., & Wainryb, C. (1991). Judging social issues: Difficulties, inconsistencies, and consistencies. Monographs of the Society for Research in Child Development, 56(2, Serial No. 224).

Ulrich, R. S. (1983). Aesthetic and affective response to natural environment. In I. Altamn & J. F. Wohlwill (Eds.), Human behavior and environment, Vol 6: Behavior and the natural environment (pp. 85-125). New York: Plenum.

Ulrich, R. S. (in press). Biophilia, biophobia, and natural landscapes. To appear in S. R. Kellert & E. O. Wilson (Eds.), The Biophilia hypothesis: Empirical and theoretical investigations. Washington, D.C.: Island Press.

Wainryb, C. (1991). Understanding differences in moral judgments: The role of informational assumptions. Child Development 62, 840-851.

Williams, B. (1985). Ethics and the limits of philosophy. Cambridge: Harvard University Press.

Wilson, E. O. (1984). Biophilia. Cambridge: Harvard University Press.

Wilson, E. O. (1992). The diversity of life. Cambridge: Harvard University Press.

Youniss, J. (1980). Parents and peers in social development. Chicago: University of Chicago Press.

Table 1

Summary of Environmental Justifications Categories

I. Homocentric

An appeal to how affects to the environment affect human beings. In other words, the environment is given consideration, but this consideration occurs only because harm to the environment causes harm to people.

| | |
|---|---|
| A. Personal Interests | An appeal to personal interests and projects of self and others, including those that involve recreation or provide fun, enjoyment, or satisfaction (e.g., "[Animals are important to me because] if I go hunting, that's an important part of my life because it'll be fun to me; "Animals matter to me a little bit because we need more pets and different animals to play with"). |
| B. Aesthetic | An appeal to preservation of the environment for the viewing or experiencing pleasure of humans (e.g., "The bayou should look beautiful because if my relatives come over, I could take them to the bayou and show them how beautiful it is and clean"; "because I'd get to see all the colors of the plants and the beauty of the whole -- of the whole natural plants"). |
| C. Welfare | An appeal to the physical, material, and psychological welfare of human beings, including that of agent ("because if the water is dirty, I might get sick"), of others (e.g., "air pollution goes by and people get sick, it really bothers me because that could be another person's life"), and of society ("it's wrong to destroy nature because nature will be good for all human kind"). |
| D. Interpersonal Condemnation | An appeal to how others would judge the actor(s) negatively in both personal contexts (e.g., they'd probably lose their friendship with everyone") and public contexts (e.g., "harming the environment is wrong because the people in town will get really mad, no one will like these people if they do that"). |
| E. Punishment Avoidance | An appeal to punishment or its avoidance (e.g., "because the police might catch her"). |
| F. Influencing Others | An appeal to the act's influence on others, with a consequentialist orientation ("because if a group of people throw theirs in there then a lot more other people will hear about it and they probably will take their trash and throw in in there"). |
| G. Unelaborated | |

Table 1 (continued)

Summary of Environmental Justifications Categories

II. Biocentric

An appeal to a larger ecological community of which humans may be a part.

| | |
|---|---|
| A. Intrinsic Value of Nature | An appeal that nature has value, and the validity of that value is not derived solely from human interests, including is-to-ought appeals(e.g., "if nature made birds, nature does not want to see birds die"; "I think people should care about animals because animals are like part of everyone's life"; "it was here before mankind arrived here"). |
| B. Rights | An appeal that nature has rights or deserves respect, including appeals wherein humans and nature are viewed as essentially similar (e.g., fishes, they want to live freely, just like we live freely, they have to live in freedom, because they don't like living in an environment where there is much pollution that they die every day"; "animals don't need to be killed either, because they need the same respect that we need"), and set in a compensatory relation ( e.g., "Fishes [deserve respect for while they] don't have the same things we have, they do the same things. They don't have noses, but they have scales to breathe, and they have mouths like we have mouths. It's going to be the same, just going to be different"). |
| C. Relational | An appeal to a relationship between humans and nature, including those based on psychological rapport (e.g., "animals are important to me because when a person in my family like died, they could come and cheer me up"); personal caretaking (e.g., "I have a dog and he's like my child or something, I take care of him"), and stewardship (e.g., "Those are animals that everyone must take care of, because God put these animals on earth for people to, like for pet stores, to keep and take care of them"). |

III. Unelaborated Harm to Nature

An appeal to the welfare of nature, including animals (e.g., air pollution is bad because "the birds and the butterflies, they can't hardly get any air, and it'll probably kill them), and plants (e.g., "air pollution could kill the flowers and the trees, and the grass and stuff"). No reference is made to whether that concern derives from a homocentric or biocentric orientation.

Table 2

Children's Interest in Nature and Awareness of Environmental Pollution: Percentage of Affirmative ("yes") Responses

| | Explicitly solicited | | | Open-ended | |
|---|---|---|---|---|---|
| Environmental categories | Important part of your life | Aware of environ. problems in general | Aware of environ. problems in Houston | Think about environ. issues | Talk about environ. issues with family |
| Animals | 84* | ----- | ----- | 59 | 13 |
| Plants | 87* | ----- | ----- | 54 | 23 |
| Parks/Open spaces | 70* | ----- | ----- | 7 | 0 |
| Garbage/Litter | ----- | 57 | 29* | 20 | 47 |
| Water pollution | ----- | 73* | 28* | 10 | 17 |
| Air pollution | ----- | 60 | 36* | 7 | 25 |
| General/Other pollution | ----- | ----- | ----- | 3 | 9 |
| Drugs/Human violence | ----- | ----- | ----- | 7 | 17 |

* Indicates statistical significance at the .01 level.

----- Indicates environmental categories that were not asked about for explicitly solicited data.

Table 3

Children Judgments of Harmful Effects to Throwing Garbage in a Bayou, and Whether Those Effects Matter: Percentage of Affirmative ("yes") Responses

| Environmental categories | Judged harmful | Cared about harm |
|---|---|---|
| Birds | 94* | 89* |
| Water | 95* | 91* |
| Insects | 80* | 77* |
| Neighborhood people | 91* | 83* |
| View of bayou | 92* | 93* |

* Indicates statistical significance at the .01 level.

Table 4

Percentage of Environmental Justifications by Categories

| Justification category | Play an important part in your life | | | Case of the polluted bayou | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Local | | | Generalized | | |
| | Animals | Plants | Parks/ open spaces | Individual | Individual pitted against contrary convention | Conventional legitimacy of pollution | Individual | Individual pitted against contrary convention | Conventional legitimacy of pollution |
| Homocentric | | | | | | | | | |
| Personal Interest | 40 | 14 | 86 | 10 | 7 | 8 | 2 | 5 | 3 |
| Aesthetic | 4 | 23 | 0 | 19 | 23 | 18 | 19 | 11 | 23 |
| Welfare | 31 | 51 | 11 | 26 | 23 | 26 | 20 | 35 | 25 |
| Interpersonal Condem. | 0 | 0 | 0 | 0 | 1 | 2 | 6 | 1 | 1 |
| Punishment Avoidance | 0 | 0 | 0 | 7 | 13 | 9 | 9 | 6 | 2 |
| Influencing Others | 0 | 0 | 0 | 2 | 6 | 2 | 16 | 7 | 8 |
| Unelaborated | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Biocentric | | | | | | | | | |
| Intrinsic Value of Nature | 0 | 0 | 0 | 2 | 0 | 1 | 2 | 1 | 1 |
| Rights | 4 | 2 | 0 | 2 | 0 | 2 | 2 | 4 | 0 |
| Relational | 7 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Unelaborated Harm to Nature | 15 | 6 | 2 | 33 | 27 | 32 | 23 | 30 | 34 |

Note. Percentages may not equal 100 due to rounding.