Running head: AFFECT AND WORLDVIEWS

The Role of Affect and Worldviews as Orienting Dispositions in the Perception and Acceptance of Nuclear Power

Ellen Peters
University of Oregon

Paul Slovic
Decision Research

November 30, 1995

Abstract

Recent research in risk perception has examined the role of affect and worldviews as orienting dispositions that guide people's decisions about complex and risky topics such as nuclear energy. This study tests and supports the hypothesis that worldviews and affect-laden imagery are highly predictive of perceptions of risk from nuclear power and support for that technology. Furthermore, affect and worldviews each contribute independently to the prediction of nuclear support. We find also that a person's affective imagery associated with nuclear power is systematically related to their worldviews. We conclude that affect and worldviews appear to play similar roles as orienting mechanisms, helping people navigate in a complex, uncertain, and sometimes dangerous world. The implication of this view for the practice of risk communication is briefly discussed.

Key words: affect, worldviews, perceived risk, nuclear power, risk communication

The Role of Affect and Worldviews as Orienting Dispositions in the Perception and Acceptance of Nuclear Power

The present study examines the interaction between two psychological systems—cognition and affect—and their joint influence on perception and acceptance of risks, with particular emphasis on the risks from nuclear power.

Risk Perception and Cognition

People respond to hazards according to their perceptions of the risks they pose. What they perceive, why they perceive it that way, and how they will subsequently behave is a matter of great import to industries and governments trying to assess and implement new technologies. Risk perception studies have focused extensively on the cognitive forces that influence risk attitudes and behaviors. For example, Slovic, Fischhoff, and Lichtenstein (1979) suggested that people use various heuristic strategies to reduce the difficult mental task of understanding and responding to risks to simpler tasks that require less effort and cognitive capacity.

Research following a psychometric paradigm has led to a taxonomy for hazards useful for understanding and predicting responses to risks (Slovic, 1987). Specifically, this work suggests that people's risk perceptions can be characterized along two dimensions—dread risk as defined by the extent of perceived lack of control, feelings of dread,[1] perceived catastrophic potential, and the inequitable distribution of risks and benefits and unknown risk or the extent to which a hazard is judged to be unobservable, unknown, new, and delayed in producing harmful impacts. These simplified "cognitive maps" appear to be quite robust when international groups of laypeople as well as experts judge diverse hazards (Englander, Farago, Slovic, & Fischhoff,

1986; Kleinhesselink & Rosa, 1991; Mullet, Duquesnoy, Raiff, Fahrasmane, & Namur, 1993; Namur & Sornay, 1988; Slovic, 1987; Slovic, Fischhoff, & Lichtenstein, 1980, 1984; Teigen, Brun, & Slovic, 1988). They appear useful in explaining and also forecasting public reaction to specific technologies. For example, hazards such as nuclear power and DNA technology tend to be judged high on both the dread risk and unknown risk factors. An accident in either of these domains will likely produce a high degree of concern as well as social impacts that extend far beyond the original cost of lives lost or equipment damaged (e.g., economic losses for the company and even for the entire industry, new government regulations, and a host of other social impacts).

Risk Perception and Affect

The way that a person thinks about a hazard and organizes information about it is obviously important for understanding risk perception. Studies suggest that how the person feels about a hazard or its risk (i.e., his/her affective reaction) also influences risk perception. Slovic, Flynn, and Layman (1991) attempted to go beyond cognitive maps to discover what may drive perceptions and their ensuing social impacts. They found that affect associated with images of a stimulus was related to judgments and preferences. Using the method of continued associations (Szalay & Deese, 1978), verbal imagery was elicited from participants in four surveys. Participants were asked to free associate to the concept of a nuclear waste repository to evoke their images and thoughts related to that concept. After free-associating to the repository stimulus, each respondent rated the affective quality of these associations on a five-point scale, ranging from extremely negative to extremely positive. These affective ratings were found to be

related to whether the person would vote for or against a referendum on a nuclear waste repository, and to their judgments regarding the likelihood of a repository accident. For example, in one study more than 90% of those people whose first image was judged very negative said that they would vote against a repository at Yucca Mountain; fewer than 50% of those people whose first image was positive said they would vote against the repository (Slovic, Flynn, & Layman, 1991). In another study, Slovic, Layman, Kraus, Flynn, Chalmers, and Gesell (1991) found that affective ratings of imagery associated with four cities and four states were highly predictive of vacation preferences as well as job and retirement preferences for those places.

The relationship between affect and risk perception was also studied by Alhakami and Slovic (1994). They observed that, whereas risks and benefits tend to be positively associated in the world (high-risk activities tend to provide greater benefits and vice-versa), they are inversely correlated in people's minds (higher perceived benefit is associated with lower perceived risk; lower perceived benefit is associated with higher perceived risk). Alhakami and Slovic found that this inverse relationship was linked to people's reliance on general affective evaluations when making risk/benefit judgments. When the affective evaluation was favorable, the activity being judged was seen as having high benefit and low risk; when the evaluation was unfavorable, risks tended to be seen as high and benefits as low.

Another demonstration of the influence of affect on risk perception comes from a study by Johnson and Tversky (1983). They presented student respondents with three brief, newspaper-style stories about a tragedy involving the death of an undergraduate student. Each story depicted a different cause of death: homicide, leukemia or fire. After reading the stories, respondents

estimated the frequencies of fatalities from 17 different causes, including diseases (e.g., leukemia, lung cancer, heart disease), hazards (e.g., fire, electrocution), and violence (e.g., homicide, terrorism). The results showed that reading about a tragic event increased frequency estimates across all causes of death. Johnson and Tversky interpreted this as an indication that the negative affect generated by the tragic story influenced all the subsequent estimates, regardless of the similarity between a tragic event and the other events.

Risk Perception and Worldviews

According to Dake (1991, 1992), worldviews, defined as generalized attitudes toward the world and its social organization, are "orienting dispositions," serving to guide people's responses in complex situations. As such, they have been found, by Dake and others, to be instrumental in determining a person's risk attitudes and perceptions. Dake argues that people's identities and worldviews are mediated by their social relations to groups as well as by the extent of social prescriptions that constrain their behavior. A person can be either more group-oriented or more individual-oriented (e.g., in terms of beliefs about right and wrong, beliefs about where control emanates, and beliefs about responsibilities to others). In addition, the person may believe either that many rules are needed to control behavior and that these rules should be different across society, or that few socially stratified rules are necessary. In a 2 x 2 matrix of social relations by level of prescription, four basic worldviews emerge: hierarchical, fatalistic, individualistic, and egalitarian. Those who follow the hierarchical worldview are said to be group-oriented and to believe in a high level of stratified prescriptions. The Fatalist also believes in high levels of stratified prescription, but is more isolated and tends to focus on individuals

rather than groups. The Individualist is hypothesized to be more individual-oriented and to believe that few rules are necessary to govern behavior. The Egalitarian is more group-oriented, but also believes in low levels of stratified rules. A fifth cultural view, hermit, is hypothesized as being largely asocial and was not considered in the present study.

In general, Dake's (1991) hypotheses and results suggest a systematic relation between worldviews and risk perceptions including perceptions and acceptance of risk from nuclear power. Fatalists, for example, who are individual-oriented as well as supportive of stratified rules, are hypothesized not to trust experts, but to condone their power and the technologies they support. Individualists, on the other hand, perceive themselves to be involved in bidding and bargaining with others to attain their personal goals and desires. They presumably would be supportive of nuclear power as a means to attain further wealth and to maintain a free market mechanism, but they would not support nuclear power if they viewed it as intruding on personal freedoms. Egalitarians are hypothesized to oppose nuclear energy because they perceive it as creating further stratifications of wealth and power, an outcome that Hierarchists should be quite comfortable with. More will be said about these worldviews in a later section when Dake's hypotheses are compared and contrasted to results from the present study.

Jenkins-Smith (1993) suggested that an individual's worldview acts as a cognitive filter to screen the information from which verbal images are constructed. He proposes a model in which worldviews influence the content of the images that the individual has of a place. In supporting studies, he showed that Hierarchists were three times less likely than Egalitarians and Individualists to provide a nuclear image in response to the stimulus, "Nevada."

A hypothesized relation between affect and worldview also is supported in Jenkins-Smith's studies. Egalitarians gave images to the stimulus, nuclear waste repository, that were significantly more negative than images given by either Hierarchists or Individualists. Jenkins-Smith concludes that, rather than being passive receivers of information, "people actively impute significance and value to signals in systematic ways" (p. 2). Worldviews then may be one system for assessing value.

In short, images about a place and the emotional significance attached to them are related to an individual's worldview. Certain kinds of people are more likely to acquire negative images and/or nuclear images of a place than others. The affect attached to the images then is a strong predictor of decisions regarding that place. The influence of both affect and worldview could be quite important as local and national governments struggle to site nuclear waste repositories, chemical plants, and other facilities perceived to be high in risk.

The Jenkins-Smith model, however, in giving precedence to the role of worldviews as cognitive filters of risk information plays down the potentially strong, independent impact of affect specific to images of nuclear energy. The strong affect associated with nuclear energy was noted by Smith (1988), who observed, "nuclear energy was conceived in secrecy, born in war, and first revealed to the world in horror. No matter how much proponents try to separate the peaceful from the weapons atom, the connection is firmly embedded in the minds of the public" (p. 1606).

In the present study, we have examined the role of worldview and affect as orienting dispositions in the perception and acceptance of nuclear power. Our primary hypotheses were:

1. Worldviews and affect will each provide significant, independent contributions to the prediction of nuclear support. They will orient perceptions of nuclear power and the resulting support or opposition of nuclear power.
2. Affect will be more highly predictive of nuclear support than worldviews. Affect, as studied here, is related to images associated strongly with nuclear power, whereas worldviews are more generalized attitudes toward political, social, and economic relations, with a less explicit relation to the domain of nuclear power.
3. Worldviews and affect will be systematically related to one another as suggested by past research. For example, Egalitarians will tend to have more negative affect for images associated with nuclear power as they interpret incoming information through their a priori beliefs about political, economic, and social relations while Hierarchists and Fatalists will tend to have more positive images of nuclear energy.

Method

A national telephone survey was conducted to test hypotheses about the factors relating to perception and acceptance of nuclear power. A representative sample of the adult population in the United States was surveyed by telephone during the period November 21, 1992, to January 16, 1993. Respondents were chosen based on a random digit dialing method combined with recruiting the person in the household who was over 18 years old and had the most recent birthdate. A total of 1512 English-speaking respondents answered 155 questions, with an average interview length of approximately 30 minutes. The response rate was 50.7%.

The characteristics of the present sample can be compared roughly to the data from the U.S.

Bureau of the Census, 1990 Census of Population, which assessed 93 million households. The composition of the sample was 51.8% female compared to 52.1% in the 1990 U.S. Census. The age range of the sample was 18 to 90, with a mean age of 42.2 years. The age data are as follows for this sample and the U.S. Census, respectively: age 18 to 29 (23.2% vs. 26.0%), age 30 to 54 (54.4% vs. 45.7%), and over age 55 (22.4% vs. 28.3%). White respondents made up 84.3% of the total sample (vs. 86.0% in the Census), blacks were 7.5% of the present sample (vs. 11.3% in the Census), and other nonwhites comprised 6.7% of the sample (vs. 2.8% in the Census). Hispanics (who can be of any race) were 3.8% of the sample (vs. 6.3% in the Census).

Affect

The survey's first question elicited images to the stimulus "nuclear power" using a version of the method of continued associations (Szalay & Deese, 1978) adapted for use in a telephone survey (see, e.g., Slovic, Flynn, & Layman, 1991; Slovic, Layman et al., 1991). The elicitation interview proceeded as follows:

> The first question involves word associations. Think about "nuclear power" for a moment. When you hear the words "nuclear power" what is the first word or image that comes to mind?
>
> What is the next word or image that comes to mind when you think of "nuclear power"?
>
> A final word or image associated with "nuclear power"?

Up to three images were elicited from each respondent. Next, respondents were asked to rate each image they gave on a scale ranging from very negative (1), negative (2), neutral (3), positive (4), to very positive (5). The image ratings were averaged for each respondent, and this number

was used as the measure of average affect in the rest of this article.

Worldviews

A set of 15 questions (see Table 1) was selected in part from scales used by Dake (1991, 1992) to measure the extent to which an individual held the four worldviews hypothesized to be related to nuclear support (e.g., Hierarchical, Fatalistic, Individualistic, and Egalitarian). Care was taken to ensure that the content of the worldview items did not overlap with the content of the items (e.g., nuclear support) to be predicted as dependent variables in the analysis.

Insert Table 1 about here

Nuclear Power

We derived an index of nuclear support by selecting five items (see Table 2), such as "If your community was faced with a potential shortage of electricity, do you...agree...that a new nuclear power plant should be built to supply that electricity?" and computing an average across those five items for each respondent.

Insert Table 2 about here

The survey also included a variety of other questions about perceived risks, attitudes toward health and the environment, trust in experts, government and science, personality characteristics, and demographic variables.

Results

Our analysis first examines the affective ratings given to associations to the stimulus, nuclear power. Next, results from the worldview questions are presented. Finally, models are constructed to predict support for nuclear power based on affect and worldviews.

Affect

In this survey, 3537 images of nuclear power and their corresponding affective ratings were elicited. Each participant provided between zero and three images with ratings, for an average of 2.3 images per respondent. We expected the imagery to the stimulus, nuclear power, to be quite negative as it was to the stimulus phrases "underground nuclear waste storage facility" and "nuclear waste repository" in earlier studies (Slovic, Flynn, & Layman, 1991; Slovic, Layman et al., 1991). The present results, however, supported Jenkins-Smith's (1993) conclusion that imagery to nuclear things (i.e., "a high level nuclear waste repository" and "a nuclear power plant") was not consistently negative. The affective ratings of the 3537 images in the present study were distributed across the scale from very negative to very positive, with 47% of the images rated either positive or very positive, 12% rated neutral, and 41% rated negative or very negative.[2] In addition, some individuals had a view of nuclear power that included both positive and negative elements. For example, of those respondents who provided a first image that was evaluated as very negative, 43% of them gave a second rating that also was very negative, but 21% of them gave images that they evaluated as positive or very positive (14% did not provide a second image, and 22% provided images that were either negative, as opposed to very negative, or neutral).

Worldviews

Correlations between pairs of worldview items ranged between $r = -.19$ and .31. A principle components analysis using both orthogonal (i.e., varimax and equamax) and oblique (i.e., promax) rotations was conducted on these intercorrelations. Similar solutions were obtained with each of these rotations. Therefore, only results from the principal components analysis with varimax rotation will be reported here. The number of factors retained was guided by the proportion of variance explained by a factor and its theoretical interpretability. Items with loadings of .40 or higher were considered to load on a factor and contribute to its interpretation.

The analysis produced three worldview factors, accounting for 37% of the variance in the items. The first factor emerged as a blend of the Fatalistic and Hierarchical worldviews. The other two factors corresponded well with Dake's (1991, 1992) Individualist and Egalitarian views. Table 1 shows the rotated factor structure.

Cultural theory suggests that worldviews help people interpret the world in such a way as to maintain their system of beliefs and moral codes. Dake suggests that Hierarchists and Fatalists both support systems that allow for the social stratification of rules although Hierarchists tend to be more group-oriented and Fatalists tend to be more individual-oriented. According to cultural theory, Hierarchists find social deviance particularly abhorrent. They believe that commands should flow down the power structure and compliance should flow up. Factor 1 included high loadings on items calling for support for a hierarchical structure (e.g., "We have gone too far in pushing equal rights in this country" and "Decisions about health risks should be left to the experts"). This factor, however, also has significant loadings on items that seem to represent the

Fatalistic worldview. Cultural theory predicts a group that rationalizes isolation and is resigned to stringent controls on their behavior (Mars, 1982). The possible explanations range from Fatalists being unable to compete successfully, meet minimum social standards, or muster the time, energy, or resources to have a voice in politics (Dake, 1992) to Fatalists simply wanting to be free from the disempowerment of well wishers' influences (Dake, 1992). This complex factor which included items related to the Hierarchical worldview also included items that reflected cultural theory's "Why bother?" rationalization (e.g., "It's no use worrying about public affairs; I can't do anything about them anyway").

This first factor appears to be a complex blend of attitudes. It includes a belief in hierarchy, but also a resignation to stringent controls rather than faith and trust in those doing the controlling. Personal rights seem less important to those who score high on this factor (e.g., "The police should have the right to listen to private phone calls to investigate a crime"). It is not merely that persons scoring high on this factor do not have the energy to fight for personal rights as Dake suggests for the Fatalistic worldview. Instead, the level of personal rights they condone, and perhaps desire, apparently has been surpassed already (e.g., "We have gone too far in pushing equal rights in this country"). Note that this data also allows for the interpretation that those who score high on this factor already have these rights for themselves, but that they do not want it extended to others. This possibility is, however, contrary to Dake's hypothesis of resignation to stringent controls on the Fatalists' own behavior. It also seems less likely when demographic information is considered. Correlations between factor scores[3] for the Fatalist/Hierarch factor and demographic variables of age, education, income, and race suggest

that persons scoring high on this factor tend to be older, less educated, and have lower incomes than persons scoring low on this factor ($r = .11, -.28, -.17$, respectively, $p < .0001$). This factor score did not correlate significantly with race ($r = .02$, $p < .54$). These trends do not suggest a group of people who would perceive themselves empowered by having more rights than others.

The Individualist, as hypothesized in cultural theory, is said to support self-regulation of the individual as well as of markets. Unlike Hierarchists, Individualists are said to have concerns about social deviance only if it disrupts the stability of market relationships or limits freedom. Our data show persons who score high (vs. low) on the Individualist factor tend to be in favor of capital punishment (perhaps the Individualist believes that a crime deserving capital punishment would lessen "his/her freedom to bid and bargain in self-regulated networks") (Dake, 1992, p. 29). Other loadings in this second factor clearly indicate the importance of personal freedom to persons high on the Individualist factor (e.g., "In a fair system, people with more ability should earn more" and "Government has no right to regulate people's personal risk-taking activities"). Persons high on this factor tend to watch over their personal interests as suggested by the high loading on an item concerning trust in authority (i.e., "People in positions of authority tend to abuse their power").

The third factor corresponds well with the Egalitarian worldview. Egalitarians are hypothesized to advocate a more participatory approach to risk, politics, the economy, and the environment. This factor loaded highly with items calling for more equality of resources (e.g., "If people in this country were treated equally, we would have fewer problems" and "What this world needs is a more equal distribution of wealth"). This factor also supports Dake's (1992)

hypothesis that the Egalitarian views authority with distrust (i.e., "People in positions of authority tend to abuse their power").

The factor loadings in the present study are consistent with previous hypotheses and findings. They are also stable across multiple rotations. Factor scale reliabilities were computed using coefficient alpha for standardized variables (Cronbach, 1951) and these were, in order of the factors: .60, .42, and .50.[4] One item loaded over .40 on two factors, and all items reached the criterion loading for a factor (one item loaded .39 and was included). All three factors were retained in further analyses.

Characterization of Worldviews

To discover the relationships between these worldview factors and variables from other domains, correlations were computed between the three factors and questions relating to nuclear support, high technology and environmental concerns, perceived health risks, desire for control, political orientation, personality, and demographic variables (see tables 2–6). The items in each grouping are presented in an order that corresponds to their correlations with the Egalitarian factor.[5]

Nuclear support. The data support Dake's (1991, 1992) hypotheses that the Fatalistic and Hierarchical views are strongly associated with less concern about technological dangers. More specifically, the correlations in Table 2 indicate that persons who scored higher on this Fatalist/Hierarch factor were more likely to be supportive of nuclear energy (e.g., "In order to avoid importing energy from other countries to meet our future electricity needs, America should rely more heavily on nuclear power").

The Individualist also tends to be pro-nuclear energy. The Individualist factor scores showed significant correlations with all but one of the nuclear support items. These results are consistent with the hypothesized views (Dake, 1991) of the Individualist (i.e., the Individualist would support nuclear power if it was perceived to increase economic good through unfettered market mechanisms). The Egalitarian view, as hypothesized, correlates significantly with a lack of support for nuclear power, in contrast to the other worldviews. A person scoring high on this factor is most likely to disagree with the pro-nuclear statements in Table 2.

Technology and environmental concerns. We calculated correlations between the three worldview factor scores and items concerning technology and the environment (see Table 3). As predicted (Dake, 1991), this data confirms the hypothesis that the Egalitarian factor will be strongly related to concerns about technology and the environment while persons high on the Fatalist/Hierarch and the Individualist factors will show far less concern about these same issues. The Egalitarian factor correlates negatively with trust in government decisions (e.g., "Our government and industry can be trusted with making proper decisions to manage the risks from technology") while the Fatalist/Hierarch factor correlates strongly in a positive direction with this same item. The Individualist factor score, while it does not correlate significantly with trust in government decisions (the Individualist is hypothesized to believe in self-regulation and few stratified rules), does have strong positive correlations with items concerning support for high technology in general and government energy choices in particular (e.g., "A high technology society is important for improving our health and social well being" and "We need to pull together and support the energy choices our government has made").

Insert Table 3 about here

The Egalitarian factor scores correlated highly in a positive direction with environmental concerns (e.g., "Technological development is destroying nature"). We would have expected the Individualist factor score to correlate negatively with these same items because Individualists are presumed to believe that nature is robust and that free market mechanisms will allow plenty for all. However, perhaps some Individualists, who tend not to trust government decisions, believe that the current practices around technological development are destroying nature, so that the Individualist factor scores do not correlate in any significant way with items regarding environment concern.

Perception of health risks. In addition to being more concerned about technology in general and nuclear power in particular, Egalitarians are hypothesized to be more critical of society and more concerned about risk across a wide variety of issues. This hypothesis is supported (see Table 4) as the Egalitarian factor scores correlate strongly in a positive direction with almost all the perceived risk items. The correlations were particularly high for perceived risks from nuclear power plants and nuclear waste. Persons who scored higher on the Egalitarian factor were more likely to have higher perceptions of health risks to the American public from these various hazards. The Egalitarian's hypothesized view of the world as fragile is supported as it was in Dake's (1991) empirical study. Persons high on the Fatalist/Hierarch or Individualist factors, on the other hand, tended to perceive slightly lower health risks to the American public as a whole

with more negative than positive correlations with the various risk items. Interestingly, there are only four significant positive correlations between the Fatalist/Hierarch factor score and perceived health risks, all of which are relatively known risks (i.e., medical X-rays, commercial air travel, storms and floods, and blood transfusions). While the Egalitarian factor scores also correlate significantly with two of these risks (i.e., medical X-rays and commercial air travel), the Individualist factor scores do not correlate significantly with any of these risks. In addition, unlike the other worldviews, persons scoring high on the Fatalist/Hierarch complex tended to answer negatively ($r = .12$, $p < .0001$) to a question regarding personal risk-taking (i.e., "Do you voluntarily participate in any activity that others consider a risk to your health or safety?" , scored as yes (1)/no (2)). These results suggest that persons high on the Fatalist/Hierarch factor may have a different cognitive structuring of risks compared to other groups. The results are also consistent with earlier findings (Dake, 1991) that those who feel our society should take risks with technology tend themselves to be cautious and to seek stability, not change.

Insert Table 4 about here

Desire for public control. Worldviews also correlate with items pertaining to desire for control (see Table 5). While the item concerning feelings of little control over personal health risks loaded highly on both the Fatalist/Hierarch and Egalitarian factors (loadings of .43, and .36, respectively; see Table 1), persons high on these factors do not share the same desire for increased control with regard to nuclear power. Egalitarian factor scores had the highest

correlations with each question about desire for control over the management of nuclear power plants. The Egalitarian worldview is hypothesized to favor more equality in terms of wealth, race, gender, authority, etc. This hypothesis is supported by the finding that persons scoring high (vs. low) on the Egalitarian factor endorse items such as "People living near a nuclear power plant should have the authority to close the plant if they think it is not being run properly."

Insert Table 5 about here

Persons scoring high (vs. low) on the Fatalist/Hierarch factor are more willing to give up control. This may be due to the belief in compliance to authority and experts (e.g., Hierarchists), or it may be due to a wish not to have control in the case of nuclear power and to be willing to give control to the experts about a variety of issues (again, the "why bother?" mentality of Fatalists). An alternate explanation is that persons high on the Fatalist/Hierarch factor simply do not perceive nuclear power plants as a threat to their personal health. They tended to rate the health risks of nuclear power lower than persons high on the Egalitarian factor. (The percentage of persons in the upper quartile of each worldview group rating nuclear power as a high health risk was as follows: Fatalist/Hierarch, 35.1%, Individualist, 28.7%, Egalitarian, 45.8%). Whatever the reason, persons high (vs. low) on the Fatalist/Hierarch factor were less likely to desire more control over nuclear issues compared to persons high (vs. low) on the Egalitarian factor, who were more likely to desire more control.

We expected persons high on the Individualist factor to desire more control in general

because they are hypothesized to support self-regulation in its various forms. The data did not support this hypothesis. Individualist factor scores correlated positively with two items concerning desire for public and local control, but also correlated positively with an item that suggests a belief that there is enough control already (i.e., "The process of licensing nuclear power plants provides adequate opportunity for the public to have their concerns considered").

Political orientation. The worldview factor scores showed a systematic relation with political orientation. Respondents were asked "Where would you place yourself on the following political scale? Very liberal (1), liberal (2), middle of the road (3), conservative (4), or very conservative (5)?" Persons scoring high on the Individualist factor tended toward conservatism ($r = .17$, $p < .0001$). The correlation was $r = .08$ for the Fatalist/Hierarch factor scores ($p < .01$); persons high on the Egalitarian factor tended toward liberalism ($r = -.18$, $p < .0001$). These results support Dake's (1991) findings that Egalitarians tended to be liberal and Hierarchists and Individualists were more conservative. However, his data indicated that Hierarchists were more highly associated than Individualists with conservatism. Fatalists were not included in Dake's analysis.

Affect. The worldviews also varied in terms of the number of affect-laden images provided. Persons with higher scores on the Fatalist/Hierarchical scale were likely to give fewer images. It may be that these individuals have less concern about nuclear power issues because they either trust the experts to make the right decisions or have given up their desire for control. Because they tend to allow others to make these decisions, and because individuals have only limited processing capacity and abilities, it may be that persons high on this factor put less cognitive capacity toward these issues, pay less attention to coding images about nuclear power and,

therefore, have a tendency to produce fewer images. Note that it is also possible that persons scoring high on this factor provided fewer images due to a difference in education level from persons scoring low on this factor. Specifically, as a person's score on this factor becomes higher, they tended to be less educated ($r = -.28$, $p < .0001$). However, persons scoring high on the Egalitarian factor also tended to be less educated than persons who score low ($r = -.14$, $p < .0001$), but the Egalitarian factor did not correlate significantly with number of images, thus this alternate hypothesis appears unlikely.

As the analysis of the number of images by worldview suggests, there is a relation between affect and worldview. It is hypothesized (Jenkins-Smith, 1993) that worldviews cognitively filter information that individuals receive about a place and ultimately influence the content of an individual's imagery as well as its affective evaluation. Data supporting this view is presented in Figure 1 for those persons who scored highly (i.e., the upper quartile) on each worldview factor.[6] The frequency of very positive and very negative responses was related to the person's worldview. In other words, a person high on the Fatalist/Hierarch factor was more likely than a person scoring high on the Egalitarian factor to give a positive affective rating while a person scoring high on the Egalitarian factor was more likely to give a negative affective rating.

Insert Figure 1 about here

Affect, Worldview, and Nuclear Support

Cultural theory holds that actors do not respond directly to situations but respond to them

through mediating orientations (Eysenck, p. 790, cited in Dake, 1991). A worldview then, is assumed to act as a cognitive and/or emotional filter on information influencing how we perceive and act toward risky situations. Our data supports this hypothesis. An individual high on the Fatalist/Hierarchical measure is more likely to support nuclear power, whereas an individual high on the Egalitarian measure is likely to oppose it.

If affect and worldviews both orient an individual's risk perception, a regression analysis should find that each significantly and independently predicts nuclear support. A series of hierarchical, nonstepwise, regression analyses were performed that provided support for this hypothesis.

The first model was of the form:

Average nuclear support = (Average affect rating across all images + Number of images)

The second model was of the form:

Average nuclear support = Fatalist/Hierarch + Individualist + Egalitarian factor scores

The third model was of the form:

Average nuclear support = (Average affect rating across all images + Number of images) + (Fatalist/Hierarch + Individualist + Egalitarian factor scores)

As stated previously, average nuclear support was an index based on averaging the responses to the five items in Table 2. This index had a reliability of .84. The top row of Table 6 indicates that the affect and worldview variables were individually correlated with the dependent variable of nuclear support. The correlation between affect and nuclear support was particularly high (r = .50).

Insert Table 6 about here

Model 1. Average affect and number of images alone had a large effect size ($R = .50$) when predicting nuclear support with the overall model significance at $p < .0001$. The average affect parameter was significant ($p < .0001$) as was the number of images ($p < .02$).[7,8]

Model 2. Worldviews alone also had a large effect size when predicting nuclear support ($R = .38$) with the overall model significance at $p < .0001$. All three worldview parameters were significant at the .0001 level.

The robustness of the worldview parameters was tested by forcing age, sex, education, income, and race into the model before allowing worldviews to enter. Again, all three worldviews were significant predictors and their standardized coefficients were virtually unchanged by inclusion of the various demographic factors in the model.

Model 3. While worldviews and average affect separately provided significant explanatory power for the question posed about nuclear power, how well did they together predict the answers to this same question? As shown previously, affect alone predicted nuclear support quite well ($R = .50$), as did worldviews alone ($R = .38$). The third model, which combines affect and worldview, did even better ($R = .55$) with the overall model significance at $p < .0001$. Each variable is statistically significant ($p < .0001$), after taking into account all other independent variables in the model, with the exception of the number of images ($p < .16$).

To test our hypothesis that affect and worldviews each contributed independently to the

prediction of nuclear support, tests of the change in R-squared (i.e., the change in proportion of variance explained) were performed. The results supported our initial hypothesis and indicated that affect provided significant explanatory power over and above worldviews just as worldviews provide significant explanatory power over and above affect. The respective F's were $F(2,1339) = 150.0$ and $F(3,1339) = 36.8$.

In the Model 3 regression analysis, the affective measure has a higher standardized regression coefficient (.41) than any of the worldview measures. However, due to unreliability of the worldview factors, we cannot conclude that affect is a better predictor of nuclear support.[9] This issue should be re-examined once the worldview factors have been developed further to improve their reliability.

Predicting support for nuclear power. Scores were computed for each individual from the full regression model in which both affect and worldviews were predictors. These predicted scores were then divided into four equal groups. Those who scored lowest were expected to show little support for nuclear power while those who scored highest were expected to be most likely to support nuclear power. A comparison of these predicted scores (see Figure 2) with each individual's response to a single item from the nuclear support index (i.e., "If your community was faced with a potential shortage of electricity, do you...agree...that a new nuclear power plant should be built to supply that electricity?") reveals the strength of a prediction based on affect and worldviews. Among those who scored lowest in the regression model, only 15% agreed. Among those who scored highest in the model's predictions, 76% said they would agree to support nuclear power.[10]

Insert Figure 2 about here

Discussion

While individuals do examine the facts presented to them with regard to nuclear issues, their attitudes toward nuclear power appear to be oriented by means of both affect and cognition. Worldviews, as well as affect linked to images associated with nuclear power, appear to influence support for nuclear energy. As affect became more negative and as belief in an Egalitarian worldview increased, support for nuclear power decreased. As affect became more positive and belief in a Fatalist/Hierarch or Individualist worldview increased, support for nuclear power increased. These results support the previous worldview findings by Dake and Jenkins-Smith. The Jenkins-Smith proposal that worldview and affect are related is supported as well. A person who scored high on the Egalitarian factor was more likely to have negative affect toward nuclear power images while a person scoring high on the Fatalist/Hierarchical factor was more likely to have positive affect.

Worldviews are measures of a person's attitudes toward political, economic, and social relations. What is important to one type of person (e.g., individuality to an Individualist) may not be important to another (e.g., individuality to a Fatalist/Hierarch). On the other hand, people holding different worldviews may find the same goal important, but have different views on whether its current state needs to be monitored or regulated or what its priority is in relation to other important goals. For example, Individualists may believe that the free market mechanism

will ensure proper use of our environmental resources, while Egalitarians may believe that nature is fragile and must be protected by strict regulations.

Understanding these patterns of beliefs is critical to assessing the technical impact of a new technology and its myriad of social impacts. What is important, why it is important, and what should be done are all questions that will be answered differently by persons holding different worldviews. A better understanding of who is impacted by a new technology and their worldviews may improve our chances of coming to a solution that works for most people.

Worldviews interact with perceptions of health risks, attitudes toward technology and the environment, personality characteristics, and various demographic variables. While the present data cannot answer the question of which came first, the chicken or the egg, we propose that worldviews begin to develop early through general life experiences. Our attitudes toward risk, as suggested by earlier research (Dake, 1991, 1992; Jenkins-Smith, 1993) develop within and seemed to be oriented by the social and cultural milieu within which we live. It may be that worldviews provide a kind of starting point or anchor for a risk attitude that is adjusted as a person experiences information or events specific to a particular technology.

Affect, on the other hand, can be viewed as constructed or interpreted through cognitive mediation (e.g., Lazarus, 1974), or reactive in a Darwinian sense and influential on the cognitive process itself (e.g., Zajonc, 1980). Notwithstanding the controversy over which comes first, cognition or emotion, it is clear that affective processes are fundamental to our thinking about nuclear power. If "virtually all cognitions have some affective qualities" (Murphy & Zajonc, 1993, p. 724), nuclear issues, in particular, seem to possess strong affective qualities. The data

from the present study suggest that affect alone can be used as a powerful predictor of support for nuclear power.

Affect toward images associated with nuclear power likely develops as a result of exposure to specific information about radiation and nuclear technologies. However, the present data suggest that is not a complete story. Affect associated with images of nuclear power was systematically related to a person's worldviews. How we feel about a risk seems to be determined in part by how management of that risk is set within the power structures of industry and government and how that type of management pattern relates to the individual's view of how the world should be organized.

The Jenkins-Smith model is able to account for some of the present findings including worldviews' influence on affect. While it is possible that the reverse causal relation is true (i.e., affect toward nuclear energy influences worldview), this seems unlikely because it would create a situation whereby an individual's worldview is constantly bombarded by affect toward various situations in life. Maintaining beliefs over time would be difficult if this were the case. It is not at all clear, however, whether the Jenkins-Smith model can account for the significant, independent, predictive power of affect above and beyond worldviews, because it assumes a cognitive mediation of affect through image content and worldviews (i.e., the argument that cognition precedes affect, for example, Lazarus, 1974).

In conclusion, affective reactions and worldviews appear to play similar roles as orienting mechanisms, helping people navigate in a complex, uncertain, and sometimes dangerous world. To the extent that our judgments and actions are influenced by such "nontechnical" factors as

affect and worldviews, we can appreciate why communication of technical information about risk often has little effect on public attitudes toward hazards such as nuclear power plants or nuclear waste repositories. Our attitudes toward nuclear power are part of "who we are." We cannot easily change these attitudes without changing some parts of our social worldviews and our emotional makeup.

We suspect that the judgments and decisions of technical experts, too, are "oriented" to a certain degree by their worldviews and their affective reactions. For example, Slovic et al. (in press) observed that toxicologists' evaluations of chemical risks were associated with their worldviews. Further research with both experts and laypeople should help clarify this issue.

References

Alhakami, A., & Slovic, P. (1994). A psychological study of the inverse relationship between perceived risk and perceived benefit. Risk Analysis, 14(6), 1085-1096.

Bem, S.L. (1974). The measurement of psychological androgyny. Journal of Consulting and Clinical Psychology, 42, 155–162.

Cronbach, L.J. (1951). Coefficient alpha and the internal structure of tests. Psychometrika, 16, 297–334.

Dake, K. (1991). Orienting dispositions in the perception of risk: An analysis of contemporary worldviews and cultural biases. Journal of Cross-Cultural Psychology, 22, (1), 61–82.

Dake, K. (1992). Myths of nature: Culture and the social construction of risk (or environmental hazards as collective representations of risk. To appear in G. Dvetkovich & T.C. Earle (Eds.), Journal of Social Issues.

Englander, T., Farago, K., Slovic, P., & Fischhoff, B. (1986). A comparative analysis of risk perception in Hungary and the United States. Social Behaviour: An International Journal of Applied Social Psychology, 1, 55-66.

Gregory, R., & Mendelsohn, R. (1993). Perceived risk, dread, and benefits. *Risk Analysis,* **13,** 259-264.

Jenkins-Smith, H.C. (1993). Nuclear imagery and regional stigma: Testing hypotheses of image acquisition and valuation regarding Nevada. Technical report, University of New Mexico, Institute for Public Policy.

Johnson, E.J., & Tversky, A. (1983). Affect, generalization, and the perception of risk. Journal of

Personality and Social Psychology, 45, 20-31.

Kleinhesselink, R.R., & Rosa, E.A. (1991). Cognitive representations of risk perceptions: A comparison of Japan and the United States. Journal of Cross-Cultural Psychology, 22, 11-28.

Lazarus, R.S. (1974). Cognitive and coping processes in emotion. In B. Weiner (Ed.), Cognitive views of human motivation. New York: Academic Press.

Mars, J. (1982). Cheats at work: An anthropology of workplace crime. London: Allen & Unwin.

Mullet, E., Duquesnoy, C., Raiff, P., Fahrasmane, R., & Namur, E. (1993). The evaluative factor of risk perception. Journal of Applied Social Psychology, 23, (19), 1594–1605.

Murphy, S.T., & Zajonc, R.B. (1993). Affect, cognition, and awareness: Affective priming with optimal and suboptimal stimulus exposures. Journal of Personality and Social Psychology, 64, (5), 723–739.

Namur, E., & Sornay, C. (1988). La perception des risques sociaux (Perception of societal risks). Villeneuve d'Ascq: Université Charles-de-Gaulle.

Slovic, P. (1987). Perception of risk. Science, 236, 280–285.

Slovic, P., Fischhoff, B., & Lichtenstein, S. (1979). Rating the risks. Environment, 21, (3), 14–20, 36–39.

Slovic, P., Fischhoff, B., & Lichtenstein, S. (1980). Facts and fears: Understanding perceived risk. In R. Schwing & W.A. Alberts, Jr. (Eds.), Societal risk assessment: How safe is safe enough? (pp. 181-214). New York: Plenum.

Slovic, P., Fischhoff, B., & Lichtenstein, S. (1984). Behavioral decision theory perspectives on risk and safety. Acta Psychologica, 56, 183-203.

Slovic, P., Flynn, J.H., & Layman, M. (1991). Perceived risk, trust, and the politics of nuclear waste. Science, 254, 1603–1607.

Slovic, P., Layman, M., Kraus, N., Flynn, J., Chalmers, J., & Gesell, G. (1991). Perceived risk, stigma, and potential economic impacts of a high-level nuclear waste repository in Nevada. Risk Analysis, 11, (4), 683–696.

Slovic, P., Malmfors, T., Krewski, D., Mertz, C.K., Neil, N., & Bartlett, S. (In press). Intuitive Toxicology II: Expert and lay judgments of chemical risks in Canada. Risk Analysis.

Smith, K.R. (1988). Perception of risks associated with nuclear power. Energy Environment Monitor, 4, 61–70.

Szalay, L.B., & Deese, J. (1978). Subjective meaning and culture: An assessment through word associations. Hillsdale, NJ: Lawrence Erlbaum.

Teigen, K.H., Brun, W., & Slovic, P. (1988). Societal risks as seen by a Norwegian public. Journal of Behavioral Decision Making, 1, 111-130.

U.S. Department of Commerce, Bureau of the Census. (1992). United States Census data: Adult population. Census of 1990 population: General population characteristics. Washington, DC: U.S. Government Printing Office.

Zajonc, R.B. (1980). Feeling and thinking: Preferences need no inferences. American Psychologist, 35, 151–175.

Author Note

This study was supported by grants to Decision Research from the Alfred P. Sloan Foundation and from the National Science Foundation (grant no. SBR–9422754). The article is based on the first author's Master's thesis. The survey items were designed in collaboration with Karl Dake, James Flynn, C.K. Mertz, Robin Gregory, Don MacGregor, Marc Poumadere, and Claire Mays. C.K. Mertz provided valuable assistance with analysis of the data. Lew Goldberg provided valuable statistical advice. We wish to thank Debbie Frisch, Lew Goldberg, Myron Rothbart, and an anonymous reviewer for insightful comments on an earlier version of this paper.

Correspondence concerning this article should be addressed to Ellen Peters, at the Psychology Department, 1227 University of Oregon, Eugene, Oregon 97403. Electronic mail may be sent via Internet to empeters.oregon.uoregon.edu.

Footnotes

[1] Dread is highly correlated with perceptions of risk and the desire for risk reduction. Though it is a potentially important component of affective evaluations of technology, research on this aspect of dread has not been pursued (for one exception—see Gregory & Mendelsohn, 1993).

[2] A breakdown of the individual ratings showed roughly similar distributions. The ratings are shown here as their distributions across very positive/positive, neutral, and negative/very negative, respectively: the 1460 first image ratings (47.8%, 12.0%, 40.3%), the 1216 second image ratings (48.6%, 11.5%, 39.9%), and the 861 third image ratings (42.9%, 13.4%, 43.8%).

[3] Factor scores were computed for each respondent by factor. For each factor, an individual's scores on each of the variables are multiplied by the factor score coefficients for those variables, and the products are summed across the variables to yield a factor score.

[4] These alpha coefficients are not necessarily low, given that only four to seven attitude items load on any one factor. Future studies can increase reliability through the addition of more items relevant to each of these worldview attitudes. The Spearman-Brown formula indicates that increasing the number of items that distinguish the Egalitarians from 4 to 12, for example, would increase reliability from .50 to .75.

[5] All of these correlations (Tables 2–6) are attenuated due to unreliability of the factors and the attitude item questions. Corrected correlations would increase between 29% (if the other attitude items here are perfectly reliable) and 116% (if the other attitude items have a reliability of .50).

For example, correction of an attenuated correlation of $\underline{r} = .30$ would raise the value to between $\underline{r} = .39$ and $\underline{r} = .65$.

[6] Individual respondents may be included in all, some, or none of these upper quartiles. Of the 1512 total respondents, 49.5% scored in the upper quartile of none of these factors, 2.6% scored in the upper quartile of all three factors, 12.9% scored highly on two factors, 13.4% scored highly on the Fatalist/Hierarch factor only, 11.0% on the Individualist factor only, and 10.6% on the Egalitarian factor only.

[7] Because the image that comes to mind first may be the most powerful, it is possible that using the mean affect score dilutes these results. However, a separate regression model using only the first image rating predicted the nuclear support index somewhat less well ($\underline{R} = .47$).

[8] It is possible that, because no more than three images were elicited from any respondent, these results may have been biased for those respondents who wanted to provide more than three images. In a more recent unpublished study with college students, however, we collected up to six images. A comparison of the same regression model in the present study using three images suggests there was little biasing. Multiple correlations using three and six images were $\underline{R} = .41$ and $\underline{R} = .45$, respectively.

[9] The reliability of the affect measure is .72 as calculated by the alpha coefficient.

[10] Figure 2, based on both affect and worldviews, shows a strong predictive relationship. Using affect alone as a predictor, the relationship would be only slightly less strong (Quartile 1 would predict 13% agreement and Quartile 4 would predict 69% agreement). If the three worldviews

were combined to predict support, without affect as a predictor, the relationship would still be strong (25.7% agreement for Quartile 1 and 64.5% agreement for Quartile 4).

Table 1. Rotated Factor Structure

Item	Fatalist/ hierarch	Individualist	Egalitarian
122. It's no use worrying about public affairs; I can't do anything about them anyway	.68		
55. When there is a really serious health problem, then public health officials will take care of it. Until they alert me about a specific problem, I don't really have to worry	.63		
64. Decisions about health risks should be left to the experts	.57		
123. We have gone too far in pushing equal rights in this country	.52		−.32
120. When the risk is very small, it is OK for society to impose that risk on individuals without their consent	.48		−.36
63. I have very little control over risks to my health	.43		.36
125. The police should have the right to listen to private phone calls to investigate a crime	.41		
109. I am in favor of capital punishment		.67	
111. In a fair system people with more ability should earn more		.59	
124. Continued economic growth is necessary to improve our quality of life		.44	
112. Government has no right to regulate people's personal risk-taking activities such as smoking, mountain climbing, hand gliding, etc.		.43	
121. What this world needs is a more equal distribution of wealth			.68
113. If people in this country were treated equally, we would have fewer problems			.64
110. People in positions of authority tend to abuse their power		.44	.50
126. Those in power often withhold information about things that are harmful to us			.39
Proportion of variance explained	15.9%	9.5%	11.7%
Coefficient alpha	.60	.42	.50

Note. Loadings below .30 are deleted from the table. Sample size for this analysis was 1386.

Table 2. Correlations Between Worldview Factor Scores and Items Pertaining to Nuclear Support

Item		Fatalist/ hierarch	Individualist	Egalitarian
5.	If your community was faced with a potential shortage of electricity, do you strongly agree, agree, disagree, or strongly disagree that a new nuclear power plant should be built to supply that electricity?	.16*	.15*	–.24*
104.	Please indicate how acceptable (nuclear power) is to you for meeting the nation's future energy needs	.13*	.16*	–.24*
68.	In order to avoid importing energy from other countries to meet our future electricity needs, America should rely more heavily on nuclear power	.18*	.13*	–.21*
77.	The nuclear power industry says that it is now possible to build a new generation of nuclear power plants that will be safer than existing plants. Assuming the nuclear power industry is correct, I would support such a new generation of nuclear plants to supply the country's future electricity needs.	.13*	.16*	–.20*
65.	In light of health concerns about acid rain, damage to the ozone layer, and climate change associated with the burning of coal and oil, America should rely more heavily on nuclear power to meet its future electricity needs	.19*	.09	–.17*
Nuclear support index (average of 5 items) Reliability = .83		.20*	.17*	–.28*

* $p < .0001$
$N = 1332$

Table 3. Correlations Between Worldview Factor Scores and Items Pertaining to Technology and the Environment

Item	Fatalist/ hierarch	Individualist	Egalitarian
Technology			
119. Our government and industry can be trusted with making the proper decisions to manage the risks from technology	.33**	.05	–.22**
118. Our technologies might impose risks on future generations, but I believe future generations will be able to take care of themselves	.24**	.14**	–.10*
114. We need to pull together and support the energy choices our government has made	.18**	.18**	–.01
108. A high technology society is important for improving our health and well being	–.05	.32**	.02
Environmental concerns			
117. Technological development is destroying nature	.00	–.05	.31**
59. The greenhouse effect is a serious problem which could lead to harmful changes in the environment and in people's health	–.18**	–.02	.26**
47. The land, air, and water around us are, in general, more contaminated now than ever before	–.12**	–.03	.20**
115. Continued economic growth can only lead to pollution and depletion of natural resources	.21**	–.02	.16**

* $p < .001$
** $p < .0001$
$N = 1342$

Table 4. Correlations Between Worldview Factor Scores and Items Pertaining to Perceived Health Risks

Item		Fatalist/ hierarch	Individualist	Egalitarian
7.	Nuclear power plants	–.03	–.13**	.27**
11.	Nuclear waste	–.10*	–.08	.24**
30.	Food irradiation (to preserve food)	.06	–.04	.22**
20.	Chemical pollution in the environment	–.08	–.07	.20**
25.	Use of genetically engineered bacteria in agriculture	.05	–.08	.19**
27.	Depletion of the ozone layer	–.06	–.12**	.18**
21.	Pesticides in food	–.02	–.10*	.18**
29.	Climate change (global warming/greenhouse effect)	–.03	–.08	.18**
18.	Radon in the home	.02	–.03	.16**
32.	Stress	–.11**	–.01	.14**
17.	Coal/oil burning power plants	–.05	–.10*	.13**
19.	Medical X-rays	.09*	–.08	.12**
28.	Outdoor air quality	–.05	–.03	.12**
15.	Street drugs (heroin, cocaine, etc.)	.05	.01	.12**
9.	High voltage power lines	–.02	–.12**	.11**
23.	Bacteria in food	.04	–.06	.11**
33.	Video display terminals	.06	–.06	.11**
13.	AIDS	–.06	.00	.11**
35.	Commercial air travel	.13**	–.06	.10**
34.	Storms and floods	.09*	–.06	.08
36.	Blood transfusions	.14**	.04	.08
22.	Cigarette smoking	–.08	–.02	.06
26.	Motor vehicle accidents	.04	.00	.06
31.	Suntanning	–.07	–.08	.06
24.	Drinking alcoholic beverages	–.02	–.02	.04

Note. These items asked people to rate the risk to the U.S. public as a whole as little or no risk, slight risk, moderate risk, or high risk. These responses were coded 1 – 4 respectively, for purposes of the correlational analysis. N = 1179.

* $p < .001$

** $p < .0001$

Table 5. Correlations Between Worldview Factor Scores and Items Pertaining to Desire for Public Control

Item		Fatalist/ hierarch	Individualist	Egalitarian
87.	People living near a nuclear power plant should have the authority to close the plant if they think it is not being run properly	−.01	−.03	.30**
83.	Nuclear power plants should not be built and operated unless the people in surrounding areas voluntarily agree to accept them	−.05	.08	.27**
75.	The public should vote to decide on issues such as nuclear power	−.10*	.06	.24**
89.	The process of licensing nuclear power plants provides adequate opportunity for the public to have their concerns considered	.16**	.11**	−.17**

* $p < .001$
** $p < .0001$
$N = 1335$

Table 6. Correlations Between Affect Variables, Worldviews, and Support for Nuclear Power

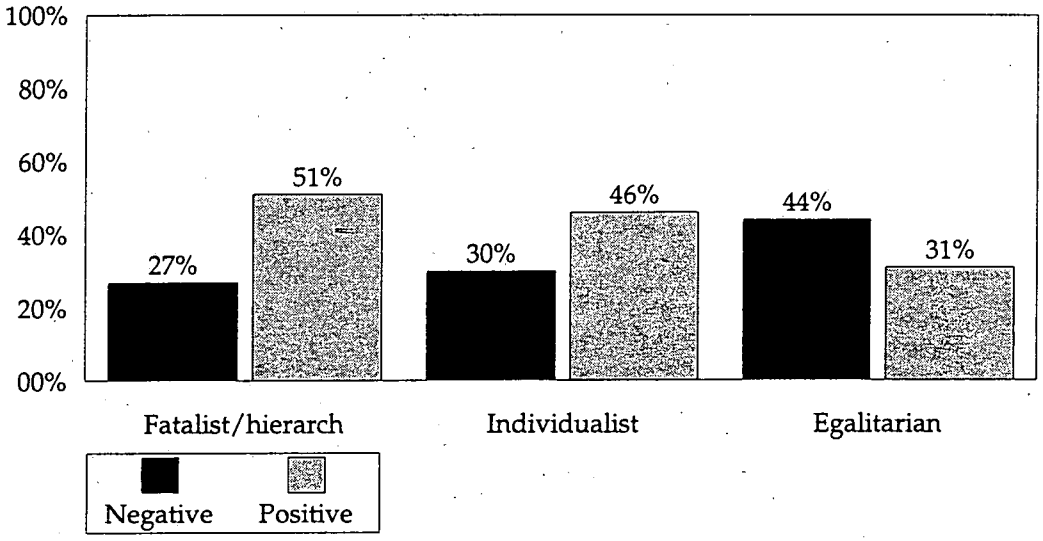
	Nuclear support index	Average affect	Number of images	Fatalist/ hierarch	Individualist	Egalitarian
Nuclear support index	1.00	.50**	−.09*	.20**	.17**	−.28**
Average affect		1.00	−.06	.17**	.16**	−.21**
Number of images			1.00	−.15**	−.02	.06
Fatalist/Hierarch				1.00	.00	.00
Individualist					1.00	.00
Egalitarian						1.00

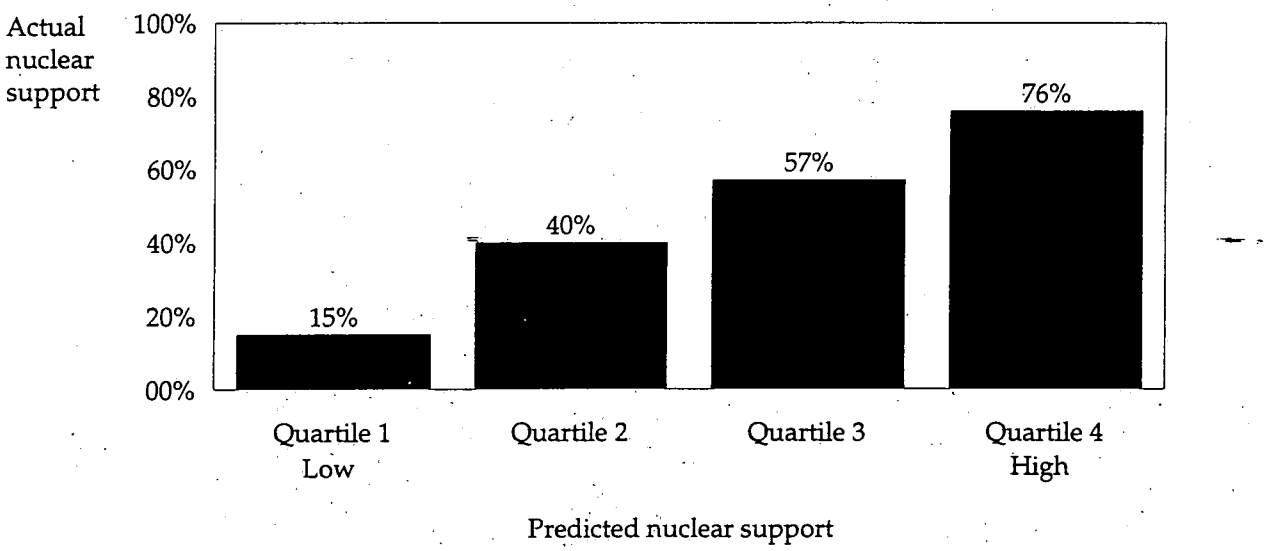
Note. $N \geq 1295$ for all correlations. Any $r \geq .06$ is significant at $p < .05$.
* $p < .001$
** $p < .0001$

Figure Captions

Figure 1. Distribution of the average affect rating for nuclear power by the upper quartile of each worldview. The affect measure was averaged over the images produced to the stimulus, "nuclear power," by each individual, and then was translated back to the original scale of very negative to very positive. On a scale from 1–5, in this graph, negative = 1 to 2.5, neutral (not shown) = 2.67 to 3.33, and positive = 3.5 to 5.0. The worldview measure is based on those individuals who scored in the upper quartile of each worldview factor (i.e., presumably hold the strongest beliefs about that chosen way of looking at the world).

Figure 2. Relationship between predictions of nuclear support based on affect and worldviews and actual nuclear support. Actual nuclear support was based on the percent agreeing that, if their community was faced with a potential shortage of electricity, a new nuclear power plant should be built to supply that electricity.


100%
80%
60%
40%
20%
00%
27%
51%
30%
46%
44%
31%
Fatalist/hierarch
Individualist
Egalitarian
Negative
Positive


Actual nuclear support
100%
80%
60%
40%
20%
00%
15%
40%
57%
76%
Quartile 1 Low
Quartile 2
Quartile 3
Quartile 4 High
Predicted nuclear support