Bringing Identity Theory into Environmental Sociology*

JAN E. STETS

University of California, Riverside

CHRIS F. BIGA

Washington State University

In an effort to explain pro-environmental behavior, environmental sociologists often study environmental attitudes. While much of this work is atheoretical, the focus on attitudes suggests that researchers are implicitly drawing upon attitude theory in psychology. The present research brings sociological theory to environmental sociology by drawing on identity theory to understand environmentally responsive behavior. We develop an environment identity model of environmental behavior that includes not only the meanings of the environment identity, but also the prominence and salience of the environment identity and commitment to the environment identity. We examine the identity process as it relates to behavior, though not to the exclusion of examining the effects of environmental attitudes. The findings reveal that individual agency is important in influencing environmentally responsive behavior, but this agency is largely through identity processes, rather than attitude processes. This provides an important theoretical and empirical advance over earlier work in environmental sociology.

Environmental sociologists have been interested in understanding and predicting environmentally responsive behavior (Buttel 1987; Stern 2000). Usually, the approach has been to examine the correspondence between attitudes toward the environment and environmental behavior (Tarrant and Cordell 1997). Unfortunately, only a modest relationship has been reported between environmental attitudes and behavior (Buttel 1987; Dunlap and Van Liere 1978; Scott and Willits 1994; Van Liere and Dunlap 1981), although some attitude scales do better than others in predicting environmental behavior (Tarrant and Cordell 1997). While the generalization that attitudes do not predict behavior is an inaccurate summary of the available evidence in attitude research, it is true that certain conditions may need to be met to achieve a strong relationship between attitudes and behavior.[1]

One criticism that has been leveled against research that uses attitudes as a key component in influencing social behavior is that it omits an explicit reference to the self and one's identity (Biddle et al. 1985; Biddle, Bank, and Slavings 1987; Burke 1991a; Chang, Piliavin, and Callero 1988; Granberg and Holmberg 1990; Sparks and Shepherd 1992). An important assumption underlying research on the self and identity is that the self is a primary motivator of behavior (Stets and Burke 2002). In order to predict how one behaves, we need to examine the identities that individuals claim and the corresponding meanings of these identities. Indeed, many studies have identified the identity-behavior link (Burke 1989a, 1989b; Burke and Hoelter 1988;

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[1]For example, multiple acts (rather than a single act) are needed to measure a particular behavior, and attitudes and behavior need to be measured at the same level of generality (Eagly and Chaiken 1993).

Burke and Reitzes 1981; Burke, Stets, and Pirog-Good 1988; Stets 1997; Stets and Burke 1996; Stryker and Serpe 1982).

In this research, we bring to environmental sociology theory and research concerned with *identities*, in addition to research concerned with *attitudes*. Essentially, we test the predictive power of each in determining environmental behavior. Attitude theory (Ajzen and Fishbein 1980), upon which the study of the attitude-behavior relationship rests, and identity theory (Burke 1991b) share the idea that behavior is intentional or purposive. The level of analysis of each is different, however, with attitude theory more limiting than identity theory. Attitude theory, rooted in psychology, focuses on how individuals make choices or decisions regarding a specific object or situation. Identity theory, rooted in sociology, focuses not simply on individuals' choices but on how persons who are multifaceted and are embedded in the social structure guide those choices. Individuals have as many identities as there are social networks of relationships and roles to which they are linked (by virtue of their commitment to them) in the social structure (Stryker and Burke 2000). The many identities a person possesses are hierarchically organized into a prominence hierarchy (McCall and Simmons 1978) and a salience hierarchy (Stryker 1980), with more prominent and more salient identities guiding behavior to a greater extent than less prominent and salient identities. These identity hierarchies reflect the organizational principle of society being similarly arranged. Given the above, identity theory importantly links individuals to the larger social structure in ways that attitude theory neglects. Therefore, identity theory is a more general theory of behavior than attitude theory, and it has the potential of predicting a broader array of behaviors across situations, including environmental behavior.

THEORY

Attitude Theory

In attitude research, attitudes are an important cause of behavior. The attitude-behavior relationship is best conceptualized in the now classic *Theory of Reasoned Action* (Ajzen and Fishbein 1980; Fishbein and Ajzen 1975). In the reasoned-action model, the proximal cause of behavior is one's *intention* to engage in the behavior. Attitudes influence behavior by influencing one's intentions.[2] Persons are presumed to behave in a way that they intend; thus, there is an inherent "reasonableness" to the process. They intend to behave in ways that produce favorable outcomes and that meet the expectations of significant others.

Since the 1970s, environmental sociologists have been developing scales that measure one's attitude toward the environment in order to predict environmental behavior (Dunlap and Van Liere 1978; Stern et al. 1995; Weigel and Weigel 1978). While individuals endorse pro-environmental attitudes nationally and internationally (Dunlap 1991; Dunlap, Gallup, and Gallup 1993), empirical studies find a weak relationship between pro-environmental attitudes and environmentally responsive behavior (Dunlap and Van Liere 1978; Scott and Willits 1994; Van Liere and Dunlap 1981), and sometimes they fail to support the relationship at all (Gill, Crosby, and Taylor 1986; Oskamp et al. 1991). We maintain that the inconsistent findings about

[2]More precisely, subjective norms (persons' perceptions of significant others' preferences about whether they *should* engage in a behavior), together with attitudes, influence intentions to behave in a particular manner.

the relationship between attitudes and behavior in environmental sociology are partially due to the fact that attitudes and the intentions they produce are not sufficient to understand people's behavior. Indeed, this is an argument that has been leveled against the theory of reasoned action more generally (Eagly and Chaiken 1993).

One extension has been to include one's personal morality/values in the attitude-behavior model (Beck and Ajzen 1991; Eagly and Chaiken 1993; Gorsuch and Ortberg 1983). We include this component in our theoretical model. Essentially, values are seen as more central to the self, transcend objects and situations, and determine attitudes and behavior (Rokeach 1973). Environmental sociologists have incorporated one's morality/ values into environmental-behavior studies by relying on Shalom Schwartz's (1977) moral norm-activation theory of altruism. Here, altruistic behavior such as pro-environmental behavior emerges when altruists see that (1) the state of the environment has harmful consequences to others, and (2) it is their responsibility to take action to avert those harmful consequences (Guagnano, Stern, and Dietz 1995; Schultz and Zelezny 1999; Widegren 1998). Paul Stern and colleagues (1999) build on Schwartz's theory by developing a value-belief-norm theory of environmentalism. This theory links value theory with the moral norm-activation theory by maintaining that personal moral norms will be activated and guide action when individuals see that what they value is threatened. For example, if individuals highly value other species and they see that environmental conditions threaten other species, they will take action to avert that threat and protect those species. We use Stern and his colleagues' value measure in this study.

A second extension to the attitude-behavior model has been to include the self and one's identity (Eagly and Chaiken 1993). Peter Burke (1991a) points out that examining one's attitude toward an object (such as the environment) and one's behavior toward the object (as in being environmentally responsive or nonresponsive) misses a third component— one's attitude toward oneself. On the basis of balance theory, Burke argues that bringing the self into the attitude-behavior model reveals this third missing element. If one behaves positively toward a positively evaluated object (the environment), balance is achieved when we find that one also positively evaluates one's self. For example, if a person sees herself as good, then she will behave positively toward a good object (e.g., contribute money to protect the environment) or negatively toward a bad object (e.g., criticize a company that pollutes the environment). Evidence reveals that attitude measures that are self-referent in content (contain the personal pronouns of "I" or "me") are better predictors of behavior than those measures that do not have self-referent items (see the classic work of Tittle and Hill 1967; Schulman and Tittle 1968).

More generally, research shows that the self and one's identity importantly guide behavior (Burke and Reitzes 1981), and that these effects are independent of the effects of attitudes on behavior (Biddle et al. 1985; Biddle, Bank, and Slavings 1987; Chang, Piliavin, and Callero 1988; Granberg and Holmberg 1990; Sparks and Shepherd 1992). For example, Hong-Wen Chang and colleagues found that blood donors gave blood when the blood-donor identity became important to them. Further, they found that the more one donated blood, the more the blood-donor identity predicted giving blood, rather than one's attitude toward donating blood doing so. Even research that has examined the value-behavior relationship has found that when the self is explicitly implicated, it importantly guides action in a manner distinct from attitudes. For example, Bas Verplanken and Rob Holland (2002) found that environmental values that were *central to the self* (as opposed to being peripheral) led to environmentally friendly choices. They suggest that since central values have likely guided behavior in the past, these values manifest themselves in general habits that are enacted across various situations. For example, those who have environmental values that are central may

develop the habit of behaving in an environmentally friendly way, such as routinely recycling, saving on electricity, taking the bus, and so forth.

To date, environmental sociologists have not systematically examined the role of identity processes in the production of environmental behavior.[3] In this research, we examine the *environment identity*, or one's self-meanings in relation to the environment (Weigert 1997).[4] In keeping with identity theory, we also examine how prominent, salient, and committed one is to the environment identity (McCall and Simmons 1978; Stryker 1980). In addition, since individuals have multiple identities, we examine how another identity independently affects environmental behavior. We do this by investigating not only the environment identity, but also one's gender identity, as in being masculine and feminine (Stets and Burke 2000a).

Previous research in environmental sociology has examined the role of gender as one interacts with the environment, and while there is a tendency for women to be more concerned about the environment than men, the results are modest (Davidson and Freudenburg 1996; Mohai 1997). Gender can be understood both at the macro level, as a position in the social structure in which a category of people is expected to behave in a particular manner (Ridgeway 1993), and at the micro level, as an identity (a set of self-meanings) that persons apply to themselves given their gender identification (Stets and Burke 1996, 2000a). The distinction between the two is that while one may label herself female, she may see herself, not in a stereotypically female manner (e.g., expressive and submissive), but in a somewhat stereotypical male fashion (e.g., instrumental and dominant). In this way, social structural expectations attached to gender influence behavior as well as self-perceptions along the feminine-masculine continuum (one's gender identity). Since gender at the macro and micro levels is simultaneously produced and maintained in situations (Stets and Burke 1996), we expect both to influence environmental behavior.

We examine identity processes, but not to the exclusion of attitudes. We incorporate into our analysis the most frequently employed measure of pro-environmental attitudes, the revised version of the New Ecological Paradigm (NEP) scale (Dunlap et al. 2000). This scale operationalizes a set of beliefs, a worldview about the nature and function of the biosphere and how it is affected by human action.[5] Some have argued that the NEP measures *general* beliefs toward the environment, rather than *specific* beliefs (Stern et al. 1995). Consequently, we add to our analysis another important attitude measure: the Awareness of Consequences (AC) scale (Stern and Dietz 1994; Stern, Dietz, and Kalof 1993). The AC scale reflects the underlying assumption that people construct attitudes about objects (such as the environment) on the basis of how the objects affect what they *value*. In the AC scale, persons' reports that particular environmental conditions have adverse consequences are rooted in what they value, thereby instigating environmental action.[6] To understand the role of identity processes in environmental sociology, we turn to identity theory.

Identity Theory

The Identity Model. An identity is a set of meanings attached to the self that serves as a standard or reference that guides behavior in situations. When an identity is activated in a situation, a feedback loop is established (Burke 2003; Burke and Cast 1997;

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[3]When we refer to "environmental behavior," we refer to friendly or supportive behavior toward the environment, and not unfriendly and destructive behavior directed at the environment.
[4]Thomashow (1995) labels this an "ecological identity."
[5]See Dunlap and Jones (2002) for a review of environmental attitude scales.
[6]While the NEP scale addresses the cognitive aspect of an attitude, the AC scale includes both the cognitive and affective dimensions of an attitude (Dunlap and Jones 2002; Tarrant and Cordell 1997).

Tsushima and Burke 1999). Figure 1 shows a feedback loop for each identity: Identity 1, Identity 2, and Identity 3. Each loop has several components. The first is the *standard*, or set of self-meanings tied to an identity. The second is the reflected appraisals component, which serves as the basis for *perceptual input*. Here, individuals derive a view of themselves in the environment based on meaningful feedback from others. A third component, the *comparator*, compares the perceptual input with the standard and registers the degree of discrepancy between the two. This discrepancy is expressed in emotional arousal, with a greater discrepancy generating more intense negative emotion. Finally, *output* to the environment (behavior) follows; like emotion, it results from the comparison of perceptual input and the identity standard.

The identity system works by modifying outputs (behavior) to the social situation in attempts to control the perceptual input to match the internal standard. In this sense, the identity system can be thought of as having the goal of matching environmental inputs to the internal standard. When this occurs, there is *self-verification* (Burke and Stets 1999). When a *lack of self-verification* exists, behavior is altered to counteract the situational disturbances and restore perceptions to match the identity
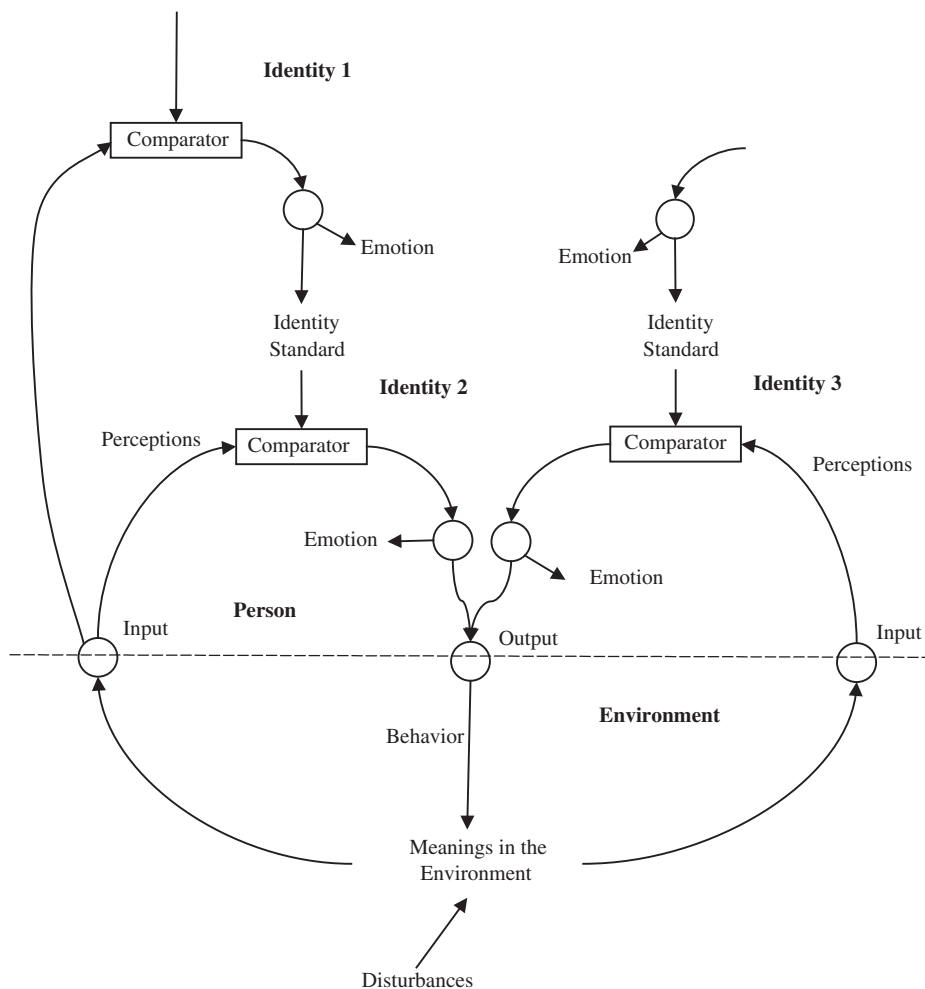

Figure 1. Identity model.

standard. Thus, for example, if one views herself as strong and sees that others agree, she will continue to act as she has (strongly). But, if she sees that others appear to view her as weak, she will increase the "strength" of her performance in an effort to restore perceptions of herself as strong.

Given our interest in multiple identities, Figure 1 models multiple identities and hierarchically arranges them. Identity 2 and Identity 3 are lower in the hierarchy and influence behavior more directly than Identity 1, at the higher, more abstract level (Tsushima and Burke 1999). At the higher level, control of perceptions is maintained by adjusting standards at the lower levels. Thus, in the hierarchical structure, actors control input meanings to match identity-standard meanings at all levels simultaneously. In general, identities operating at the different levels must be aligned in their meanings (Burke 2003). If identity meanings are in opposition to each other—for example, if one has to be both powerful and powerless—it puts the actor in the impossible position of verifying multiple incompatible identities simultaneously. One resolution is to change one or the other identity-standard meanings toward congruence.

In the current study, we are interested in one's gender identity, one's environment identity, and environmentally responsive behavior.[7] The two identities can be conceptualized as Identity 2 and Identity 3 in Figure 1. We see these two identities as potentially overlapping in meaning along the dimensions of care and concern. A gender identity that is more feminine should be related to claiming an environment identity that is ecocentric (interdependent with and protective of the environment), because each shares the meaning of being other-directed—that is, being sensitive to and supportive of things beyond the self (Eagly 1987; Spence and Helmreich 1978).[8]

Role and Person Identities. Typically, identity theorists have examined individuals' role identities—that is, the meanings individuals attach to themselves as an occupant of a role in the social structure, such as being male/female, student, friend, or worker (Stets and Burke 2002). Individuals activate appropriate self-meanings—an identity standard—while in that role. In this study, gender identity is a role identity (Stets 1995; Stets and Burke 1996). It is the meanings individuals attribute to themselves in the role of male or female (Stets and Burke 2000a). Individuals regulate the meaning of their gender identity according to the identity model outlined above.

We conceptualize the environment identity as a person identity.[9] A person identity includes self-meanings that are tied to an individual, rather than being attached to a particular role or position in the social structure (Stets 1995; Stets and Burke 1994). They may be seen as characteristics or attributes that individuals see as representing who they are, how they feel, and what they value. Given this more general reference to the self, these person identities operate across various roles and situations. Importantly, in the same way that we regulate and act to maintain the meanings of our *role* identities, we also regulate and act to maintain the meanings of our *person* identities. Like role identities, perceptions of one's person identity in a situation are compared to

[7]Aside from gender identity, other identities may influence environmental behavior, such as one's political identity, occupational identity, and family identity. We chose to study gender identity because much attention has been given to gender in environmental sociology research (see Davidson and Freudenberg's 1996 review), and there is a well-established measure of gender identity in identity theory (see Stets and Burke's 2000a review).

[8]There are limits to understanding the relationship among multiple identities using cross-sectional survey research as we do in this study. Self-reports at one point in time do not allow an assessment of the moment-to-moment, complex patterns of influence between and among identities within any one situation and across situations. Nevertheless, survey research does give us insight into what may be taking place.

[9]While identity theorists have discussed the person identity, to date they have not seriously incorporated it into their research (Stets and Burke 2000b). We do that in this research.

one's meaning of the person identity held in the standard (Stets and Burke 2002). Any discrepancy between the two will result in a lack of self-verification, and the system will respond to resolve the discrepancy.

Identity Prominence, Identity Salience, and Identity Commitment. Since a person takes on multiple roles in society (for example, a woman may also be a friend and a worker), and thus has multiple role identities (one for each of the role positions they occupy in society), the same will be true for person identities: individuals will have multiple person identities. Multiple identities have been conceptualized as hierarchically arranged in terms of their *prominence* (McCall and Simmons 1978) and *salience* (Stryker 1980; Stryker and Serpe 1982). We will examine the impact of each in this research.[10]

The prominence hierarchy reflects one's ideal self, or what is desired or seen as central to the self-concept. The prominence of an identity depends upon the degree to which one (1) gets support from others for an identity, (2) is committed to the identity, and (3) receives intrinsic and extrinsic rewards from the identity (McCall and Simmons 1978). The more prominent the identity, the more likely it will be activated and enacted in a situation.[11]

The salience of an identity is the probability of enacting—or readiness to play out—a line of action that is consistent in meaning with the identity that is being claimed in the situation. Identity salience is also aligned in a hierarchy in which some identities are more salient than others. While the prominence hierarchy addresses what is *important* to the individual, the salience hierarchy focuses on how an individual will likely *behave* in a situation. What influences the salience of an identity is the degree of *commitment* one has to the identity. Commitment has two dimensions: a *quantitative* and *qualitative* aspect (Stryker and Serpe 1982, 1994). In the former, commitment reflects the number of persons to whom one is tied through the identity. The greater the number of persons to whom one is connected through having a particular identity, the greater is the commitment to that identity. In terms of the qualitative dimension, the stronger or deeper the ties to others based on a particular identity, the higher the commitment to the identity. Empirical evidence reveals a relationship between identity commitment, identity salience, and behavior consistent with the identity (Callero 1985; Stryker and Serpe 1982).

Environment Identity Model and Hypotheses. We bring the above components of the identity process into a theoretical model of environmental behavior. Figure 2 presents the model. We are particularly interested in how the meanings of the environment identity and the prominence, salience, and commitment to the environment identity, together with their environmental attitudes, are related to environmental behavior. Additionally, since earlier environmental-attitude studies have addressed two external, "nonattitudinal" factors believed to influence environmental behavior, gender and political orientation (Tarrant and Cordell 1997), we include these in our model.[12] We begin with the most distal causes of environmental behavior in our model: gender and gender identity.

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[10]We agree with the theoretical argument that identity prominence and identity salience should remain distinct concepts given their different meanings (Stryker and Serpe 1994). This view differs from that of earlier work, which merged the two concepts (Gecas and Seff 1990; Rosenberg 1979; Simon 1992; Thoits 1991).

[11]Stryker and Serpe (1994) use the term "psychological centrality" rather than "prominence" to refer to identities that are central to the self, but the terms are conceptually equivalent.

[12]While previous results have been somewhat conflicting as to the effects of gender and political orientation, they have explained some of the variance in both environmental attitudes and environmental behavior.
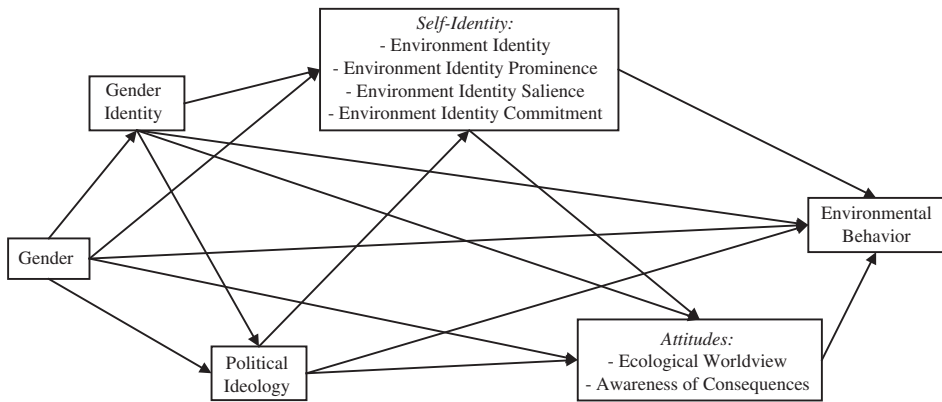
Figure 2. Environment identity model.

Gender and Gender Identity. Environmental studies have shown that women tend to express higher levels of concern for the environment than men, although the findings are somewhat mixed (Davidson and Freudenburg 1996). The explanation that has received the most consistent support as to why women express higher levels of environmental concern is that women *care more* about the health and safety of their families and communities than do men (Davidson and Freudenburg 1996). Caring is believed to be an orientation that women adopt more than do men (Cancian and Oliker 2000; Gilligan 1982). Indeed, the roles that women occupy in society, such as domestic worker and primary caretaker, foster a concern for the welfare of other people (Cancian and Oliker 2000; Eagly 1987).[13] This orientation would encourage pro-environment attitudes and pro-environmental behavior.

The mixed support for gender and environmental outcomes may be due to the fact that one's environmental attitudes and behavior may have less to do with being female or male (being a member of a social category) and more to do with the meanings that people attribute to themselves as feminine or masculine (their gender identity). While masculinity is *agency-focused*, emphasizing competition and independence, femininity is *communion-oriented*, highlighting sensitivity and a concern for others (Eagly 1987; Spence and Helmreich 1978). Identity theory assumes that people choose behaviors that are similar in meaning to the meanings of their identities (Burke and Reitzes 1981). Therefore, we would expect environmentally responsive behavior to be linked more to femininity than to masculinity.

Prior research has shown that *gender identity*, in addition to gender, is a good predictor of behavior. For example, studies on conversational behavior have found that the inconsistency as to whether men use more dominant and assertive speech patterns than women (James and Clarke 1993; James and Drakich 1993) could be resolved by examining gender identity, rather than gender (Drass 1986; Spencer and Drass 1989). Masculinity predicted more dominant and assertive speech patterns, rather than being male doing so. In the present research, while females may report pro-environmental attitudes and behavior, femininity may produce similar effects— and perhaps more reliably, since self-meanings are the guide, rather than one's membership in a category. In the latter case, identification with category membership may vary, as may the behaviors that follow from it.

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[13]Whether a care orientation is rooted in nature or nurture is not directly relevant to the current research.

In this research, a high score on gender identity reflects femininity, and a low score reflects masculinity. Given the above, we offer the following hypotheses:

HYPOTHESIS 1: *Females will be more likely than males to report (a) pro-environmental attitudes and (b) pro-environmental behavior.*

HYPOTHESIS 2: *Gender identity will be positively related to (a) pro-environmental attitudes and (b) pro-environmental behavior.*

The Environment Identity and its Prominence, Salience, and Commitment. In our model, we conceptualize the environment identity as the meanings that one attributes to the self as they relate to the environment. We conceptualize these self-meanings as ranging from nonexploitative and supportive to exploitative and nonsupportive of the environment. One's self-perception is along the dimension of an environmentally-friendly/environmentally-unfriendly continuum. In this study, a high score on the environment-identity measure represents environmentally-friendly self-meanings. Once one's environment identity is formed, environmental attitudes will develop and environmental behavior will follow.

As depicted in the model, the environment identity, identity prominence, identity salience, and commitment to the environment identity will influence environmental behavior directly, but also indirectly through an ecological worldview and awareness of consequences.[14] We conceptualize the environment identity and its prominence, salience, and commitment at the same temporal level.[15] We are less concerned with whether identity prominence guides the salience of the environment identity and commitment to that identity, or, alternatively, whether the salience of the environment identity and commitment to that identity influences the importance of that identity for the self. We are more concerned with how the environment identity, identity prominence, identity salience, and identity commitment influence environmental attitudes and behavior.

Since individuals likely develop their gender identity before their environment identity, we have placed gender identity prior to the environment identity.[16] Since a more feminine gender identity is linked to a concern for others, this other-directedness should influence self-meanings of a pro-environment identity and an environment identity that is prominent and salient and to which the individual is committed. Similarly, since being female implies an ethic of care, females should be more likely than males to report a pro-environment identity as well as a prominent, salient, and committed environment identity.

Therefore, our next set of hypotheses includes the following:

HYPOTHESIS 3: *Females will be more likely than males to report (a) the environment identity, (b) a prominent environment identity, (c) a salient environment identity, and (d) a committed environment identity.*

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[14]Importantly, the identity components refer to knowledge about the self, while the attitudes refer to knowledge about the world without reference to the self. Self-knowledge is considered more rudimentary than knowledge of the world.

[15]Some have argued for a causal ordering between identity prominence and identity salience with an important identity influencing that identity being played out in a situation (McCall and Simmons 1978; Nuttbrock and Freudiger 1991). Others have argued that there is no causal ordering, but simply an association between the two (Stryker and Serpe 1994). In the latter case, playing out an identity would simply *reflect* the importance of that identity.

[16]Given time limitations on the survey, we were not able to measure prominence, salience, and commitment to one's gender identity. Future research will want to examine this.

HYPOTHESIS 4: *Gender identity will be positively linked to (a) the environment identity, (b) the prominence of the environment identity, (c) the salience of the environment identity, and (d) commitment to the environment identity.*

HYPOTHESIS 5: *The environment identity will be positively associated with (a) pro-environmental attitudes and (b) pro-environmental behavior.*

HYPOTHESIS 6: *The prominence of the environment identity will be positively related to (a) pro-environmental attitudes and (b) pro-environmental behavior.*

HYPOTHESIS 7: *The salience of the environment identity will be positively associated with (a) pro-environmental attitudes and (b) pro-environmental behavior.*

HYPOTHESIS 8: *Commitment to the environment identity will be positively related to (a) pro-environmental attitudes and (b) pro-environmental behavior.*

Environmental Attitudes. We do not assume a causal ordering of the environmental attitudes; rather, we see them as related to each other.[17] Based on the most recent analysis as to the relationship between environmental attitudes and behavior in environmental sociology, we expect that an ecological worldview and the awareness of the consequences of environmental conditions will positively influence environmentally responsive behavior. Michael Tarrant and Ken Cordell (1997) found that these two measures positively predicted pro-environmental behavior. Thus, our final hypotheses are:

HYPOTHESIS 9: *An ecological worldview will be positively associated with pro-environmental behavior.*

HYPOTHESIS 10: *Awareness of the consequences of environmental conditions will be positively associated with pro-environmental behavior.*

In estimating the model in Figure 2, we assume that there are correlated errors not only between the ecological worldview and awareness of consequences scale, but also among the environment-identity measures (environment identity, prominence, salience, and commitment to the environment identity). For simplicity, we have not diagrammed these correlated errors, but they are estimated. This is a block recursive structural model, with variables to the left of the model influencing factors to the right. To estimate the model, we use the maximum likelihood procedure of Amos, which incorporates information from all of the equations in the model at once (Arbuckle 1999). This is a full-information method, rather than a limited-information method in which the model's parameters are estimated one at a time. Assuming that the model is properly specified, the full-information method provides estimators with small mean-square errors.

METHOD

Sample

A survey on the environment was announced to students in several upper- and lower-level sociology classes at a large northwestern university in 2001. Students were told

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[17]Some have argued that the ecological worldview influences awareness of consequences because the former measures general beliefs and the latter reflects more specific beliefs (Stern 2000; Stern et al. 1995; Stern et al. 1999). While we are not convinced of this causal ordering, we do assume that the measures are similar and, thus, related: for example, persons who provide positive responses on one scale will respond positively on the other scale. We take this relationship into account by assuming that the errors between the two measures are correlated.

that their participation was voluntary, but that they would receive extra class credit for participating in the survey. The survey took approximately 20 minutes to complete. Question topics included their attitudes and behavior toward the environment, their environment identity (including its prominence and salience and their commitment to it), their gender identity, and background questions.

A total of 437 students completed the survey, for a response rate of 78 percent. Slightly more women (60 percent) than men (40 percent) responded to the survey. The average respondent was 20 years old (SD = 2.8), white (82 percent), somewhat wealthy (64 percent reported that their parents' income is greater than or equal to $50,000), and had never been married (89 percent). This demographic profile does not significantly depart from the average student at the university sampled.[18]

Measures

Dependent Measure: Environmental Behavior. The environmental-behavior measure was made up of seven items taken from the Cambridge Reports, Yankelovich et al., and Gallup on environmental behaviors (see Dunlap and Scarce 1991). In general, the items reflected the degree to which respondents take action to protect the environment.[19] The first five items asked respondents to answer "No" or "Yes" (coded 0/1) to the following questions:

1. Increased efforts by business and industry to improve environmental quality could lead to higher consumer prices. Would you be willing to pay higher consumer prices so that industry could better preserve and protect the environment?

In the past several years, have you:

2. Made any changes in your day-to-day behavior because of concerns about the environment?
3. Contributed money to an environmental, conservation, or wildlife preservation organization?
4. Boycotted a company's products because of its record on the environment? and
5. Volunteered for an environmental, conservation, or wildlife protection group?

The other two items asked respondents to indicate how much they strongly disagree to strongly agree (coded 1–4) with the following statements:

1. I would be willing to give up convenience products and services I now enjoy if it meant helping preserve our natural environment, and
2. I would be willing to spend a few hours a week of my own time helping to reduce the pollution problem.

The above items were factor analyzed. The findings revealed that the items formed a single factor with an eigenvalue greater than one only on the first factor. The items were standardized and summed, with a high score representing behavior that is

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[18]There is nothing in identity theory that indicates that the theoretical processes we outline in Figure 2 operate differently for other individuals or groups, such as older, less-educated persons. Thus, what we find in this sample should occur in other, different samples.

[19]While the behavioral measure includes some behavioral-intention items, there is evidence that behavioral intention is highly correlated with behavior (Eagly and Chaiken 1993).

environmentally responsive. The omega reliability (Heise and Bohrnstedt 1970) for this scale is .68.

Independent Measures: Environment Identity. The environment identity is the set of meanings attached to the self as the person interacts with the natural environment. As Andrew Weigert argues, the environment identity is an "experienced social under-standing of who we are in relation to, and how we interact with, the natural environ-ment" (Weigert 1997:159). To operationalize the environment identity, we turn to a distinction in the literature as to how individuals see themselves in relation to the environment. This distinction involves the worldviews of anthropocentrism and ecocentrism (Brown 1992; Thompson and Barton 1994).[20]

In anthropocentrism, humans are seen as intrinsically valuable, unique from all other species, and are shaped by their social and cultural environment. The biophy-sical environment is largely irrelevant to human action. The environment does not have intrinsic value; instead, it is a means to human ends. Thus, those holding an anthropocentric view would see themselves as independent and separate from the environment. In ecocentrism, while humans are valuable and unique, they are seen as one among many other species and objects (such as rivers and forests) that are of worth. When humans act, they must consider environmental forces that may impose constraints on human affairs. Essentially, those holding an ecocentric view would be concerned with the environment, define their relationship to it as interdependent, and be active and involved in the biophysical world.

Eleven bipolar statements comprised the environment identity measure. Respon-dents were asked to think about how they *view themselves* in relationship to the environment, identifying where they would place themselves between each bipolar statement referencing the natural environment. These included:

1. in competition with the natural environment . . . in cooperation with the nat-ural environment
2. detached from the natural environment . . . connected to the natural environ-ment
3. very concerned about the natural environment . . . indifferent about the natural environment
4. very protective of the natural environment . . . not at all protective of the natural environment
5. superior to the natural environment . . . inferior to the natural environment
6. very passionate towards the natural environment . . . not at all passionate towards the natural environment
7. not respectful of the natural environment . . . very respectful of the natural environment
8. independent from the natural environment . . . dependent on the natural environment
9. an advocate of the natural environment . . . disinterested in the natural environment
10. wanting to preserve the natural environment . . . wanting to utilize the natural environment
11. nostalgic thinking about the natural environment . . . emotionless thinking about the natural environment.

[20]An alternative distinction that is very similar in connotation is the human exemptionalism and new ecological paradigm (known as the HEP/NEP differentiation) (Buttel and Humphrey 2002).

Responses ranged from 1 to 5, where 1 reflected agreement with one bipolar statement, 5 reflected agreement with the other bipolar statement, and 3 put the respondent in between the two statements. In answering these questions, the focal point was the *person*, rather than a role or position that one holds in the social structure. In this way, our conceptualization of the environment identity as a person identity is reflected in how it is measured.

We point out that compared to how identities are usually measured, we do not have at least two criterion categories for the environment identity that would establish the characteristics/meanings that would discriminate between these categories. For example, for gender identity (discussed below), we have the criterion categories of being male or female from which to discriminate between masculinity and femininity. In the absence of criterion categories for the environment identity, we cannot use discriminant function analysis. Instead, we use factor analysis as an appropriate alternative. In factor analysis, we identify a cluster of meanings that appear on one factor, and this factor becomes the dimension of meaning for the environment identity.[21] The results of the factor analysis revealed that the items form a single factor with an eigenvalue greater than one only on the first factor. Five items were reverse coded, and then the items were standardized and summed, with a high score representing an "environmentally friendly" (albeit ecocentric) identity. The omega reliability for this scale is .91.

Prominence, Salience, and Commitment to the Environment Identity. When answering questions concerning the prominence, salience, and commitment to one's environment identity, respondents were to think about themselves in terms of "how you relate to, interact with, and use the natural environment." Prominence of the environment identity was measured by its importance. Response categories included "Not at All Important," "Somewhat Important," "Important," and "Very Important" (coded 1–4).

Salience of the environment identity was measured by asking respondents to identify how they would describe themselves to another when meeting for the first time (Stryker and Serpe 1994). Three situations were presented: (1) meeting a roommate for the first time; (2) meeting someone at a party for the first time; and (3) going on a date for the first time. Among a list of descriptors (worker, environmentalist, friend, consumer, and student), respondents indicated which they would tell the person first, which they would tell the person second, and so on in each of the three situations. Responses ranged from "Least Likely to Tell" to "Most Likely to Tell" (coded 1–5). For the environmental response, the responses were standardized and summed across the three situations, with a high score representing a more salient environment identity. The omega reliability for the salience measure is .86.

We measured both the quantitative/interactional/extensive and qualitative/affective/intensive dimensions of identity commitment (Stryker and Serpe 1982, 1994). For the quantitative dimension, two questions were asked (Stryker and Serpe 1994). Respondents were to indicate whether they had joined any organizations, and whether they had met any friends through activities related to their environment role. Responses were "No" or "Yes" (coded 0–1). For the qualitative dimension, two additional questions were asked (Stryker and Serpe 1994). Respondents were asked how important it is to them that their (1) friends and (2) parents view them as an environmentalist. Responses included "Not at All Important," "Somewhat Important," "Important," and "Very Important" (coded 1–4).

The items from both the interactional and affective dimensions were factor analyzed. The analysis showed a single factor with an eigenvalue greater than one only on the first factor. The items were standardized and summed, with a high score representing more commitment to the environment identity. The omega reliability for the commitment scale is .86.

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[21]Future research will want to establish criterion categories for the environment identity.

Environmental Attitudes: Ecological Worldview and Awareness of Consequences. The widely used and recently revised version of the NEP scale (Dunlap et al. 2000) is a 15-item scale that is concerned with individuals' beliefs toward the environment and humans' relationship to it. Examples of items include:

1. We are approaching the limit of the number of people the earth can support,
2. The balance of nature is strong enough to cope with the impacts of modern industrial nations, and
3. Humans are meant to rule over the rest of nature.

The response categories range from "Strongly Disagree" to "Strongly Agree" (coded 1–5).

While early research identified three dimensions to the NEP scale, more recent research reveals only a single dimension (see Dunlap et al. 2000 for a review). Given the inconsistency in the multidimensionality of this scale, we treated the items making up the NEP as representing a single underlying construct: an ecological worldview. The items were factor analyzed. The items formed a single factor with an eigenvalue greater than one only on the first factor. The items were reverse scored, standardized and summed, with a high score representing an ecological worldview. The alpha reliability for this scale is .79.

When we compared the mean responses across the NEP items in our population with those of Dunlap and colleagues' representative sample of Washington State residents (Dunlap et al. 2000), there was not a significant difference (t = 1.64, n.s.). However, there was a slight reduction in the variability of responses in our sample with a somewhat smaller standard deviation than the Washington residents (t = −2.21, p < .05). This latter finding may be due to the greater homogeneity of our population in comparison to the Washington residents.

The AC scale (Stern, Dietz, and Kalof 1993; Stern and Dietz 1994) is an alternative measure of environmental attitudes. Like the NEP, the AC scale measures beliefs on the environment, but people's responses on this scale presumably reflect an underlying value orientation that is threatened, and this threat then motivates individuals to act in an environmentally responsive manner. The nine-item scale is comprised of three components: an egoistic, social-altruistic, and biospheric value orientation. The response categories for all items in all components range from "Strongly Disagree" to "Strongly Agree" (coded 1–4).

The egoistic aspect involves people's concern to protect the environment based on self-interest. An individual favors protecting the environment only when the expected benefits *for the individual* outweigh the expected costs. The concern is with how environmental conditions affect the individual personally. Items that reflect this component include:

1. Protecting the environment will threaten jobs for people like me,
2. Laws protecting the environment limit my choices and personal freedom, and
3. A clean environment provides me with better opportunities for recreation.

The social-altruistic feature is concerned with aspects of the environment that are likely to harm others. Persons valuing this orientation may bear personal costs to safeguard the environment so that others are protected. This orientation is other-directed rather than self-directed. They include the statements:

1. We don't need to worry much about the environment because future generations will be better able to deal with these problems than we are,

2. The effects of pollution on public health are worse than we realize, and
3. Pollution generated here harms people all over the earth.

Finally, the biospheric component addresses the costs or benefits of aspects of the environment to other species and ecosystems and to the biosphere itself. Here, individuals go beyond humanity to other species and places that could be affected by environmental conditions. Items for this aspect include:

1. Claims suggesting that current levels of pollution are changing the earth's climate are exaggerated,
2. Over the next several decades, thousands of species will become extinct, and
3. The balance of nature is delicate and easily upset.

We created several different scales. First, we generated a scale from the nine items. We factor analyzed the items. The items formed a single factor with an eigenvalue greater than one only on the first factor. Four items were reverse coded, and then all the items were standardized and summed, with a high score representing values that support protecting the environment. The omega reliability for this scale is .77.

Second, we examined the three components of this scale in separate analyses. For this, we created three subscales to represent the egoistic, social-altruistic, and biospheric aspects. Because three items will always factor into one scale (Schuessler 1971), we examined the correlations for the items making up the three scales. All of the inter-item correlations for each subscale were significant. Each subscale was summed, with a higher score reflecting higher egoistic, social-altruistic, and biospheric values, respectively.

Gender Identity. We used the Burke-Tully (1977) method to measure gender identity. This is a method now used in many studies on gender identity (see Stets and Burke 2000a for a review). It involves identifying people's meanings of being male or female and then using these meanings as applied to the self to form a scale of gender identity. To operationalize gender identity, the method uses the meanings of the people in one's sample, rather than the meanings from another source, such as the researcher or another population (Burke and Tully 1977). Discriminant function analysis is used to select those characteristics/meanings that discriminate most clearly between being male and being female. The most highly discriminating characteristics are weighted by the discriminant function and then summed to form a gender-identity scale.

In this study, the meanings of being male and female were taken from the Personal Attributes Questionnaire (PAQ) (Spence and Helmreich 1978). This is one of the most widely employed sets of bipolar adjectives used to capture the meanings of maleness and femaleness in our society (Stets and Burke 2000a). The PAQ lists a series of attributes that are positively valued for both sexes but are more normative for either males or females to endorse. Respondents rate themselves on these bipolar attributes. Result from the discriminate function analysis (distinguishing males from females with respect to their self-meanings) reveal that five of the bipoloar items discriminate most clearly between being male and being female:

1. not at all aware of the feelings of others . . . very aware of the feelings of others,
2. never cries . . . cries very easily,
3. feels very superior . . . feels very inferior,

Table 1. Means and Standard Deviations for Variables ($N = 365$)

Variables	Means	Standard Deviation	Range
Gender	1.60	.49	1–2
Gender identity	1.60	.27	.72–2.21
Political ideology	4.26	1.21	1–7
Environmental identity	−.01	.66	−2.24–1.87
Environment identity prominence	2.67	.81	1–4
Environment identity salience	−.01	.89	−.87–2.46
Environment identity commitment	−.01	.76	−.98–2.02
Ecological worldview	−.01	.51	−1.58–1.35
Awareness of consequences	−.01	.53	−1.65–1.23
Environmental behavior	−.01	.54	−1.58–1.48

  4. not at all understanding of others ... very understanding of others, and
  5. very little need for security ... very strong need for security.

The items are weighted according to the discriminant function and summed, with a high score reflecting femininity and a low score reflecting masculinity.

Demographic Characteristics. *Gender* was coded 1 for males and 2 for females. *Political ideology* was measured using a seven-point scale ranging from extremely conservative to extremely liberal (coded 1–7).

RESULTS

Table 1 presents the means and standard deviations for each of the variables. Table 2 presents the correlations among the variables. Without other controls in the analysis, being female is positively related to a feminine gender identity and environmentally-friendly attitudes, but males report a more salient environment identity than do females. Femininity is positively associated with the AC scale, though not the ecological-worldview scale, and masculinity, rather than femininity, is associated with the salience of the environment identity.

   Table 2 reveals that the more ecocentric the environment identity, the more prominent and salient the environment identity and the more the person is committed to the environment identity. Additionally, the more ecocentric the environment identity, the more environmentally friendly are the environmental attitudes and behavior. Prominence, salience, and one's commitment to the environment identity are all positively correlated with each other. They are also all positively related to pro-environmental attitudes and behavior. In general, the results show that not only are environmental attitudes significantly related to environmentally responsive behavior, but one's environment identity, as well as its prominence and salience and one's commitment to it, are significantly related to such behavior as well.

   Table 3 shows the error correlations among the variables that we expected would be significantly related. The results show that factors that are related to the environment identity are also related to environment-identity prominence, salience, and commitment. Additionally, identity prominence, salience, and commitment are interrelated, indicating that variables that are associated with one identity measure are likely to be associated with the other identity measures. Finally, the errors for the two attitude scales are significantly correlated. In general, the findings support the correlation among the error terms, and these are taken into account in our estimation procedure.

Table 2. Correlations of Variables ($N = 365$)

Variables	1	2	3	4	5	6	7	8	9	10
1. Gender	1.00									
2. Gender identity	.54*	1.00								
3. Political ideology	.08	.08	1.00							
4. Environment identity	.05	.09	.21*	1.00						
5. Environment identity prominence	−.04	.01	.11*	.49*	1.00					
6. Environment identity salience	.19*	.14*	.04	.29*	.43*	1.00				
7. Environment identity commitment	.01	.06	.09	.48*	.51*	.40*	1.00			
8. Ecological worldview	.12*	.10	.31*	.54*	.33*	.17*	.27*	1.00		
9. Awareness of consequences	.12*	.18*	.24*	.48*	.35*	.17*	.32*	.61*	1.00	
10. Environmental behavior	.04	.06	.23*	.59*	.52*	.33*	.50*	.40*	.43*	1.00

*p < .05.

Table 4 shows the structural equation model estimates of the theoretical model outlined in Figure 2. While gender is related to gender identity, gender also influences the salience of the environment identity and holding an ecological worldview. While we expected women to report a more salient environment identity (Hypothesis 4c), the results reveal that the reverse is true ($\beta = -.16$, $p < .05$). While women have a more ecological worldview ($\beta = .10$, $p < .05$), they are not more likely to be aware of the consequences of environmental conditions. Thus, there is mixed support for Hypothesis 1a. Further, because women do not show more pro-environmental behavior than men, Hypothesis 1b is not supported. Overall, gender has no direct effect on environmental behavior, or any indirect effect on behavior is weak and applies to men through the salience of the environment identity.

Turning to gender identity, the more feminine one's gender identity, the greater the awareness of the consequences of environmental conditions ($\beta = .11$, $p < .05$), although more feminine people do not hold an ecological worldview. Therefore, there is also inconsistent support for Hypothesis 2a. Since greater awareness of the consequences of environmental conditions is related to pro-environmental behavior ($\beta = .13$, $p < .05$), more feminine individuals are more likely to enact environmentally responsive behaviors through concerns over environmental conditions. Thus, gender identity has an indirect effect on environmental behavior.

Table 3. Error Correlations Among Variables ($N = 365$)

Variables	1	2	3	4	5	6
1. Environment identity	1.00					
2. Environment identity prominence	.49*	1.00				
3. Environment identity salience	.30*	.43*	1.00			
4. Environment identity commitment	.47*	.51*	.41*	1.00		
5. Ecological worldview	–	–	–	–	1.00	
6. Awareness of consequences	–	–	–	–	.45*	1.00

*p < .05; – = not estimated.

Table 4. Standardized Estimates of Equations in Environment Identity Model ($N = 365$)

Independent Variables	Dependent Variables								
	Gender identity	Political ideology	Environment identity	Environment identity prominence	Environment identity salience	Environment identity commitment	Ecological worldview	Awareness of consequences	Environmental behavior
Gender	.54	0	0	0	−.16	0	.10	0	0
Gender identity		0	0	0	0	0	0	.11	0
Political ideology			.21	.12	0	0	.20	.14	.09
Environment identity							.45	.35	.31
Environment identity prominence							.10	.13	.19
Environment identity salience							0	0	.07[a]
Environment identity commitment							0	0	.17
Ecological worldview									0
Awareness of consequences									.13
R^2	.30	0	.05	0	.04	0	.34	.29	.47

[a] $p < .10$; nonzero coefficients $= p < .05$; zero coefficients $=$ n.s.

Moving forward in the theoretical model, the environment identity has the strongest significant effect, relative to the other effects, on environmental attitudes ($\beta = .45$, $p < .05$; $\beta = .35$, $p < .05$) (Hypothesis 5a) and behavior ($\beta = .31$, $p < .05$) (Hypothesis 5b). In this way, the environment identity has both a direct effect and an indirect effect (through environmental attitudes) on environmental behavior. In addition, the more prominent the environment identity is, the more likely it is that one will hold positive environmental attitudes ($\beta = .10$, $p < .05$; $\beta = .13$, $p < .05$) (Hypothesis 6a) and enact environmentally responsive behaviors ($\beta = .19$, $p < .05$) (Hypothesis 6b). Thus, the effect of the prominence of the environment identity on environmental behavior is both direct and indirect, through environmentally-friendly attitudes.

The salience of the environment identity has a tendency to be related to environmental behavior ($\beta = .07$, $p < .10$) (Hypothesis 7b). Commitment to the environment identity ($\beta = .17$, $p < .05$) is also associated with environmental behavior (Hypothesis 8c). However, neither identity salience nor identity commitment is related to environmental attitudes (Hypothesis 7a and Hypothesis 8a). We more closely examined the effect of commitment to the environment identity on environmental behavior by analyzing the separate effects of the quantitative/interactional/extensive dimension and qualitative/affective/intensive dimensions. We found that the extensiveness of the ties ($\beta = .17$, $p < .05$) was positively related to pro-environmental behavior, but that their intensiveness ($\beta = .04$, n.s.) was not.

With respect to the role of gender and gender identity on the environment identity and its dimensions, aside from the negative effect of gender on the salience of the environment identity, neither gender or gender identity are associated with the ecocentricity of the environment identity (Hypotheses 3a and 4a), the prominence of the identity (Hypotheses 3b and 4b), its salience (Hypotheses 3c and 4c), or commitment to the environment identity (Hypotheses 3d and 4d). Nor do they directly influence environmentally responsive behavior. Only gender identity has an effect—indirect—on environmental behavior.

We expected environmentally-friendly attitudes to be positively associated with pro-environmental behavior, but the relationship held only for the AC scale ($\beta = .13$, $p < .05$) (Hypothesis 10), not for holding an ecological worldview (Hypothesis 9). Since the awareness of consequences scale has three components (the egoistic, social-altruistic, and biospheric), we examined how the factors in our theoretical model were related to these aspects in separate analyses. Table 5 presents the results.

In Table 4, we found that having a more feminine identity was associated with being aware of the consequences of environmental conditions. The results in Table 5 reveal that

Table 5. Standardized Estimates of Equations Using Awareness of Consequences Components ($N = 365$)

Independent Variables	Dependent Variables		
	Egoistic	Social-Altruistic	Biospheric
Gender	0	0	0
Gender identity	0	.12	0
Political ideology	−.10	.11	.11
Environment identity	−.32	.16	.27
Environment identity prominence	0	0	0
Environment identity salience	.13	0	0
Environment identity commitment	0	0	0
R^2	.18	.13	.18

Nonzero coefficients = $p < .05$; zero coefficients = n.s.

femininity is only related to the social-altruistic component ($\beta = .12$, $p < .05$). Recall that this component is concerned with aspects of the environment that are likely to harm others. Further, recall that the gender-identity measure we used discriminates between being male and female on such items as the degree to which one is "aware of the feelings of others" and "understanding of others," with these items characterizing females (and thus femininity) more than males (and masculinity). Therefore, femininity and social altruism likely implicate similar meanings, such that identifying with femininity becomes associated with identifying with the social-altruistic value.

While the results in Table 4 revealed that a pro-environmental identity is positively related to the AC scale, the findings in Table 5 indicate that the effect of the environment identity is negative for the egoistic dimension ($\beta = -.32$, $p < .05$) and positive for the social-altruistic ($\beta = .16$, $p < .05$) and biospheric ($\beta = .27$, $p < .05$) features.[22] Persons who claim the environment identity are not individuals who subscribe to environmental attitudes that imply a self-interested orientation. Rather, they are people who are concerned about the environment for reasons that are other-oriented. Behaving in an environmentally irresponsible manner can hurt other humans and the biosphere more generally.

Finally, while the results in Table 4 showed that the salience of the environment identity is not related to the AC scale, the results in Table 5 reveal that the salience of the environment identity is associated with the egoistic component ($\beta = .13$, $p < .05$). Since our findings in Table 4 indicated that men have a more salient environment identity, this higher salience may increase their endorsement of the egoistic component.

In a subsequent analysis, we examined how each of the components above related to environmental behavior. We found that only the social-altruistic aspect was associated with environmental behavior ($\beta = .12$, $p < .05$). Thus, those who engage in environmentally responsive behavior do so because they are motivated by concerns that are not ego-oriented or global-oriented, but other-oriented.

DISCUSSION

The Findings

One might argue that there is a futile quest in environmental sociology to look for increasingly refined concepts and better measures of environmental attitudes and behaviors in order to establish a stronger link between what people favor and how they behave. Linda Derksen and John Gartrell (1993) label this quest "methodological individualism" because it ignores the effects that the social context has on behavior. While we agree that more studies are needed to examine the social context in which pro-environmental behavior occurs, we maintain that a more fundamental change is needed to account for environmental behavior. We argue that sociological theory needs to be brought into this research. By relying on identity theory and introducing one's environment identity—that is, the set of environmentally relevant self-meanings that one projects and sustains—we can better account, not only for environmental behavior, but also for the environmental attitudes one holds as a result of this identity.

Our results reveal that the environment identity and its prominence, commitment, and salience significantly influence pro-environmental behavior. Controlling for one's

[22]As a reminder, the items in each of the three components are summed, with a higher score reflecting a higher value on that component. In creating the full scale, some items had to be reverse coded, such as those in the egoistic component, so that a higher score meant a higher value on being aware of the consequences of environmental conditions.

environment identity, the ecological worldview attitude has no effect on environmental behavior. Additionally, the effect of the awareness of consequences attitude is not as strong as the environment identity. Without the environment identity, identity prominence, identity salience, and identity commitment, an ecological worldview is significantly associated with pro-environmental behavior ($\beta = .19$, $p < .05$) and, to a greater extent, the awareness of consequences attitude measure ($\beta = .30$, $p < .05$). However, when the environment identity is added to the analysis, its effect is very strong ($\beta = .48$, $p < .05$), while the effect of the awareness of consequences measure is reduced ($\beta = .18$, $p < .05$) and the effect of the ecological worldview is markedly reduced and no longer significant ($\beta = .01$, n.s.). With the inclusion of the environment identity, the amount of variance explained in the model is significantly increased ($R^2 = .23$ to $R^2 = .38$; $F = 88.23$, df (1), $p < .05$). Further, when identity prominence, identity salience, and commitment to the environment identity are added, the ecological worldview remains nonsignificant (see Table 4) and the awareness of consequences attitude measure is further reduced ($\beta = .13$, $p < .05$). When all of the environment-identity measures are included in the model, the amount of explained variance again significantly increases ($R^2 = .38$ to $R^2 = .49$; $F = 20.00$, df (3), $p < .05$).

Holding an ecological worldview is not associated with pro-environmental behavior, perhaps because it is a set of beliefs toward the environment that are too global and therefore not related to specific behaviors (Stern et al. 1995). Alternatively, the evaluative dimension of an attitude may be missing from this measure (Tarrant and Cordell 1997), and this may be important in predicting behavior. Indeed, it is included in the awareness of consequences measure, given the underlying emphasis on values. The value dimension that significantly influences environmental behavior is social altruism, or safeguarding the environment to protect the welfare of other humans.[23] In general, our findings reveal that the relationship between pro-environmental attitudes and behavior is, in part, spurious due to the influence of the environment identity. One's identity serves as an important motivator for behavior, because people act in ways to verify their identity meanings. This is a human process that environmental sociologists need to incorporate into their research.

In addressing actors' multiple identities in this research, we expected gender identity and the environment identity to have overlapping meanings along the dimension of care and other-directedness, with the result that femininity would be positively associated with a pro-environment identity. We were surprised to find that gender identity is not associated with the environment identity or its prominence, salience, or commitment. Further, gender identity only influences pro-environmental behavior through the awareness of consequences of environmental conditions. More feminine persons hold social-altruistic values, which are, in turn, associated with pro-environmental behavior. We can gain some insight into gender identity in environmental sociology research through an analysis of gender.

In this study, females were more likely to hold an ecological worldview than males, but this pro-environmental attitude was not related to pro-environmental behavior. However, males had higher environmental-identity salience than females, and a salient environment identity was only weakly associated with environmentally responsive behavior. In general, when examining gender as a *category* in society, the results are somewhat contradictory, and there is no strong link between one's membership in a

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[23]We do not know whether a different attitude measure than the NEP or even the AC scales would be better associated with our measure of environmental behavior, or, alternatively, whether a different environmental-behavior measure would be related to these attitude measures. However, this focuses on measurement issues and not theory, the latter of which we see as critical to advancing environmental research.

gender group and environmental behavior. When studying gender as an *identity*, the findings reveal only an indirect connection to environmental behavior, through one of the attitude measures. The above leads us to conclude that however gender is defined—either as a category or as a set of meanings individuals attribute to themselves—it does not significantly add to our understanding of environmentally responsive behavior, particularly when we consider a more important factor: that is, the set of meanings individuals attribute to themselves in terms of their relationship to their environment—their environment identity.

While the environment identity and identity prominence are positively associated with pro-environmental attitudes, identity salience and commitment to the environment identity are not related to environmental attitudes. Previous research has argued that identity prominence assumes a level of *self-awareness* that identity salience does not (Stryker and Serpe 1994). People are aware of more important identities compared to less important ones, but they may not be aware of how salient an identity is in their hierarchy, although their behavior would inform them of its ranking in the hierarchy. If persons are self-aware of identities that are more important, this should lead them to endorse particular attitudes toward objects that correspond to identity self-meanings. Indeed, as earlier mentioned, Burke (1991a) argues that one's attitude and behavior toward an object must include one's attitude toward oneself. The environment identity and the prominence of the environment identity may be better proxies of one's attitude toward the self than the salience of the environment identity or commitment to that identity, the latter of which may be relatively unconscious.

Toward a Sociological Model of Behavior

Given the theory and findings of this research, Figure 3 represents a general model of behavior that not only incorporates psychologists' customary concern with attitudes,
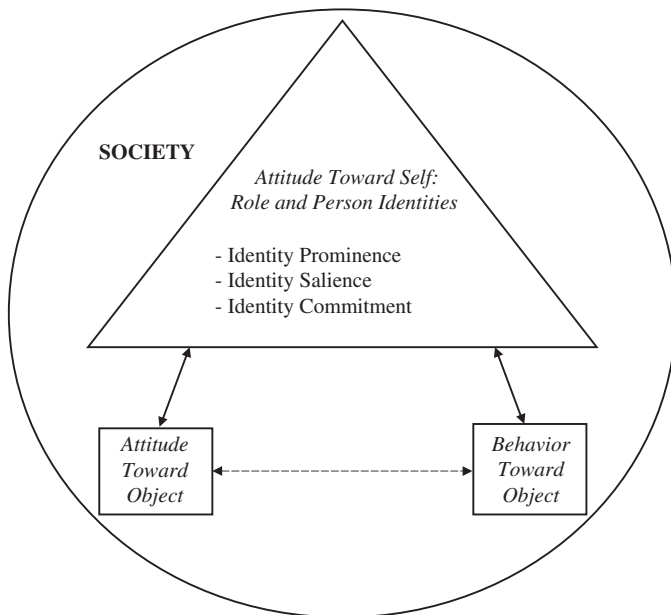

Figure 3. Self, attitudes, and behavior in a social context.

but also includes sociologists' concern with identities. Following Burke (1991a), studying one's attitude and behavior toward an object must include a third component: one's attitude toward the self. By knowing how one sees herself, we are in a better position to predict behavior, compared to using only attitudes that are not self-referential. Thus, the traditional attitude-behavior model (lower portion of Figure 3) needs to be broadened to incorporate identities (top portion of Figure 3).

In comparison to attitude theory, identity theory brings social structure into the study of behavior by taking into account the fact that actors have multiple identities, one for each of the many positions they hold in a complex society. Because the identities associated with each position that one holds in the social structure cannot be activated at the same time without conflict, multiple identities are hierarchically arranged, and those identities higher in the hierarchy—representing identities that are more prominent and salient—are activated more often than other identities. This hierarchical conceptualization of the self reflects a society that is similarly organized. Thus, we use a triangle in the top portion of Figure 3 to represent the identity hierarchy, and this hierarchy exists within the larger context of society.

In identity theory, identity prominence and identity salience represent the self and the strength of the link to the inside—that is, to all of the other identities a person claims by virtue of the many positions he or she occupies. Commitment represents society and the strength of the link to the outside, as reflected in the connections with others in the social structure. Commitment makes explicit the embeddedness of individuals in particular locations in the social structure. The number of people in society to whom one is linked by virtue of an identity and the strength of those social ties represent greater commitment to that identity.

When we investigate individuals' identity, as well as identity prominence, identity salience, and identity commitment, and we relate this to attitudes and behavior, we keep actors attached to the social structure in which they are embedded and from which action emerges. This is in contrast to psychological theory, in which actors are conceptualized as isolated entities, impervious to societal influences. We treat actors as having individual agency while recognizing that this agency may be constrained when interactions with particular social ties limit resources and opportunities, given the exclusion of other social ties.

The influence of identities on attitudes and behavior is mutual, as represented by the double-headed arrows in Figure 3. While identities shape one's attitudes and behavior toward objects, one's attitudes and behavior serve to verify and maintain the self-meanings contained in actors' identities. Thus, identities serve as a guide, with outcomes that support the very self-structure upon which each identity rests. The reciprocal influence of identities on attitudes and behavior is stronger than the influence of attitudes on behavior. In Figure 3, this is represented by a solid double-headed arrow (strong relationship) and a broken double-headed arrow (weak relationship). Indeed, the relationship between attitudes and behavior is somewhat tenuous in the psychological literature, even environmental sociology. Including the sociological component of one's self/identity, as we have done in the current research, advances our understanding of social behavior.

Identity factors improve our power to predict behavior (compared to attitudes), because identity theory rests on the important sociological assumption that humans are embedded in a social structure in which behavior is chosen, not on the basis of discrete, personal decisions, but on the basis of competing demands stemming from the many positions one assumes in society. When we take into account actors' participation in the broader social structure and the networks of

others to whom they are differentially tied, we increase our ability to predict what they will do. Their behavior is no longer highly variable; it is consistent and patterned across situations. It is the job of sociologists to discover, attend to, and understand individuals' behavior, but this must be done within the context of a full set of patterns of action and interaction among all persons, all of which constitutes the structure of society.

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