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Environmental Education and Behavioral Change: An Identity-Based Environmental Education Model

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In this paper, the effectiveness of environmental education (EE) programs at fostering ecologically responsible behavior is analyzed through the lens of psychology. In section 1, a critique of knowledge and attitude appeals is presented using contemporary psychological understandings of these constructs to show why many EE programs have been met with mixed results. It is argued that knowledge and attitudes are misunderstood in precisely how they are employed in decision-making and that these misunderstandings hamper the impact of EE programming. In section 2, the theoretical foundation for applying identity research is developed further and is shown to engage both the automatic and controlled cognitive processes—the key distinction of the IBEE model. In section 3, this research is applied to develop a novel program for producing ecologically responsible behavior through EE using self-identity as a more sophisticated and effective behavioral mediator, as is how a 'pro-environmental identity' could be developed. Self-identity is a durable and robust behavioral mediator that has been shown to be highly predictive of an individual's behavior and can be shaped to lead one toward ecologically responsible behavior across behavioral domains.

Keywords: environmental education, environmental behavior, environmental psychology, conservation

> "Once a choice becomes identity linked, it is automatized. It feels identity-syntonic, it feels right, and does not require further reflection." (Oyserman, Elmore, and Smith, in The Handbook of Self and Identity, 2012)

INTRODUCTION

While the recent past has been marked by an increasing number of efforts at fostering ecologically responsible behavior, the environmental problems we face today cannot be solved by slow-to-react, incremental changes or the shoehorning of

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additional behaviors into existing patterns of consumption. Behaviors such as florescent bulb use, reusable shopping bags, or even recycling are not enough to stop global warming or reverse the precipitous decline in oceanic productivity. Furthermore, even these simple acts have proven difficult to induce despite a generally high level of environmental literacy (Zelezny, 1999). Behavior, in a broad sense, has *many* psychological antecedents and there are considerable material limitations present in any decision-making situation. If we are ever to escape the compensatory cycle of environmental remediation, it is the very moment of decision that must be understood and addressed.

There are well-established bodies of research on the psychology of persuasion, norm activation, attitude priming, information framing, social-identity or category induction, conformity, values, etc., that have been applied to behavior. Many of these have even been applied specifically to what are considered 'pro-environmental behaviors', such as recycling (Nigbur, Lyons, & Uzzell, 2010), hotel towel reuse (Goldstein, Cialdini, & Griskevicius, 2007), reduced shower duration (Aronson & O'Leary, 1982-83), littering (Cialdini, Reno, & Kallgren, 1990; Reno, Cialdini, & Kallgren, 1993), and more. Moreover, all of the studies cited above found positive effects; that is, the researchers were able to induce the desired behaviors.

A parallel strand of research—albeit less focused on *inducing* certain behaviors—has been evolving at the same time in the field of environmental education (EE). This branch of EE research, which also takes behavioral change to be its purpose (Hungerford & Volk, 1990; Kollmus & Agyeman, 2002; Nolan, 2010; Goodwin, et al., 2010; Pomerantz, 1990-91; Rioux, 2011; Zelezny, 1999), commences from a slightly different position. Rather than analyze behavior in a broad sense, and then design EE programs around what are found to be significant behavioral mediators, the EE research on behavior commences from the perspective of 'how can EE influence behavior?' In practice this difference is subtle, but likely responsible for why 'knowledge' and informedness continue to be the most commonly used proxies for measuring the effect of an EE program (Heimlich & Ardoin, 2008)

What is needed if we are to develop a method for producing long-lasting behavioral change toward more ecologically responsible decisions is a blending of certain elements of the two strands. EE primarily focuses on information or attitudes as a means of producing change (Heimlich & Ardoin, 2008; Pooley & O'Connor, 2000). While these approaches have been met with generally disappointing results, their foundational aim is correct. That is, information is assumed to be able to affect behavior across many domains. The logic here states that if people understand what pollutes water and what wastes trees, they can employ this information in myriad situations producing less destructive behavior across domains. The one-off initial position that these studies commence from, however, produces a bias in terms of analysis of resultant behavior. The assumption that information necessarily informs behavior is difficult to move past; this tends to bias EE research toward improving characteristics of information delivery, such as relatability and framing, as a means of improving its effectiveness. The psychology research more fully understands the processes involved in information processing and behavior in general, but due to the experimental environment in which much of these theories are tested, there tends to be a near-term bias. That is, factors are identified that cause a behavior in an immediate setting. There are studies in both fields that deviate from the generalizations depicted here, but such studies are in the minority.

What is needed is a psychological construct that is durable and robust in that it is not easily or quickly adapted to or bent by new situations and contexts, yet still constructed or developed so as to be shapeable. This construct must also be predictive of behavior; it must function as how information is hoped to function in the EE literature. That is, it is not just active in certain environments but must be

present in *all*, or nearly all, decision-making environments. Furthermore, the influence it has on behavior must be unidirectional—it must consistently push behavior toward less environmentally harmful or consumptive decisions. This unidirectional influence is akin to a behavioral reorientation. Self-identity has emerged as a construct fitting these requirements. The ways in which self-identity operates on behavior is discussed in a later section, as is how an ecologically responsible reorientation could be attached to it.

The research presented here applies social psychological theory to analyze why EE programs intended to foster ecologically responsible behavior have been met with marginal and sporadic success. Why many techniques do not succeed in this regard is important to understand in order to better inform future attempts at fostering this behavior. Then, drawing predominantly on research in the field of automatic and controlled cognitive processing, a novel approach for operationalizing this research in EE programming—defined for the purpose of this analysis in the following section—in order to achieve a sustainable relationship between people and natural resources in perpetuity is proposed.

INFORMATION AND ATTITUDES

Before approaching EE from the perspective of psychology, it is important to clarify how EE is conceptualized for the purpose of this analysis. The term 'environmental education' in this paper is conceptualized in a broad sense to include all educational programs, information campaigns, or any other organized effort at confronting peoples' understanding of, attitudes toward, or behavior affecting our natural resources. This is consistent with the literature in the field in that articles in EE journals have analyzed everything from brief, school-based environmental literacy interventions (Goodwin, et al., 2010), informal environmental programs in state parks (Negra and Manning, 1997), residential nature-based summer camps (Dresner, et al., 1994), popular media such as the documentary 'An Inconvenient Truth' (Nolan, 2010), and everything in between.

Research on the causes, definitions, and consequences of ecologically responsible behavior have been analyzed from the perspective of virtually every social science. However, EE has long been the operationalized arm of this work (Disinger, 1982). The majority of literature in the field of EE that considers the larger, societal role of environmental education takes behavioral change, in varying degrees of explicitness, to be the ultimate purpose of these programs (Hungerford & Volk, 1990; Kollmus & Agyeman, 2002; Nolan, 2010; Goodwin, et al., 2010; Pomerantz, 1990-91; Rioux, 2011; Zelezny, 1999). That is not to say, however, that there are no EE researchers or practitioners who dissent from this perspective. The opposition to this function of EE is perhaps most directly expressed in an article by Courtney-Hall and Rogers (2002), where the authors criticize Kollmuss and Agyeman's (2002) work which attempts to bridge the gap between the educational understanding of behavioral antecedents with psychological principles.

This debate stems primarily from an ethical questioning of endeavoring to directly change peoples' behavior. The central rift over which this debate forms is that of behavioral volition. This debate arises when one views promoting pro-environmental behavior as supplanting an individual's volitional behavior with adherence to a predetermined program or set of behavioral objectives. The underlying logic of this debate assumes that achieving behavioral change necessarily means achieving compliance with a set of discrete behaviors that are determined by the particular program creator or manager. The research presented here sidesteps this debate by proposing a new definition of pro-environmental behavior that deviates from the discrete behavior model. Furthermore, the direct consequences of environmental harm—increased food prices, restricted travel due to extreme

weather events, increased insurance costs, behavioral constraints imposed as a result of environmental regulation, etc. (Tol, 1996)—all put limitations on the behavior of individuals. Either as a result of the consequences of anthropogenic harm or the policies and practices designed to address this harm, individuals' behavior will be directly affected. In light of the broader, societal context in which this debate is situated, the ethical question of affecting behavior becomes moot. For purposes of clarification, the model presented here does take behavioral change, albeit defined differently, to be its purpose.

Information

From an educational standpoint, the objective of behavioral change is problematic. Education relies heavily on conveying information as a means of affecting behavior, and as an established body of research now indicates, being informed is only marginally and often unreliably predictive of related behavior (Thapa, 2010; Kollmus and Agyeman, 2002; Kaiser, et al., 1999). Comprehensive reviews of information campaigns conducted by Stern (1999) and Schultz (2002) found, unequivocally, that these efforts do not result in long-lasting changes in behavior. The most recent and statistically rigorous meta-analysis conducted by Osbaldiston and Schott (2012) on the effects of different EE interventions found that information (coded 'instruction' in their study) produced only marginal effects. This study is particularly important as it used observed behavior, opposed to self-reported behavior, as its dependent variable. The results of information campaigns designed to engage workplace conservation behaviors (Staats, Wit, & Midden, 1996; Siero, et al., 1996) and those in more traditional educational settings have been met with similarly mixed results (Goodwin, et al., 2010; Kaiser, 1999). A counterpoint to the majority of this work comes from Zelezny (1999), who did find that school-based interventions produced small but positive results. However, the author cautioned the use of the study in making broader inferences regarding these results due to often poor research methods employed in many studies as well as reliance on self-reported behavior as a measure of resultant behavioral change.

Information can be distorted, ignored, selectively employed, or overshadowed by a host of situational factors that are endemic to virtually all decision-making environments. The saliency of particular social norms (Cialdini, Reno, & Kallgren, 1990); behavioral conformity as a function of social belonging or as a source of information itself (Asch, 1956; Festinger, 1954; Aronson and O'Leary, 1982-83); accessibility of an attitude regarding the action or object at hand (Fazio, 1989); and the saliency of a social role or social-identity can all affect how information is employed in decision-making (Ross, Amabile, & Steinmetz, 1977). This list is by no means comprehensive but simply intended to demonstrate that there are a variety of ways in which information can be given a backseat role. Furthermore, these processes are complex and the degree to which they affect behavior or precisely how they interact with information is not done justice simply by listing them. As it is not the purpose of this article to fully elucidate these theories, suffice it to say, information alone is only one small piece of the behavior equation.

There is one pernicious psychological mediator—cognitive dissonance—that bears tremendously on how individuals engage information and warrants a brief discussion. Much of the information we receive regarding the use and state of our natural resources is disconcerting to say the least. Two of the most fundamental tenets of modern psychology state that human beings have a deep motivation to perceive our world accurately (competency needs) and to perceive ourselves as decent, good people (self-esteem)—that is, to be correct and to protect our egos (Aronson, 2010, p. 167-175; Markus, 1977). These needs, however, can be put at odds with one another. The theory of cognitive dissonance (Festinger, 1954;

Aronson, 1969) states that when an individual holds two psychologically inconsistent cognitions, a state of psychological tension is created. This tension is processed in much the same way the brain processes pain; instinctively, there is a need to reduce this psychological tension. The process that reduces this tension is generally termed *rationalization*—that is, one automatically changes, dismisses, or adds cognitions that reduce the tension.

Cognitive dissonance reduction operates below the level of conscious awareness; it is a fundamental aspect of the so-called psychological immune system. Cognitive dissonance is not only *reactive*, however; the longer this process operates on a cognition or if the threat is in a domain with which the individual strongly identifies, he or she may come to internalize these distortions as deeply held attitudes, beliefs, and values, shaping behavior and judgments in subsequent related situations. In this way, dissonance becomes *proactive* as well. There are a host of psychological phenomenon for which dissonance reduction is responsible, such as blaming the victim (Janhoff-Bulman, Timco, & Carli, 1985), viewing inevitable actions or irrevocable decisions more favorably (Kay, Jimenez, & Jost, 2002), the separation of alternatives after a decision has been made (Gilbert, 2006), the principle of justification of effort (Gerard & Mathewson, 1966), and the sequential escalation of commitment to a cause (Freedman and Fraser, 1966).

Dissonance reduction can often lead to maladaptive environmental behavior in that it may prevent individuals from accurately perceiving destructive behaviors. From the perspective of producing ecologically responsible behavior, cognitive dissonance is a tremendous barrier. For instance, Global Warming presents a material threat to an individual. The information that he or she is actively engaging in behavior that is increasing the likelihood and severity of that threat creates cognitive dissonance. There would be a variety of ways to reduce this dissonance, but convincing oneself that the threat is not as severe as is reported is the likely option. And indeed, researchers have found negative correlations between knowledge of global warming and stated concern (Kellstedt, Zahran, & Vedlitz, 2008), as well as with other 'sick baby'-type environmental appeals (Obermiller, 1995). Furthermore, EE interventions designed to target cognitive dissonance with respect to pro-environmental behaviors have been found to produce positive results in terms of behavioral change, lending credibility to the importance of acknowledging cognitive dissonance's role in mediating how individuals engage environmental information and pro-environmental behaviors (Osbaldiston & Schott, 2012).

Attitudes

Recognizing the weak relationship between information and ecologically responsible behavior, a growing number of EE programs and education researchers are looking to *attitudes* as a more durable and potent behavioral antecedent (Pooley & O'Connor, 2000). While there is evidence that attitudes—under certain conditions, which will be discussed shortly—can be reasonably predictive of behavior, there is tremendous variability within the EE literature regarding the precise definition and operational characteristics of attitudes. Attitudes are a more nebulous psychological construct than 'information' or 'knowledge' and no less subject to biases of their own. Three major patterns emerge regarding the ways in which attitudes are inconsistently addressed in the EE literature. It is important to understand these misunderstandings and misapplications to better understand why EE programs—even those which effectively target this more sophisticated behavioral mediator—often fall short of their objective.

First, while many of these studies are correct in generally treating attitudes as the evaluative or emotional component of a corresponding cognition, they vary widely

in what they define as the *object* of this attitude. Attitudes necessarily form in relation to an object of thought. If the purpose of EE is to change behavior, then attitudes are not measured simply to gauge general affect toward the environment. Attitudes are measured as a means of determining an individual's *desire to behave* in a responsible manner toward these objects. This is evidenced in the way that the terms attitudes, beliefs, values, and behavior are used indiscriminately in many studies (Nolan, 2010; Negra & Manning, 1997).

In the EE literature, and much of the environmental psychology literature as well, attitude objects can be placed into two general categories. The first is evaluations of tangible resources themselves, such as 'wildlife' (Dettmann-Easler and Pease, 1999); and the second is evaluations of the human actions that affect these resources, such as those used to measure environmental concern in the commonly used New Ecological Paradigm Scale (Stern, Dietz, Guagnano, 1995). From the perspective of actual behavior, however, it is tremendously important how attitude objects are defined if they are to be understood as informing decisions. One of the reasons that environmental attitude-behavior convergence is so low (Thapa, 2010) is because many different attitudes can be made salient in any given situation and even those that would seem pertinent to the particular behavior may vary in their accessibility from situation to situation (Fazio,1989). It is unlikely that the broad, abstract attitude object of 'the environment' or 'natural resources' will be made salient in many decision-making situations. This is consistent with Ajzen and Fishbein's (1980) Attitude Theory, which predicts that global (in the psychological sense to mean all-encompassing) attitudes are poor predictors of specific behaviors. Conversely, the more limited *behavioral* attitude objects such as 'recycling' will only be made salient in very specific situations. And even here it is entirely possible that attitudes regarding other present objects—such as the stereotyped image of a 'recycler'—could be made more salient and overshadow positive attitudes toward recycling.

The second misapplication in the literature regarding attitudes, and this has been largely alluded to in the discussion of attitude objects, pertains to another facet of their relationship to behavior. The influence that attitudes have on behavior is generally overstated or never explicitly discussed, with the underlying assumption being that attitudes are predictive of behavior (Heimlich & Ardoin, 2008; Pooley & O'Connor, 2000). Attitudes predict behavior insofar as they are readily accessible, salient in the decision environment, and not overwhelmed by contradictory norms, social roles, or material limitations (Ajzen & Fishbein, 1980). As with the overstatement of the impact of information in the decision-making process, a similar first-person actor/observer bias is likely responsible for the dogged adherence in the EE literature to the notion that attitudes predict behavior.

Lastly, there is a misunderstanding of the ways in which attitudes are formed and the purpose they serve in navigating complex environments (Heimlich & Ardoin, 2008). Attitudes operate as *heuristic devices* (Kahneman & Tversky, 1973). Heuristic devices are cognitive shortcuts used to categorize and process the tremendous volume of stimuli present in everyday environments. The emotional component that distinguishes attitudes from opinions is particularly important because these immediate emotional responses—a flash of emotional evaluation—operate much faster and can process many stimuli simultaneously (Bohner & Dickel, 2011). Attitudes, then, act as the stored evaluations of objects of thought. Understood in this sense, the attitude-behavior relationship is actually bidirectional (Valente, et al., 1998). Attitudes inform behaviors but behaviors also inform attitudes. This bidirectional relationship also helps explain why EE programs that actively involve participants in a given behavior are more effective at changing attitudes; these programs alter the *affect* associated with the behavior.

What psychological construct, then, are EE researchers and practitioners to look toward to foster pro-environmental behavior? The Identity-Based Environmental Education (IBEE) model posits that self-identity is a more robust and potent behavioral mediator that is still malleable so as to be able to produce long-lasting behavioral change. However, before discussing how a pro-environmental identity may be developed, it is important to understand precisely the cognitive processes that underlie identity as a behavior-producing construct.

THE BICAMERAL MIND, IDENTITY, AND PRO-ENVIRONMENTAL BEHAVIOR

Emerging research on the bicameral structure of the mind demonstrates that no decision is made without engaging two cognitive systems operant in any decision-making situation: the automatic and controlled cognitive processes (Baumeister, Masicampo, & Vohs, 2011; Dijksterhuis, Chartrand, & Aarts, 2007; Jeannerod, 2006). The precise balance of the two systems in decision-making depends on the nature of the decision at hand, but developing an understanding of this research within the field of environmental education is critical for advancing the effectiveness of EE programming with respect to fostering pro-environmental behavior.

The human mind operates on two levels simultaneously, and traditional EE programs that target informedness or attitudes appeal primarily to one system alone. There is the level of conscious awareness—the controlled processes—and the level that we are largely unaware of—the automatic processes (Baumeister, Masicampo, & Vohs, 2011; Evans, 2008). Automatic processes produce an immediate flash of positive or negative when confronted with stimuli. This flash happens instantaneously and below the level of conscious awareness. Automatic processes are also able to process many stimuli simultaneously, whereas the conscious, controlled processes can handle only one at a time. Automatic processes do not happen in a vacuum, however. After this immediate judgment is registered, the controlled processes go about explaining what has now formed the foundation of the decision at hand. According to this view, consciousness plays little to no role in decision-making; and there are a number of researchers who favor this view (Dijksterhuis, Chartrand, & Aarts, 2007). For instance, Jeannerod (2006) considers consciousness to be purely a "post hoc phenomenon (p. 36-37)." Bargh (1989) has gone so far as to say that 99.44% of our psychological reactions from moment to moment are automatic. Many researchers in this field, however, favor a less extreme view of the relationship between automatic and controlled processes.

There is ample evidence that while automatic processes may dominate the domain of relatively insignificant, short-term decisions, consciousness plays a more significant role in complex actions that require long-term planning (Baumeister, Masicampo, & Vohs, 2011). But even these complex projections and calculations are not made with a purely conscious weighing of the alternatives. They involve *affective forecasting*—the subconscious process of forecasting one's emotional reaction to a stimulus in the future—largely the domain of automaticity (Baumeister, Masicampo, & Vohs, 2011; Gilbert, 2006). Consciousness also constructs the mental narrative that helps us view the world as explainable by connecting past and future decisions with reasons that fit our self-concepts (Gregg, 2006); the narrative of an individual's life that it is termed their 'identity'.

Automatic processes function as a kind of meta-attitude or attitudinal orientation. They tend to be more durable than attitudes as traditionally defined and have the characteristic of exhibiting a relatively stable directional influence on behavior. While there is an ongoing debate in psychology as to the precise balance of these two systems in producing behavior, there is no debate over the fact that all

human action involves both systems. According to Bargh and Uleman (1989, p.6), automatic and controlled processes are, "independent qualities that may appear in various combinations." Understood in this way, it is not that automaticity rules consciousness or that consciousness drives automaticity, but rather they create a situation of *mutual informedness* or a necessary interdependence that expresses as a singular action or behavior.

Affecting one system independently of the other—information appeals primarily to conscious, controlled processes alone—can have a negative effect when considering how these systems interact to produce behavior. Attitudes get closer, the emotional component is rooted in the automatic processes, but again, this approach is hamstrung by being limited to a singular attitude object. It also becomes clear that if any part of either system is in conflict with the other this can produce a compounding effect that may lower the likelihood of behaving in an ecologically responsible manner in future similar situations—the effect of cognitive dissonance. If both systems are engaged, however, it may be possible to produce mutually informed cognitive processes that present in the form of the global behavioral reorientation that the IBEE model posits. Understanding the dynamic balance between these two levels of cognition is significant because it points to the importance of affecting both systems in attempting to produce lasting behavioral change.

The self-concept and automaticity

The notion of the 'self' is as old as psychology itself and has been employed in many different avenues of psychology research. Many of these different strands of research have developed their own working definitions and operant characteristics of the 'self'. In her seminal work on a developmental perspective of the self-concept, Harter (1999) identified at least eleven separate instantiations of the self as an operant construct. In a summation of these concepts, Harter (1999, p. 3) proposes this definition, "attributes of the self that are consciously acknowledged by the individual though language—that is, how one describes oneself." Much of the self is unconscious and automatic—but because the self develops from conscious verbal thinking and storytelling, it can only be constructed at the intersection of automatic and controlled processes (Lieberman, 2007).

The self, however, is itself divided. Harter (1999) and others note that the global notion of the self is loosely composed of self-concepts that are specific to particular domains—academics for instance. These researchers are quick to point out, however, that 'global self-concept' is more than simply the aggregate of these domain-specific self-concepts. Rather, the global self-concept is seen more as a jumping-off point; domain-specific self-concepts are formed relationally between the global self-concept and environmental factors (Oyserman, Elmore, & Smith, 2012). To borrow an analogy from genetics, the global self-concept is akin to a piano. It is relatively stable and the characteristics of the keys also relatively stable. The situational environment, then, is analogous to the pianist while the song that is produced—analogously the behavior—can vary. While the global self-concept is relatively stable, it can be actuated by the environment to produce a variety of songs. If certain songs are played regularly, they become ingrained and thus the domain-specific self-concept, usually referred to in this operant form as a *self-identity*, becomes more stable. These domain-specific self-concepts—self-identities—can, over time or if associated with a highly self-identified behavioral domain, mold the global self-concept.

The self, then, is neither an entirely conscious nor subconscious entity; it can only exist as a function of both automatic and controlled processes. The self is, in a sense, the bridge between these two levels of cognition. It both explains and justifies

behavior internally to the individual through the construction of the narrative that is perceived as 'self' and it shapes the automatic process' reactions—the positive or negative flash—by seeking to support continuity in this narrative (Jaynes, 1976; Leary & Tangney, 2012, p. 89). This continuity seeking, as guided by automatic evaluations, is ego-protective or serves as ego-justification (Jost & Hunyady, 2003). The self guides cognition and behavior not as a static arbiter of experience, but rather as an organizing principle in the continual process of making meaning of one's experiences. In this way, the self exhibits influence on both cognitive systems.

The self as producer of behavior

To produce *global* behavioral change toward less environmentally harmful behavior across behavioral domains requires that both automatic and controlled processes be engaged. In addition, the situational characteristics which weigh so heavily on behavior and are endemic to virtually all decision-making environments are engaged differently when they conflict with self-identity opposed to when they conflict with information or an isolated attitude.

It is important at this point to distinguish between self-concept and self-identity as the two terms have been used interchangeable to this point. The majority of researchers who employ some formulation of the self in behavioral modeling make little distinction between the terms. This paper employs the distinction that self-identity (identity) refers to the more stable global self, whereas self-concept is the particular facet of the global self that is salient in a given situation. To use the piano analogy, self-identity is the full set of keys whereas self-concept is the set of keys being played by a situation.

A growing body of empirical evidence supports the notion that the self acts as a sort of *meta*-attitude exerting a consistent directional influence on behavior (Oyserman, Elmore, & Smith, 2012). According to Morf and Mischel (2012), "The self-system is thus a *motivated meaning system* insofar as the self-relevant meanings and values that are acquired in the course of its development inform, constrain, and guide the interpretations of experience, goal pursuits, self-regulatory efforts, and interpersonal strategies." Self-identity is a variable that has been increasingly added to behavioral models and has been met with great success. One such model to which it has been included is the Theory of Planned Behavior (TPB). The TPB posits that the intention to commit a behavior is the most direct antecedent of that behavior, and that behavioral intentions are anteceded by (a) the extent to which individuals hold a favorable attitude toward the behavior, (b) individuals' perceptions of the norms and conventions regarding the behavior (i.e., subjective norms), and (c) the extent to which the individual perceives the behavior at hand to be under his or her personal control (Oreg & Katz-Gerro, 2006). Researchers were met with interesting results when they included self-identity as a part of their model. They found that self-identity predicted behavior irrespective of the rest of the model (Oreg & Katz-Gerro, 2006; Sparks & Guthrie, 1998). It is also important to note that these studies found a great deal of variability with respect to their attitude measures, supporting the analysis of attitudes presented earlier in this article.

Based on these findings it is now thought that self-identity is not a stable concept that can be placed next to other variables in the TPB model, but rather, that it *precedes* variables a-c in cognitive processing, supporting the argument that identity affects both automatic and controlled systems (Oyserman, Elmore, & Smith, 2012; Oyserman, 2009). In a study examining peoples' mundane consumption habits, meaning relatively minor day-to-day purchases, identity proved to be highly predictive (Kleine, Kleine, & Kerman, 1993). The authors stated that people seek to behave in ways that support their self-concept as a means of ego-support and justification. Importantly, this extends to include their purchasing habits (Kleine,

Kleine, & Kerman, 1993). The far-reaching effects of self-identity on behavior are supported by other behavioral theories that reference the self and are relevant to fostering and maintaining pro-environmental behavior. These include the following:

Deviance Regulation Theory (DRT, Blanton & Christie, 2003)

DRT rests upon the fundamental notion that people seek to maintain and support a positive self-image. Acts that deviate from social norms (behavioral information learned from observing others) in ways that identify the individual with a positive image or group are viewed as more representative of one's identity and thus more desirable than aligning one's self with positive images or groups that do not deviate from social norms. Despite the fact that environmentalism and pro-environmental behaviors continue to grow in social esteem, specific pro-environmental behaviors often deviate from social norms. If this were not the case, then pro-environmental behavior would already be the societal norm, which, as evidenced by the current state of our environment, it is not. DRT states that if an individual holds those who exhibit ecologically responsible behavior in high regard, as an individual with a pro-environmental self-concept would, , then this individual will deviate from social norms to behave in an ecologically responsible manner. DRT essentially states that those with environmental self-concepts may be less susceptible to social norm behavioral conformity.

Cognitive Dissonance (Festinger, 1954; Aronson, 1969)

Dissonance theory states that cognitive dissonance is most acute when a cognition conflicts with an individual's self-concept. These situations present a more serious threat to the individual and subsequently that individual is more motivated to reduce this dissonance. While this means that the distortions created to reduce the dissonance may be more extreme and more likely to be internalized, it also means that people are more motivated to avoid situations where they expect to engage in behaviors that will produce this internal conflict.

Identity-Congruent Behavior and Identity-Based Motivation (Oyserman, 2009; Oyserman, Elmore, & Smith, 2012)

Identity-congruent behavior is a broader term identifying processes alluded to in the above two theories. That is, people seek to engage in behavior that is congruent with their self-identity as a form of ego-protection. One situational factor that no psychological construct can overwhelm is the material limitations present in the decision-making environment that limit one's ability to behave in the desired manner. However, identity-congruent behavior states that people will seek out environments that present low barriers to behavior that supports one's self-concept. This suggests that people will self-select into these environments, thereby reducing the influence of material limitations by avoiding situations in which they are likely to be present.

Taken together, there is a great deal of evidence suggesting that self-identities are a psychological construct with tremendous potential from the perspective of EE. Self-concepts engage both automatic and controlled processes and have the ability to produce behavior that is less susceptible to conflicting social norms as well as material limitations. There is also an important role for knowledge with respect to environmental self-concepts. Since people seek to support their positive self-image by engaging in behavior that is congruent with their self-concepts, information on the effects of human actions on the environment as well as behaviors that can

reduce these impacts become a means of self-actualization. In this sense, knowledge appeals which necessarily reside in conscious, controlled processes become supported by the automatic processes as well. The effects of this interaction are likely to be multiplicative and produce significant behavioral change. Furthermore, the IBEE model maintains complete volition on the part of the student. A fundamental orientation toward ecologically responsible behavior does not require that specific, discrete behaviors be complied with. Ecologically responsible behavior on the part of an individual with an environmental self-identity can express in myriad ways and is not as subject to comparisons of sacrifice that are common in the discrete-behavior approach.

THE IDENTITY-BASED ENVIRONMENTAL EDUCATION MODEL

The following model deviates from traditional approaches in two important ways. First, *identity-based environmental education* (IBEE) defines 'ecologically responsible behavior' very differently than the discrete-behavior definitions typically employed in EE and environmental psychology. Identity-based EE recognizes that virtually every human action has ramifications for our natural resources. Accordingly, identity-based EE seeks to affect *global* (again, in the psychological sense to mean all-encompassing) behavior and to produce less environmentally harmful, consumptive behavior across behavioral domains. The IBEE model does not advocate for the adoption of specific, predetermined behaviors. Secondly, self-identity has emerged as a psychological construct that is psychologically ubiquitous—it resides at the intersection of cognitive automaticity and controlled processing—and can exhibit a consistent influence on behavior in several important ways where knowledge and attitudes have historically fallen short. Contrary to how this approach sounds, fostering environmental self-identities allows for more behavioral volition and personal expression than do traditional discrete-behavior models.

Redefining pro-environmental behavior within the IBEE model

The way in which 'ecologically responsible' or 'pro-environmental' behavior is conceived of bears tremendously on the way in which it is engaged both in study and in practice. As it is currently treated in the EE and environmental psychology literature—and subsequently operationalized in EE programming—it could never alter our current trajectory of resource use or adapt to heretofore unforeseen environmental issues sufficiently to forestall serious consequences for human health and wellbeing. That is not to say that discrete behaviors such as florescent bulb use are not valuable in slowing environmental harm; however, unless these behaviors are fostered as part of a broader plan to address an individual's behavior across many domains these discrete behaviors will never create a lasting, sustainable relationship between people and the natural world. The inadequacies of the discrete-behavior approach are not simply a function of the scale of adoption, they stem from a series of deep-seated assumptions. Some of these assumptions are endemic to the operationalization of engaging behavioral change in EE programs and some are rooted in the palliative nature of contemporary environmentalism writ large.

The way in which environmental behavior is currently conceived of in the literature is best characterized by examining the dependent variables of studies and programs which seek to address it. A brief sampling of studies in the psychology literature yields these dependent variables: curbside recycling (Nigbur, Lyons, & Uzzell, 2010), shower duration (Aronson & O'Leary, 1982-83), littering (Cialdini, Reno, & Kallgren, 1990; Reno, Cialdini, & Kallgren, 1993), hotel towel reuse

(Goldstein, Cialdini, & Griskevicius, 2007). As well as the following items, many of which are commonly used to indicate global pro-environmental behavior in survey-based, correlational studies: recycling, purchasing products made of recycled materials, avoiding aerosol cans, and purchasing organic foods (Gutierrez, 1996). Very few EE studies measure actual behavior. A meta-analysis of the programmatic aims of 700 EE programs in the US in found that 543 sought to affect knowledge, 124 to affect attitudes, and only 42 addressed actual behavior (Pomerantz. 1990-91). Of those that did target behavior, these are some of the dependent variables employed: collection of used batteries at a middle school (Rioux, 2011); stated intention to check tire pressure, plant trees, or purchase a fuel efficient vehicle (Nolan, 2010); reported recycling, turning off lights, and trying to reduce food waste (Goodwin, et al., 2010).

This is precisely the problem. As it stands now, 'ecologically responsible' or 'pro-environmental' behaviors are conceived of as a specific subset of an individual's global behavior. Conceptualizing ecologically responsible behaviors in such a manner—regardless of any broader definitions of which they are assumed to be representative—carries with it several underlying assumptions and logical extensions. These assumptions and their implications can be summarized as follows:

i) Conceptualizing ecologically responsible behavior as a set of discrete actions implies that *compliance* with these established actions more accurately describes the goal of environmental research—and subsequent operationalization into EE programs—than does fostering self-determined behavior which is adaptive and less environmentally harmful.

Fostering informed, volitional, less-harmful behavior is the overarching implicit goal of environmental education. This is precisely the slant that the EE perspective takes on changing behavior that was described in the introduction to this paper. The key distinction between the EE and psychological perspectives on changing behavior is that the EE perspective emphasizes self-informed, conscious decisions, whereas the psychological perspective is more focused on *inducing* behavior. That is not to say that the psychological perspective necessarily ignores or avoids conscious deliberation, it is just more aware of the impotence of consciousness with respect to determining behavior.

ii) Treating ecologically responsible behavior as a specific subset of behaviors implies that we know how an ecologically responsible person should behave in order to solve the environmental problems we face.

In a very real sense, every behavior an individual exhibits that involves the alteration of any physical material has a *direct* impact on our natural resources. In economics, this type of behavior is broadly termed 'consumption'. Individually, some such behaviors and decisions do not drastically affect our natural resources—letting a car idle to warm-up for a few minutes, for example. Others, such as the decision to purchase a 3,000 sqf house opposed to one of 1,500 sqf, do produce lasting and significant impacts. These decisions also create an *indirect* impact on our environment by signaling to others what constitutes appropriate behavior. The behavioral cues that are imputed from the actions of others have been termed *descriptive* or *social norms* and wield significant influence on the behavior of others (Cialdini, Reno, & Kallgren, 1990).

iii) The subset of behaviors that we deem as ecologically responsible or pro-environmental is shaped in reaction to environmental problems as they become evident.

By definition, a reactive process can never prevent unforeseen circumstances. The environmental problems we face today, by and large, were not predicted before symptoms began to emerge. While it is true that the natural sciences are continually advancing and increasingly capable of detecting minute changes in our environment,

contemporary environmentalism is still caught in a compensatory cycle. Variables are retroactively added to the environmental health equation as new research emerges; and to address these new concerns, new behaviors are advocated. This is not to say that there have been no successes using this model. As lakes in the industrial regions of the eastern part of the US began to acidify, scientists identified the causes and crafted behavioral requirements to address them (Likens, Driscoll, & Buso, 1996). The campaign against acid rain is often touted as evidence that it is possible to reverse environmentally destructive behavior.

There are several key issues with this model, however. First, despite success in curtailing the causes of acid rain, damage was done from which many areas have yet to recover (Likens, Driscoll, & Buso, 1996). In the time required to study and identify the causes of environmental problems, damage is being done. Often this damage is irreparable and its causes have too much inertia to be quickly reversed. This perspective is not new, however. Many researchers in the field of environmental policy have studied the effect of this reactive model as it operates at the level of governance (Wynne, 1992). Secondly, if this reactive process is turned around and projected into the future, it becomes immediately clear that what tomorrow's environmental problems will be are largely heretofore unknown. In all likelihood, the seeds of tomorrow's issues have already been sown. It is a fundamental human bias to assume that once we know the outcome of an event, we could have predicted it in advance (Fischhoff, 1975). It is difficult to escape this hindsight bias.

Lastly, success in the realm of fostering ecologically behavior is largely determined only in relation to addressing current environmental problems. Behavior that does not have a well-defined causal link to a defined outcome is rarely discussed. Broader definitions of ecologically responsible behavior are typically couched in non-specific, outcome-based terms, but what exactly this behavior actually looks like is never discussed (Courtney-Hall & Rogers, 2002).

As discussed above, every human action has consequences for our natural resources. Accordingly, what is needed is a behavioral model that no longer treats ecologically responsible behavior as distinct from *global* behavior. The model advocated here is perhaps better described as a *behavioral reorientation*. Since consumption, drawing on the economic definition, necessarily involves the physical, material world, both directly and indirectly (consistent with the economic definition in which services are included as consumption), what is needed is behavior that reduces *total* consumption in a broad sense. A focus on reducing large-scale consumption escapes the reactive, compensatory trap of the current model. EE is currently focused on educating people about the impacts of human actions on the natural world—every human impact can be reduced to a function of consumption. The key is that EE currently targets specific consumption behaviors, opposed to behavior in a broader sense. Every environmental problem we face today has arisen as a function of consumption. The behavioral model advocated here can be summarized as follows: *If we cannot predict what tomorrow's environmental problems will be, but we can know that they will arise as a function of consumption, then if we reduce aggregate consumption we will ameliorate these problems before they arise.*

While the above description does not address the composition of consumption—some consumptive behaviors have a more potent and deleterious effect than others—the IBEE model addresses the composition issue as well. In the IBEE model of less-consumptive environmental self-identities, the environmental ramifications of actions are tied to self-esteem. In this way, information becomes a means of self-actualization. This model has the potential to address both the aggregate consumption issue as well as the consumption of composition issue.

What is needed is a model of behavior that is not judged to be ecologically responsible, or not, based on the ends it seeks to achieve. The natural world does not operate teleologically and behavior is needed that is equally process-focused. *Identity-Based EE* achieves this by allowing a behavior's 'ecological rightness' to be determined by affect and emotion, rather than by an abstract and complicated projection of how a particular action will affect natural resources. The precise model of this behavior as well as how self-identity could be used to achieve it is what this paper now turns to.

Creating environmental self-identities

According to Harter's (1999) seminal piece on a developmental perspective of the self, self-identities are formed largely through interaction with significant others. The self is primarily a meaning-making construct (Morf & Mischel, 2012) and as social animals humans routinely look to those around them to provide information as to how to interpret experiences. At various stages of development, however, the individuals perceived to be significant and thus formative change. More importantly, the ability and role that others play in constructing the narrative of an individual's identity changes. During childhood, caregivers are particularly important. For a school-based intervention, the primary caregivers will be the students' teachers. However, older students may also serve this role, albeit in a more limited sense. As will be explained in the program details below having older students function in this role serves two purposes. During adolescence, peers and those with similar social-identities become more important. As one grows into adulthood, self-concepts become more textured and stable. Who is deemed an important 'other' during these stages is largely a function of one's self-identity that has been formed through childhood, adolescence, and young adulthood. As we seek identity-congruency, we tend to align with others with whom we share many characteristics; put differently, those with similar social-identities. Throughout this development process, it is not simply contact with significant others that matters, it is the general affect they show toward objects of thought. The internalization of and identification with these affective characteristics informs automatic cognitive responses and if interpreted by the controlled processes through an environmental frame, an environmental identity will begin to form.

Perhaps the most significant lesson from the perspective of EE to come from Harter (1999, 2012) has to do with the progression of self-identity stability. As the summary above alludes to, as people age their identities become more informed and increasingly solidified (Harter, 1999; Oyserman, Elmore, & Smith, 2012). If plotted against age, the trajectory of this development is not linear; it exhibits a more logarithmic path. Younger years are when self-concepts are more rapidly developing and this development slows as the individual progresses into adulthood. It is critical, then, that environmental programs be available to kindergarten and grade school-aged children because the process that makes self-identity more amenable to encouragement at these young ages makes it less amenable as an individual develops.

Program details

An EE program that seeks to foster environmental self-identities could realistically be designed in a variety of ways. Based on Harter (1999, 2012), a program that adhered to the following criteria could achieve environmental self-identities. Because of the variability possible in design, and the necessity of making engagement in environmental behavior relevant to the individual (which requires that place, culture, and local environmental issues be considered in program design)

the following principles are intended to shape an IBEE-based program. These principles are discussed within the context of a traditional school-based educational setting because these are the principle institutions that could implement an IBEE approach.

I) *Engage students' social and personal identities in as many behavioral domains as possible to increase the influence exerted on global self-identity.*

This is the overarching principle that guides the following program. Students need to make connections outside of what is traditionally defined as discrete, pro-environmental behaviors. Material should be presented and ideas discussed in a broader 'environmental frame'. The more times this frame is brought to mind when considering an action, the more automatic it becomes (Oyserman, Elmore, & Smith, 2012).

II) *Engage those who are deemed 'significant others' to the developmental stage of students in program activities. Individuals acquire information about 'affective properties'—akin to emotional reactions—about objects of thought largely from those around them. At different stages of development affective properties are more readily absorbed from others within certain age groups relative to the developmental stage of students.*

For students at or below grade 3, this is primarily their parents and teachers. Before the age of 5, students have not yet developed the metacognitive self-awareness necessary to reflect on their own feelings (Harter, 2012). This means that the narrative that is beginning to form their early identities is very amenable to encouragement. Teachers should actively help students interpret their experiences through an environmental frame or directly provide this as a reason for their actions. The key is that teachers foster the idea that the reason students are engaging in a behavior or receiving positive feelings from an activity or experience is because they 'care so much about the environment', are 'good environmentalists', or 'good park rangers', etc. These interpretations should reference the self. Rather than having students recycle 'because it is important', they should recycle 'because *they* care about nature' or because '*you* are a good environmentalist'. Identity is a meaning-making system and at this age teachers are capable of providing meaning for students. Any behavior that has a direct impact on the environment can be framed in such a way to a student.

Between the ages of 5-7, students' metacognitive self-awareness expands so that they are able to begin to reflect on their own feelings (Harter, 2012). Caregivers are still the primary significant others for these ages. In this age range, teachers have less ability to directly explain the causes of a students' behavior to them and they should shift to a role of assisting students process experiences through an environmental frame. These assisted interpretations need to be consistent, regularly provided, and provided in as many behavioral domains as possible.

In middle-to-late childhood (8-10), early adolescence (11-13), and middle adolescence (14-16) peers become the most significant others and the social environment becomes a more significant source of information (Harter, 1999; Redman & Redman, 2014). Teachers should provide as many opportunities as possible for students to work with groups and activate an environmental social-identity. Teacher should still assist students' interpretations of experience through an environmental frame, but the routes for achieving this have somewhat changed. Group work advocating conservation, clubs that engage in conservation activities, or assigning students to roles such as 'green captain' in the classroom all serve to engage significant others in environmental meaning-making activities. It may also serve two purposes to have students in 6th grade or higher group-teach an occasional lesson on conservation to students 3rd grade and lower. Putting the older students in groups and having them advocate conservation would strengthen a group-identity and advocating a position has been shown to lead to an attitudinal

movement toward that position (Hogg, 2012). The younger students would benefit from seeing conservation messages coming from different groups because they may think that only teachers or adults care about conservation; young students are not as capable of making between-object connections such as generalizing a teacher's behavior to all people.

III) *Endeavor to make behavioral domains that relate more directly to ecological behavior—consumption via purchasing or consuming, for instance (Redmand & Redman, 2014)—more strongly identified with students. Self-concepts that are strongly identified with have a more potent effect on self-identity.*

IV) *Make external justification for participating in activities related to fostering environmental self-identities as low as possible. Low external justification leads to higher identification with tasks (Ryan & Deci, 2000).*

This only applies to students aged 5-7 and up. Below this age students' ability to internally justify actions to themselves is weak so there is less reason to be cautious about providing explicit justifications for why a student is engaging in a behavior. If people are forced or required to engage in an activity, they are not likely to internalize the importance of the reasons that they are participating. For students aged 5-7 and up, when engaging in environmental behaviors—gardening, recycling, building birdhouses, etc.—teachers should be careful to not force an interpretation of why the behavior is important or significant. Rather, students should be encouraged through questioning and dialogue to provide their own environment-centric reasons for engaging in the activity.

V) *Make the experiences and activities used in the program as authentic to each student as possible.*

There is evidence that self-concepts can be developed that do not mirror one's authentic experience (Harter, 1999). This is particularly important to consider when engaging somewhat older students (4-8th grades) in social and group-identity based activities as peers are significant others to them. To make experiences authentic, place-situated and culturally respective environmental issues should be explored (Chawa & Cushing, 2007) and individual expression encouraged even in these social settings.

VI) *Emphasize affect toward the particular object of thought—understood in a broad sense to include nonphysical objects such as behaviors or group activities.*

This is perhaps the most important overarching principle in fostering environmental identities. Others are significant through the course of identity development because their reactions and general affect toward pro-environmental behaviors or ideas signals to others what constitutes appropriate reactions or feelings. This is particularly important through ages 5-7. Teachers must be enthused about engaging in pro-environmental behaviors and be 'affect leaders' for others to gauge appropriate feelings toward environmental objects of thought (Chawa & Cushing, 2007).

VII) *Engage students in as many pro-environmental or nature-related activities/behaviors as possible.*

As noted earlier in this paper, encouraging these discrete behaviors, such as recycling or unplugging electronics when away have value on their own merit, but can be employed as part of a broader plan to develop a deeper environmental coconsciousness across behavioral domains. Individuals who engage in conservation behaviors are more likely to engage in similar behaviors in the future due the principle of justification of effort (Cialdini & Goldstein, 2004). If teachers can foster an *I* or *Me*-centric justification within an environmental frame, then the reasons for engaging in pro-environmental behaviors become more deeply identified with and can come to shape a person's identity. This also serves to make attitude objects less abstract. If students have real experience with plants and animals, the attitudes regarding these objects of thought become less conceptual

and more real. They become more tangible and textured, thus attitudes regarding these objects become more likely to be salient in decision-making situations.

Aside from the program adhering to the above principles, it is vital that the EE program be sustained throughout many years and begin as early as preschool or kindergarten. Self-concepts are rapidly developing at young ages, and subsequently it is important to maintain such a program to foster a more stable environmental self-identity. In order for environmental frames and identity characteristics to form across behavioral domains, it would be best if these perspectives were integrated into traditional course subjects opposed to being held as separate lessons or activities that are considered outside of traditional subject areas. Because identities are formed over such long periods the research does not indicate how regularly students should take part in such programs in order to develop such a self-concept; additional research is needed in this area.

The largest shortcoming of the IBEE model as presented here is that it has not been empirically tested. This research rests on a strong theoretical foundation, but specific programs need to be designed and evaluated in order to test its real-world efficacy.

CONCLUSION

Throughout all of the various evolutions that the field of environmental education has undergone, one facet of EE has remained stable. EE has always and continues to endeavor to create a more sustainable and stable relationship between humanity and the natural resources upon we which we rely. Viewed from this perspective, the challenges that EE faces in this fundamental aim are greater and more pressing now than at any point in our planet's history. These new challenges, however, create the opportunity for new solutions. The research in this paper presents one possible new approach for addressing environmental issues that are increasingly global in their impacts and diffuse in their causes. All environmental issues arise as a function of consumption and the Identity-Based Environmental Education model presents one approach that stands to address this fundamental relationship.

This research is just the tip of the iceberg, however. If self-identity based EE is to become a reality, a great deal more study is required. Psychological constructs that are as fundamental to human functioning as the 'self' are complex in their operation and sensitive in their development. More research is needed to better understand the formation of self-identities as well as how an ecologically-responsible behavioral orientation may be attached. The research in this paper can serve as a foundation for others, or at least the beginning of a search for new and creative solutions in disciplines that have yet to be tapped in the fight to save our planet.

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