

## DESIGN OF THEORY TO TEST WHAT MOTIVATES PEOPLE TO TAKE ACTION TOWARD PROTECTING OUR OCEANS

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**Abstract:** Oceans, often thought of as one of our last global commons, serve many important roles from providing us food and resources to connecting nations for trade. Despite their importance, through a tragedy-of-the-commons effect, our oceans are becoming increasingly stressed. Addressing such issues of the commons require a collaborative international approach, as evidenced by the United Nations sustainable development goal 14 to “conserve and sustainably use the oceans, seas and marine resources” [1] and the IAMU Tasmanian Statement [2]. This paper will explore what makes individuals (and organizations) move from awareness to action when it comes to protecting our oceans. It will propose a theoretical framework by which to test the most effective means of motivating action to protect the ocean environment. The framework will be based upon a non-equivalent group quasi-experimental design [3], [4] which will be used to assess the relative effects of treatments that have been nonrandomly assigned to participants from around the world. Both the treatment and control groups will be subject to pre- and post-testing using an awareness assessment [5], such as the one developed by the Ocean Literacy Project [6]. Several treatments will be explored, including examples such as behavioral conservation [7], to determine the most effective means to be used by NGOs in ocean advocacy. Informed by a review of the literature, this theoretical paper will provide the evidence-based research method for testing and measuring what motivates people to take action toward protecting our oceans.

**Keywords:** Oceans, sustainability, non-equivalent group design, NGO, conservation, advocacy

## **Introduction**

We rely on our high seas and oceans for food and natural resources, trade and commerce, recreation and tourism, biodiversity and clean water, as well as carbon storage and climate regulation, among many other critical life-sustaining and enriching functions. While our high seas and oceans are unusually resilient and in relatively reasonable health according to some measures [8], it is also in a state of decline (e.g., [9], [10], [11]). Some of this is due to naturally-occurring changes and some is due to man's behaviors. As one of our last global commons, the high seas and oceans are subject to a well-known economic effect known as the "tragedy of the commons" [12]. In such a case, shared finite resources (such as fisheries in the high seas and oceans) become depleted and diminished when rational individuals who have rights to the commons exploit the resource out of self-interest rather than to benefit the common [13]. It is particularly difficult to manage or regulate such situations. However, just as behaviors are what create a "tragedy of the commons," it is quite possible that solutions may be found by examining how to change those behaviors.

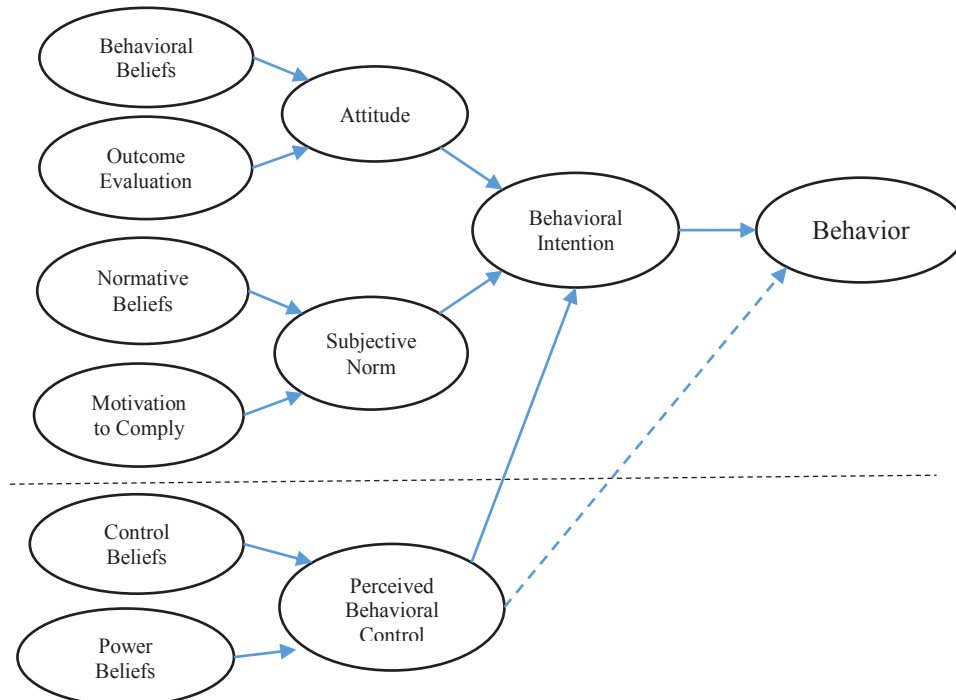
This paper will examine previous studies of conservation efforts, models of advocacy, and present a model to test various approaches to ocean advocacy that NGOs might consider employing.

## **Conservation Efforts and Behavior Change**

Only several decades ago, global concern for the environment varied by geo/demography – concern was higher among people in developed nations than in developing nations. More recently, at the turn of the millennium, global concern for environmental issues and support for environmental protection was at a high level uniformly across geo/demography [14]. In 2013, again based on an international survey, global concern for the environment waned to a 20-year low [15]. On the surface, you might expect environmental conservation behaviors to vary as awareness and concern increased or decreased. However, conservation behaviors did not change dramatically during fluctuations in awareness of and concern for environmental issues [16], [17]. This provides some evidence that awareness alone does not alter behavior sufficiently to impact the environmental concern. In a global survey of experts' evaluation of progress toward achieving the seventeen UN sustainable

development goals, the goal for protecting our high seas and oceans ranked second from the bottom [18].

Schultz [7] suggests four reasons why behavior change is difficult when it comes to conservation efforts. First, education (or awareness) alone does not alter behavior [19], [20], [21]. Second, our thinking is biased and short-sighted. For example, one international study [22] indicated that people believe environmental problems are worse elsewhere (i.e., local better than global) and will get worse over time (i.e., better now than in future). As a result, environmental issues are viewed as lower priority [23]. Third, we often perceive ourselves as separate (or unconnected) from nature and as a result, have less incentive to engage in conservation behaviors [24]. Finally, our social norms guide our behavior. For example, when there is widespread concern for environmental issues, the underlying assumption is that conservation is not the norm, which serves to exacerbate the problem [25]. By examining these rationale for the lack of behavior change, Shultz goes on to offer several strategies for altering conservation behaviors, such as the use of motivational messages, behavioral prioritization using a targeted approach rather than a one-size-fits-all approach, and multi-disciplinary approaches.



**Figure 1:** Theories of Reasoned Action and Planned Behavior

Looking at the specific example of biodiversity loss (which is driven in part by the resource use of a growing human population), St. John et al. [26] reviewed social-psychology theories

of behavior and how they were used in the context of conservation and natural-resource management. Using the theories of reasoned action and of planned behavior [27] as a framework (Figure 1), they reviewed the relatively few examples in conservation science where social-psychological models were used explicitly.

All things held equal, the more positive a person's attitude, subjective norm, and perceived behavioral control are, the greater the behavioral intention and, thus, the likelihood that they perform the behavior [28].

They also examined examples where these models were used implicitly based upon specific predictors of behavior. For example, one group of studies examined attitude and its implicit impact on pro-conservation behaviors; the results were mixed – only about one quarter of the studies demonstrated a relatively significant link between attitude and pro-conservation behavior, half demonstrated a mismatched link, and the remainder were inconclusive. An important finding was that general attitudes toward the environment are of limited use in predicting behavior. Rather, in order for attitudes to be useful toward motivating behavioral change, they must be specific to the targeted conservation focus (e.g., poaching behaviors, habitat conversion). In general, there was a dearth of investigation and studies that focused on these theories. It was suggested that conservation interventions might be more successful by expanding our knowledge and approach toward understanding human decision processes and behavior change. Specifically, when developing conservation programs and interventions, a more comprehensive model of behavior change that includes beliefs, attitudes, norms, controls, and intentions should be used. These conclusions of the St. John et al. investigation have also previously and independently been put forth [29].

### **Advocacy Framework**

Ultimately, pro-conservation behavior changes likely will not happen on their own. Rather external groups or membership groups, like non-governmental organizations (NGOs) play a role in promoting and promoting behavior change. There are many models of how NGOs advocate for their particular areas of concern. To understand the nature of this advocacy work, Szarka [30] proposes a framework for NGO advocacy functions that focused specifically on environmental issues (e.g., climate change). The advocacy functions identified by Szarka include: issue framing, knowledge generation/dissemination, attribution of responsibility, lobbying, public mobilization, and agenda setting. Each of these six functions are based upon theory and then validated through a field study of NGOs in France, Germany,

and the UK. However, this framework is *descriptive* rather than *prescriptive* in that it illustrates what is being done rather than what should be done.

You might think that a primal set of advocacy functions would have evolved through time (i.e., those functions that best advanced the NGO mission would survive and thrive and spread, and those that were ineffective would wither and disappear). However, based upon the conservation psychology literature, there is mounting evidence that this is not the case. For example, education, which has been a traditional advocacy function of NGOs, has been shown to be ineffective because it does not, by itself, motivate behavior change [19], [20], [21]. Education has been proven less than effective because it is a weak motivator of the behavioral change, much weaker than is needed to change behaviors and address environmental concerns.

Therefore, to exploit this advocacy framework to motivate behavioral changes, it might be beneficial to overlay this advocacy framework [30] onto the theories of reasoned action and planned behavior [26]. The issue framing function of advocacy (which often takes the form of economy, social justice, or environment) could be viewed as “action-oriented sets of beliefs and meanings that inspire” and motivate action in movement organizations [31]. As such, issue framing might best be used to a belief-shaping function. Similarly, knowledge construction would as be useful in shaping beliefs. Attribution of responsibility as an advocacy function comes from the Quaker-inspired tradition of “bearing witness” [32]. Often in the form of on-the-ground presence, front-line involvement, and the intention to enlighten the public, attribution of responsibility appears to invoke norms and attitudes as a behavior change strategy. The remaining three advocacy functions (i.e., lobbying, public mobilization, and agenda setting) all involve behavioral intention and ultimately active behavior change to impart upon the NGO goals. As such, with some admittedly-awkward manipulation, the advocacy framework can be mapped to fit within the frame of the theories of reasoned action and planned behavior. That said, a behavior-theory-informed extension of Szarka’s framework might be prove useful in identifying which NGO functions and practices prove to lead to the actual intended behavior change.

### **Community-Based Social Marketing Framework**

As previously noted, environmental advocacy campaigns are frequently information intensive [21], [33] based upon the assumption that if recipients knew and cared more, they would do more. While well-meaning, many such initiatives are ineffective and instilling behavioral change [19], [33]. Realizing that “achieving a sustainable future will require that

people do things differently” (i.e., change behaviors), McKenzie-Mohr and Schultz [34] call upon yet another framework known as community-based social marketing (CBSM) in efforts to foster sustainable behavior. CBSM involves a five-step process of behavioral change:

1. Select behaviors – This involves a two-part approach. First, develop a mutually-exclusive list of end state behaviors. Then, evaluate the list to determine which behaviors are high-likelihood and high-impact.
2. Identify barriers and benefits – Barriers and benefits may (and likely will) vary between different behaviors and also among different individuals. However, in order to create sustainable behavioral change, barriers must be minimized and benefits maximized.
3. Develop strategies – Carefully select from among the behavioral change tools (e.g., commitment, prompts, norms, goal setting, convenience, etc.).
4. Pilot the strategy – Test the strategy on a small scale before widespread implementation to ensure efficacy and effectiveness. Also, different strategies may be competed against one another to determine the most cost-effective option.
5. Broad-scale implementation and evaluation – Once the pilot has proven successful, apply it to a wide-scale implementation and continue to evaluate efficacy and effectiveness.

In short, CBSM would be a specific approach to developing advocacy functions and strategies. For example, if an NGO decided that knowledge generation and dissemination (e.g., education) were an important advocacy function for its particular mission, it would first identify the specific behavioral changes necessary to address the environmental concerns. Then, they would analyze the barriers and benefits and create educational strategies to motivate the specific behavior changes. This is fundamentally different from the typical educational campaigns which are primarily cognitive in nature to those that influence affect and emotions in addition to behaviors. The NGO would then pilot test the strategies and ultimately, if successful, it would launch a full-scale campaign.

### **Proposed Experimental Framework**

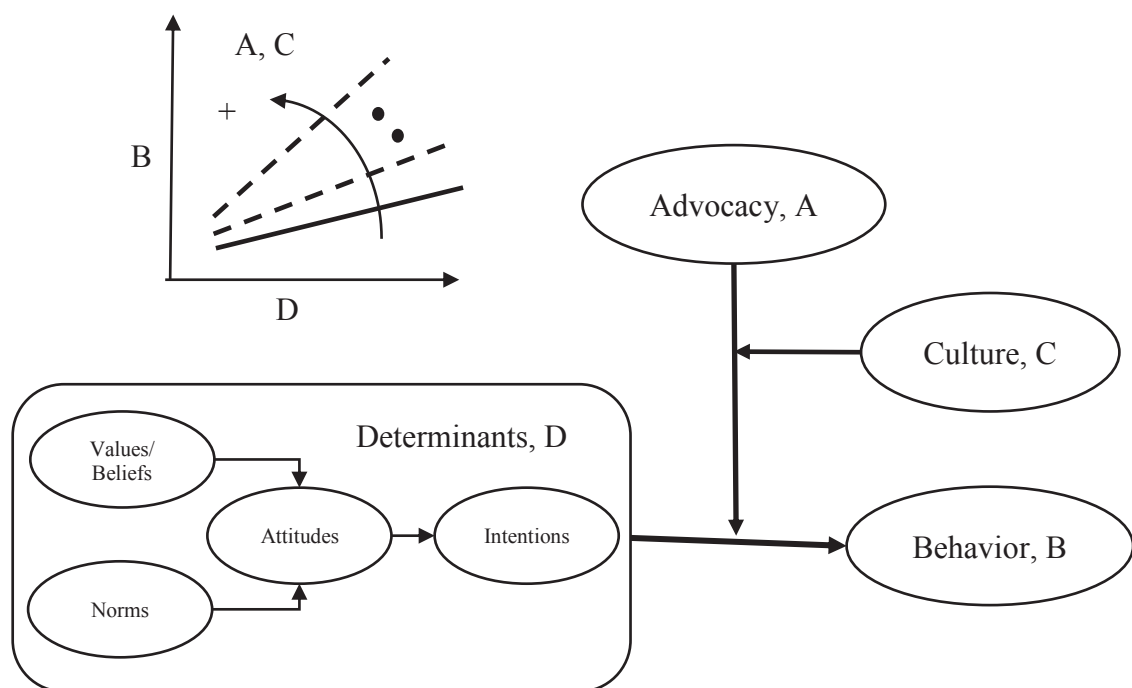
Using the previously referenced studies and research as a foundation, a theoretical framework will now be put forth. This framework as described in Figure 2 simplifies the theories of reasoned action and planned behavior into a single composite construct, which will be called *determinants* of behavior and labeled as D. The determinants of planned behavior, the independent variables in this case, will include values, beliefs, norms, attitude,

intentions, and decisions. Actual conservation behavior is the dependent variable and will be labeled as B.

This basic relationship previously demonstrated in the psychological literature provides the first hypothesis,

*H1: There is a positive relationship between the determinants of behavior (D) and the actual conservation behaviors (B).*

The inserted chart in Figure 2 illustrates this positive relationship with the positively sloping solid line.



**Figure 2:** Theoretical Framework

Additionally, advocacy roles and strategies, labeled as A will serve to moderate the relationship between the determinants of behavior, D, and actual conservation behaviors, B. For example, advocacy strategies (A) such as community-based social marketing will enhance the relationship between the determinants (D) and the behaviors (B). From the conservation literature, we have our second hypothesis:

*H2: As increasingly effective advocacy strategies (A) are applied, the relationship between determinants of behavior (D) and conservation behaviors (B) also increases.*

The inserted chart in Figure 2 illustrates this moderator effect with the addition of a series of increasingly positively sloped dashed lines.

Finally, since culture (C) is an extremely important context variable and also an important dimension of the determinants of behavior, it is expected that culture will mediate the relationship between the advocacy strategies (A) and its effect of the determinant-behavior relationship. In other words, the efficacy of advocacy (A) on behavior (B) is influenced by the cultural context (C) within which the advocacy is taking place. From the culture literature, this provides our final hypothesis:

*H3: Advocacy (A) influence on behavior (B) varies with culture (C).*

In order to test the above theoretical framework and the proposed hypotheses, a experimental framework will be put forth. The framework will be based upon a quasi-experimental non-equivalent group design [3], [4] as shown in Figure 3.



**Figure 3:** Non-Equivalent Group Design

In the non-equivalent group design, there are two groups (N1 and N2). These will either be intact groups (e.g., from the Maritime Environmental Protection Associations) and thus non-randomly assigned or assembled groups randomly assigned (particularly where an equivalent group is needed). N1 will be the treatment group and N2 will be the control group (that receives no treatment between the pre- and post-testing). Both groups will be subject to the same pre-testing. In this case, since we are examining ocean advocacy and action, we will be interested in assessing their ocean literacy (as a potential additional modifier variable) labeled as L [5], [6]. Likewise, since these groups are being drawn from a global population, we will also want to assess contextual factors [35] such as culture [36], [37]. Treatments are advocacy strategies and will vary, but could include CBSM strategies, or any of those described in the behavior conservation literature. Once the treatment, noted as X, has been applied to the treatment group, then after prescribed periods of time, both groups will be subject to post-testing to measure behavioral intent and ultimately behavior changes, labeled as A.



In conclusion, by conducting such experiments, we expect to identify those NGO advocacy strategies and techniques that work best in changing public behavior when it comes to ocean advocacy and concern for environmental issues. This is important because in order to effect change more deliberate efforts need to be made to change behaviors that will result in improvements to conservation efforts.

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