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Encouraging Water Protection through Donation: Examining the Effects of Intention to Engage in Personal Water Conservation Behaviors on Donation Behaviors

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Abstract: In many parts of the world, water scarcity is increasing due to climate change and the deterioration of the quantity and quality of water sources. In the southeastern U.S., water conservation is of particular concern because of the decades-long water war between the states of Florida, Georgia, and Alabama over two shared river basins. Individuals can only do so much to conserve water in their home, but different forms of donations can contribute to larger efforts resulting in greater environmental impact. Using a conceptual framework connecting self-identity to water conservation contribution engagement, the purpose of this study was to determine if personal water conservation behavioral intent impacted contributions to organizations supporting water conservation so effective communication strategies can be developed. Previous studies connected self-identity and intention to engage in pro-environmental behaviors, but there is a lack of research on the connection to water conservation donation behavior. Respondents were recruited to take an online survey using non-probability opt-in sampling. Self-reported intent to engage in water conservation behaviors, current contribution behaviors (if they donate to an organization that protects water, are a member of a water conservation organization, own a specialty license plate that supports water conservation, and volunteer for water conservation events), and total family income in the past year were obtained. Data were analyzed using point-biserial correlations and binary logistic regressions. The results indicated personal water conservation behavioral intent was positively correlated to water conservation contribution behaviors. Personal water conservation behavioral intent and income level were significant predictors of contribution behaviors. Environmental communicators and educators should encourage those who identify as conservationists to increase their self-identity through contributing to organizations. Future research should be conducted to determine if actual versus perceived discretionary income and/or time is a predictor of contributions.

Keywords: water conservation; water; sustainability; climate change; donation; conservation behavior; self-identity; intent to engage

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1. Introduction

Clean water is essential to human life and health [1]. Water scarcity is increasing along with the deterioration of the quantity and quality of water sources in many parts of the world [2]. The sustainability of the United States' (U.S.) water supply is a growing concern due to population growth, climate change [3], and droughts that are increasing in frequency, intensity, and duration [4]. The U.S. economy also depends on water availability, as it is the highest producer of goods and services in the world [5]. The U.S. uses 1.5 times the volume of Lake Eerie, the fifth largest freshwater lake in the U.S., each year to produce those goods and services [5]. Water conservation is even more important in the southeastern U.S., where the states of Georgia, Florida, and Alabama have been battling for two decades, in what is commonly referred to as the water wars, over access to water from two shared river

basins. Due to its population size of almost 500,000 people, the city of Atlanta in the state of Georgia is said to be taking a larger portion of freshwater from these basins which, in turn, causes adverse effects on Florida and Alabama's freshwater availability and their economies [6,7].

According to the Environmental Protection Agency, residential water users can conserve water in many ways inside and outside of the home. Repairing leaky faucets, only running the dishwasher when it is full, maximizing the use of natural vegetation, and only watering the lawn when it is necessary are all ways residents can conserve water [8], but individuals can only do so much to conserve water in their own homes. Nonprofits and other organizations can help protect water resources on a larger scale. For example, the Cahaba River Society helps protect the Cahaba River Basin in Alabama, which is the main source of drinking water for one-fifth of Alabama's population [9]. The organization achieved many victories for the basin including creating a supplemental environmental project that earned $30 million to acquire stream buffers in Jefferson County and ending chicken waste dumping in the Cahaba, which removed half of the point source nutrient pollution in the watershed [9]. Organizations like this rely on individual donations to achieve their goals. For example, in 2014, The Nature Conservancy reported 55% of their single largest revenue source came from individual donations [10]. Water.org is a global nonprofit that sourced $3.4 million in 2021 from individual donations [11]. With their revenue, Water.org was able to reach over 9.2 million people with sustainable access to safe water or sanitation [11].

Individuals can donate to organizations in many ways including monetary donations, membership, purchasing specialty license plates, and volunteering. Monetary donations can be a recurring or one-time action that is carried out in person, online, or anonymously. Individual donations to organizations add up to fund large projects that individuals would not be able to do on their own.

Memberships usually encourage long-term engagements with organizations, are financially accessible, and provide tangible rewards to supporters [12]. Membership requirements can vary based on the organization from no minimum donation to tiers of membership. For example, there is no minimum donation to become a member of The Nature Conservancy, but higher levels of donations give members different benefits. The lowest level, a "Conservation Champion", receives a special picnic blanket as a gift while the highest level, the "Legacy Club", receives an exclusive trip and event invitations on top of all other benefits [13].

Additionally, organizations and nonprofits focused on water protection, such as the Cahaba River Society, can be supported through specialty license plate purchases where a portion of the purchase price goes directly to the sponsoring organization [14]. In the U.S., licensed drivers can purchase license plates sponsored by a variety of organizations that usually display the organization's name and/or logo. The state of Georgia offers hundreds of specialty license plates from many types of organizations including sports, political, collegiate, occupational, and environmental [15]. Fees associated with specialty license plates vary by plate. For example, the Georgia Aquarium specialty license plate costs $45 to initially buy and to renew each year, and the aquarium receives $20 every time someone purchases or renews [16]. Many specialty, organizational, and military license plates offered in the U.S. generate funds to support initiatives. In 2013, Florida generated $31 million in sales from specialty license plates [17]. Alabama currently offers 115 different specialty plates, Florida offers 122, and Georgia offers 208 [18].

Another form of donation to environmental causes is volunteering. Organizations need volunteers to donate their time for a variety of reasons including tabling, campaigning, or manual labor like trash cleanups. In the southeastern U.S., the Chattahoochee Riverkeeper is a nonprofit committed to keeping the Chattahoochee River clean and safe. With the help of 2100 volunteers, almost 60 tons of waste was removed from the river in 2022 [19]. In Florida, Miami Waterkeeper is a nonprofit organization working to promote clean water and ecosystem protection [20]. In 2021, the organization had 506 volunteers

check in to 24 different volunteer events contributing to 1029 pounds of marine debris removed, 1617 water samples collected and analyzed, and 1125 individuals trained to report pollution [21].

Donations, whether given in the form of money or time, can help organizations focused on water conservation make a large impact and achieve their goals. However, how to communicate most effectively with potential donors, specifically related to water conservation, is still unknown. Examining differences in donation engagement based on personal conservation behaviors may increase environmental communicators' ability to use the role of self-identity as a way to improve communication efforts focused on increasing donations to organizations supporting water protection efforts.

1.1. Conceptual Framework

The current study was based on a framework which connects the concept of self-identity and intention to engage in donation behaviors contributing to broader, potentially more impactful, water conservation efforts. These two concepts were used together in many environmental studies using self-identity to reinforce intention to engage in various environmental behaviors. Previous studies [22–24] connected self-identity and intention to engage in pro-environmental behaviors, but there are currently no studies specifically connecting self-identity to intention to engage in water conservation donation behaviors.

1.2. Self-Identity

Self-identity reflects the extent to which a person sees themself as fulfilling a societal role, and it has a significant influence on personal behavior [25]. Ajibade and Boateng [22] found participants with stronger eco-centric identities had stronger intent to engage in pro-sustainable behaviors. The findings suggested strengthening certain environmental identities may encourage participation in pro-sustainable behaviors. Additionally, Valizadeh et al. [26] found higher conservation identity was significantly related to higher intention of water conservation. Farmers who identified as a "good farmer", who think beyond their farm to their social and ecological impacts, were more likely to engage in water conservation behaviors, which included encouraging other farmers to conserve water and paying for water conservation. Furthermore, environmental groups usually promote public activism, which sends normative messages to members and the community [27]. Other normative messages include displays of identification and membership within a group. For example, someone with a branded water bottle from a conservation organization they are a member of shows their peers they see themselves as part of a certain type of group. Owning a specialty license plate also sends a normative message about water conservation attitudes and engagement and may be an expressive form of self-identity warranting an exploration into its relationship with water conservation behaviors.

1.3. Income

A person's income level can mediate certain behaviors that contribute to their self-identity. There is substantial evidence for positive relationships between income level and donation [28–30]. Donations can be a way to increase self-identity as a conservationist by using discretionary income or free time to contribute to environmental organizations. Discretionary income and time can be difficult to measure, and the two variables' relationship with donation is much more complex than a simple positive or negative relationship [31]. Previous studies used income level to explore its effect on pro-environmental behavior [32] and donation behavior [33].

1.4. Behavioral Intent

The strongest predictor of actual behavior is behavioral intention [34]. Behavioral intention refers to factors that impact actual behavior and willingness to perform that behavior [34]. Studies often examine water conservation intention and do not measure self-reported or actual behavior (e. g., [35–40]). Other fields of study that examine the rela-

tionship between intention on behavior reported a relationship between the variables [41]. In addition, identity was included in studies examining intention for green behavior and found as a significant predictor of intention [42].

1.5. Engaging in Donation Behavior

Monetary donations take different forms and can range from a one-time, small donation all the way to leaving an estate to an organization [43]. Donating money to an organization is simple to do considering most organizations take online payments. Monetary donations can be tied to identity as little or as much as donors want because of anonymous or public giving. For example, websites like GoFundMe allow donors to give money anonymously to whatever fundraiser they choose [44]. On the other hand, Clemson University's "I Pay Ten a Year" (IPTAY) is a well-known fundraising organization at the South Carolina university where many donors display their commitment with "IPTAY" car stickers, t-shirts, hats, etc. [45].

Membership with an organization typically comes with a longer-term commitment, whether that is recurring giving, receiving newsletters, or donating other resources. Some organizations require more than just a donation to join, such as mandating volunteer hours and meeting attendance. Motivation to join a group is altruistic, egotistic, or somewhere in between [12]. Organizations sometimes encourage membership through discounts, merchandise, and other benefits. Group membership in relation to self-identity has stronger ties than solely giving money. There is a considerable amount of research on the influence of social identity on behavior and individuals with a strong sense of collective self in a group [46]. For example, Van der Werff et al. [47] found the stronger self-identity as an environmentalist, the stronger the personal norm of environmentally friendly behavior. Environmental self-identity was measured with three statements in which respondents rated them on a seven-point scale ranging from totally disagree to totally agree: Acting environmentally friendly is an important part of who I am; I am the type of person who acts environmentally friendly; I see myself as an environmentally friendly person [47].

Owning a specialty license plate also takes commitment on part of the purchaser. Those desiring a specific plate must pay an upfront cost above and beyond typical registration fees and go to their Department of Motor Vehicles to request the specific plate. In the state of Georgia, depending on which plate is chosen, owners must pay an annual registration fee, special tag fee, ad valorem tax, and fill out special forms [16]. Specialty license plates do promote social norms and create a sense of identity in a group even though they are more difficult to obtain than a membership or just giving a monetary donation. Displaying a specialty license plate supporting conservation efforts is how environmentalists can distinguish themselves from others in a public manner and promote normative messaging of pro-environmental beliefs.

Volunteers donate time, energy, and labor to organizations at no cost. Volunteering can include physical labor, manning a booth, lobbying, etc. Volunteering usually requires people to donate their limited free time to an organization for which they may receive no personal benefit. There is a strong amount of effort put into volunteering, but it also contributes to the formation of self-identity as an environmentalist because it is much more than handing over money. Volunteering is intentional work during hours that would normally serve as leisure. A person's sense of commitment to a group has consistently predicted volunteer engagement, and the act of donating time has a positive impact on the sense of self efficacy and empowerment [48].

1.6. Purpose and Research Objectives

The purpose of this study was to determine if personal water conservation behavioral intent impacted contributions to organizations supporting water conservation so effective communication strategies can be developed which encourage individuals to move beyond personal action to broader water conservation efforts. The research objectives were to:

1. Describe the relationships between personal water conservation behavioral intent and current donation to a water conservation organization, membership in a water conservation organization, purchasing specialty license plates, and volunteering time for water conservation efforts;
2. Determine if personal water conservation behavioral intent predicts donation to a water conservation organization, membership in a water conservation organization, purchasing specialty license plates, and volunteering time for water conservation efforts;
3. Determine if income level mediates the effect of personal water conservation behavioral intent predicting donation to a water conservation organization, membership in a water conservation organization, purchasing specialty license plates, and volunteering time for water conservation efforts.

2. Materials and Methods

A quantitative research design was used to address all three research objectives. The research presented here was part of a larger study designed to explore public perceptions related to water conservation behaviors. The larger study sought to understand water conservation intention and behavior within the theory of planned behavior to further explore relationships and nuances between the variables.

2.1. Population and Sample

The target population was residents who were 18 years of age or older in the U.S. states of Georgia, Florida, and Alabama. The decades-long water war over two shared river basins, the Apalachicola–Chattahoochee–Flint and the Alabama–Coosa–Tallapoosa, in these three states was the reason Alabama, Florida, and Georgia were selected [49].

2.2. Data Collection

Respondents were recruited in September 2022 using non-probability opt-in sampling via Qualtrics. Non-probability opt-in sampling is well accepted in public opinion research, although it poses several limitations, such as limiting respondents to individuals with internet access and attracting specific types of people due to the nature of online surveys [50]. Quotas for gender, race, and ethnicity, representative of the populations of Georgia, Florida, and Alabama, based on the 2020 Census, were established a priori to mitigate this limitation [51]. Responses were collected from 907 respondents—287 in Alabama, 309 in Florida, and 311 in Georgia.

2.3. Instrumentation

Respondents' self-reported intent to engage in water conservation behaviors was measured by respondents indicating how likely they were to engage in nine water conservation behaviors on a five-point Likert-type scale (1 = Very Unlikely; 2 = Unlikely; 3 = Undecided; 4 = Likely; 5 = Very Likely). Respondents were also allowed to indicate Not Applicable. Items were adapted from Gibson et al. [37], Owens and Lamm [52], and Patterson [53]. Respondents were asked to indicate their level of intent for each of the following statements: donate to an organization that protects water; join a water conservation organization; buy a specialty license plate that supports water conservation efforts; only run the washing machine when it is full; only run the dishwasher when it is full; only water your lawn in the morning or evening; reduce the number of times you water your lawn; sweep patios and sidewalks instead of hosing them down; and volunteer for a stream cleanup or restoration event. Responses were averaged to create an intent to engage in water conservation behavior index found reliable ($\alpha = 0.81$). If respondents selected Not Applicable for an item, they received a series mean—the mean of all responses related to the variable [54]. This index was used to determine relationships between and prediction of civic behaviors, donation behaviors, and income level.

Respondents were asked to select "yes" or "no" on four statements about their current conservation behaviors. The respondents were asked if they: donate to an organization that protects water, are a member of a water conservation organization, own a specialty license plate that supports water conservation efforts, and volunteer for a stream cleanup or wetland restoration event. Items were adapted from Gibson et al. [37] and Owens and Lamm [52]. Respondents were grouped by their response, "yes" or "no", to each of the four statements. Respondents who responded "yes" received a 1 and respondents who responded "no" received a 0. Respondents were placed in one of the two different groups for each analysis.

Respondents were asked to report their total family income, from all sources and before taxes, in the year 2021. The income levels were described as: less than $24,999, $25,000 to $49,999, $50,000 to $74,999, $75,000 to $149,999, $150,000 to $249,999, and $250,000 or more. Respondents were only allowed to select one level of income.

The survey was reviewed for content accuracy and face validity by a panel of faculty members in natural resource conservation, survey design, and communication studies. The University of Georgia Institutional Review Board (IRB #00005553) approved the study design. The instrument was pilot tested for content validity with 50 individuals who were representative of the sample. The Cronbach alpha coefficients were all above 0.70 and, therefore, the scales were deemed reliable [55], and no changes were made following the pilot test.

2.4. Demographics

The average respondent was female (53.3%), white (76.5%), and had an income between $25,000 and $49,999 (26.1%). Detailed demographic characteristics of the respondents can be viewed in Table 1.

Table 1. Demographics of respondents (N = 907).

	Total		**Florida**		**Georgia**		**Alabama**	
	(N = 907)		**(N = 309)**		**(N =311)**		**(N = 287)**	
Baseline Characteristic	***F*** *	**%**	***F***	**%**	***F***	**%**	***F***	**%**
Sex								
Female	483	53.3	194	62.8	133	42.8	156	54.4
Male	424	46.7	115	37.2	178	57.2	131	45.6
Age								
18–34 years	206	22.6	81	26.2	66	21.2	59	20.6
35–54 years	287	31.6	92	29.8	101	32.5	94	32.8
55+ years	414	45.8	136	44	144	46.3	134	46.7
Race **								
White	694	76.5	212	68.6	232	74.6	250	87.1
Black	130	14.3	56	18.1	49	15.8	25	8.7
Asian	55	6.1	30	9.7	20	6.4	5	1.7
American Indian or Alaska Native	21	2.3	10	3.2	3	1	8	2.8
Other	42	4.6	23	7.4	12	3.9	7	2.4
Ethnicity								
Hispanic	153	16.9	111	35.9	25	8	17	5.9
Non-Hispanic	754	83.1	198	64.1	286	92	270	94.1

Table 1. *Cont.*

	Total		Florida		Georgia		Alabama	
	(N = 907)		(N = 309)		(N =311)		(N = 287)	
Baseline Characteristic	***F*** *	**%**	***F***	**%**	***F***	**%**	***F***	**%**
Family Income Level								
Less than $24,999	195	21.5	62	20.1	58	18.6	75	26.1
$25,000–49,999	237	26.1	86	27.8	71	22.8	80	27.9
$50,0000–74,9999	191	21.1	67	21.7	61	19.6	63	22
$75,000–149,999	218	24	77	24.9	85	27.3	56	19.5
$150,000–249,999	48	5.3	10	3.2	28	9	10	3.5
$250,000 or more	18	2	7	2.3	8	2.6	3	1
Home Ownership								
Rent	577	63.6	116	37.5	97	31.2	93	32.4
Own	306	33.7	184	59.5	208	66.9	185	64.5
Other	24	2.6	9	2.9	6	1.9	9	3.1

Note: * *F* represents absolute frequency. ** Respondents could select more than one race.

2.5. Data Analysis

Data were analyzed descriptively, using means and standard deviations, and relationally, using point-biserial correlations, to meet the first research objective. Point-biserial correlations were used because the binary questions on current conservation behaviors were discrete dichotomies [56]. The behavioral intent scale was compared against each current civic behavior to determine if there were relationships between the five variables. The correlation coefficient, *r*, shows the effect size and direction of the relationship, which is determined to be significant by the *p*-value [56]. The confidence interval, CI, also shows significance when the interval does not include zero, and s^2 shows the sample's variance. Binary logistic regressions were used to address objective two. Binary logistic regression is used when the outcome is a categorical variable and has exactly two categories [56]. The civic behavior responses were separately used as dependent variables while intention was used as the covariate for each response. Binary logistic regressions with a categorical indicator were used to address objective three. The same analyses from objective two were used except objective three models used income level as a categorical indicator to determine if income level mediated intention. The value of B represents the change in logit, which is the natural logarithm of the odds of the outcome occurring, of the outcome variables associated with a one-unit change in mean intention score [56]. The odds ratio indicates a change in odds resulting from a one-unit change in the mean intention score, and the probability shows how likely the respondents were to donate with a one-unit increase in mean intention score. Analyses were run using a 95% confidence level to calculate the p-values. Data were analyzed using the Statistical Package for the Social Sciences (SPSS) 27 (Chicago, IL, USA).

3. Results

Respondents were asked to indicate how likely or unlikely they were to engage in nine water conservation behaviors. The mean was then used as a measure of their self-reported intent to engage in water conservation behaviors, indicating that, overall, they were likely to engage (M = 3.66, SD = 0.67). Personal water conservation behavioral intent was significantly related to current donation to a water conservation organization ($r = 0.364$, $p < 0.001$), membership in a water conservation organization ($r = 0.260$, $p < 0.001$), purchasing specialty license plates ($r = 0.266$, $p < 0.001$), and volunteering time for water conservation efforts ($r = 0.308$, $p < 0.001$). Donation and volunteering shared 13.2% and 9.5% of their variance, respectively, with personal water conservation behavioral intent, which is considered a medium effect [56]. Membership and specialty license plate ownership shared

6.8% and 7.1% of their variance, respectively, with personal water conservation behavioral intent, which is considered a small effect [56]. Detailed results can be found in Table 2.

Table 2. Relationships between personal water conservation behavioral intent and civic behaviors.

Civic Behavior	*r*	*p*	CI	s^2
I donate to a water conservation organization	0.364	<0.001	[0.306, 0.419]	13.2
I am a member of a water conservation organization	0.260	<0.001	[0.199, 0.320]	6.8
I own a specialty license plate that supports water efforts	0.266	<0.001	[0.205, 0.326]	7.1
I volunteer for water protection events	0.308	<0.001	[0.248, 0.366]	9.5

Note: *r*, correlation coefficient; *p*, significance value of *r*; CI, 95% confidence interval of *r*; s^2, sample variance.

Binary logistic regressions were used to determine if personal water conservation behavioral intent significantly predicted water conservation donation (see Model 1 in Table 3). Model 1 represents the prediction of donation behavior using water conservation behavioral intent. Personal water conservation behavioral intent was a significant predictor of donation. Respondents were 9.39 times more likely to donate when their water conservation behavioral intent mean score increased by one. Binary logistic regressions were used to determine if income level mediated the personal water conservation behavioral intent effect as shown in Model 2. Model 2 represents the analysis of income level mediating water conservation behavioral intent. Respondents reported their intent to engage in water conservation behaviors, if they donate to a water organization, and their total income from 2021. The results indicated that as income level increased, the respondents were more likely to donate to a water organization, but that intention to engage in water conservation behaviors was still a significant predictor. Detailed results can be found in Table 3 Model 2.

Binary logistic regressions were used to determine if personal water conservation behavioral intent significantly predicted membership in a water conservation organization (see Model 1 in Table 4). Personal water conservation behavioral intent was a significant predictor of membership. Respondents were 12.30 times more likely to be a member when their water conservation behavioral intent mean score increased by one. Binary logistic regressions were used to determine if income level mediated the personal water conservation behavioral intent effect as shown in Model 2. Respondents reported their intent to engage in water conservation behaviors, if they are a member of a water organization, and their total income from 2021. The results indicated as income level increased, the respondents were more likely to be a member of a water organization except at the $250,000 or more income level. Intention to engage in water conservation behaviors was still a significant predictor. Detailed results can be found in Table 4, Model 2.

Table 3. Predicting donation to a water organization using personal water conservation behavioral intent and income level.

	B	Odds Ratio	Probability
Model 1			
intention	2.24 *	9.35	9.39
Model 2			
intention	2.16 *	8.64	8.67
Less than $24,999	-	-	-
$25,000 to $49,999	0.39	1.48	1.48
$50,000 to $74,999	0.53	1.70	1.70
$75,000 to $149,999	1.18 *	3.26	3.25
$150,000 to $249,999	1.30 **	3.67	3.67
$250,000 or more	1.73 **	5.66	5.64

Note: * $p < 0.001$ ** $p < 0.01$. *B*, binary logistic regression coefficient.

Table 4. Predicting membership in a water organization using personal water conservation behavioral intent and income level.

	B	Odds Ratio	Probability
Model 1			
intention	2.51 *	12.35	12.30
Model 2			
intention	2.31 *	10.03	10.07
Less than $24,999	-	-	-
$25,000 to $49,999	1.16	3.20	3.19
$50,000 to $74,999	1.65	5.23	5.21
$75,000 to $149,999	2.91 **	18.27	18.36
$150,000 to $249,999	3.69 *	40.08	40.04
$250,000 or more	2.94 ***	18.89	18.92

Note: * $p < 0.001$ ** $p < 0.01$ *** $p < 0.05$. *B*, binary logistic regression coefficient.

Binary logistic regressions were used to determine if personal water conservation behavioral intent significantly predicted specialty license plate ownership (see Model 1 in Table 5). Personal water conservation behavioral intent was a significant predictor of specialty license plate ownership. Respondents were 12.55 times more likely to own a specialty license plate when their water conservation behavioral intent mean score increased by one. Binary logistic regressions were used to determine if income level mediated the personal water conservation behavioral intent effect as shown in Model 2. Respondents reported their intent to engage in water conservation behaviors, if they own a specialty license plate that supports water efforts, and their total income from 2021. The results indicated as income level increased, the respondents were more likely to own a specialty license plate except at the highest income level. The income level category $250,000 or more should not be interpreted because of quasi-complete separation due to sample size, causing the estimate to be unreliable. Additional context is provided in the limitations. Intention to engage in water conservation behaviors was still a significant predictor. Detailed results can be found in Table 5, Model 2.

Table 5. Predicting license plate ownership using personal water conservation behavioral intent and income level.

	B	Odds Ratio	Probability
Model 1			
intention	2.53 *	12.56	12.55
Model 2			
intention	2.40 *	10.99	11.02
Less than $24,999	-	-	-
$25,000 to $49,999	0.21	1.24	1.23
$50,000 to $74,999	1.21	3.35	3.35
$75,000 to $149,999	1.71 **	5.51	5.53
$150,000 to $249,999	1.93 ***	6.85	6.89
$250,000 or more [1]	−17.444	0.00	37,505,569.50

Note: * $p < 0.001$ ** $p < 0.01$ *** $p < 0.05$; [1] The income level category $250,000 or more should not be interpreted because of quasi-complete separation. *B*, binary logistic regression coefficient.

Binary logistic regressions were used to determine if personal water conservation behavioral intent significantly predicted volunteering for water conservation events (see Model 1 in Table 6). Personal water conservation behavioral intent was a significant predictor of volunteering. Respondents were 8.00 times more likely to volunteer when their water conservation behavioral intent mean score increased by one. Binary logistic regressions were used to determine if income level mediated the personal water conservation behavioral intent effect as shown in Model 2. Respondents reported their intent to engage

in water conservation behaviors, if they volunteer for water conservation events, and their total income from 2021. The results indicated as income level increased, the likelihood of volunteering increased except at the highest income level. Intention to engage in water conservation behaviors was still a significant predictor. Detailed results can be found in Table 6, Model 2.

Table 6. Predicting volunteer efforts using personal water conservation behavioral intent and income level.

	B	Odds Ratio	Probability
Model 1			
intention	2.08 *	8.03	8.00
Model 2			
intention	1.98 *	7.22	7.24
Less than $24,999	-	-	-
$25,000 to $49,999	0.84	2.31	2.32
$50,000 to $74,999	1.22 ***	3.39	3.39
$75,000 to $149,999	1.59 *	4.88	4.90
$150,000 to $249,999	2.17 *	8.72	8.76
$250,000 or more	1.12	3.07	3.06

Note: * $p < 0.001$ *** $p < 0.05$. *B*, binary logistic regression coefficient.

4. Discussion and Conclusions

The study evaluated relationships between personal water conservation behavioral intent and nine water conservation civic behaviors. The results indicated personal water conservation behavioral intent was positively related to water conservation civic behaviors. These results confirmed the findings of Ajibade and Boateng [22] about environmental identities predicting intent to engage in pro-environmental behavior. Personal water conservation behavioral intent and income level were significant predictors of civic behavior. With a few exceptions, the overall findings of income level positively predicting donation confirmed previous research studies [28–30]. The exceptions were mainly at the highest income level where respondents were less likely to be a member of a water organization, own a specialty license plate, and volunteer their time for water efforts. These results can aid in effective communication strategies to encourage water conservation at different income levels.

Understanding these factors and results are essential to policy makers that communicate the importance of water conservation to the public [57]. Audience segmentation may be an effective strategy [58,59] when dealing with different levels of self-identity as a conservationist [25] as well as different socioeconomic statuses. The study adds important findings to the body of literature that explores intention and donation behaviors in the environmental sphere. Water conservation messaging can benefit from these findings on the relationships between intention to engage in water conservation, water conservation donation behavior, and income level.

Implications and Recommendations

Environmental communicators should encourage those who identify as conservationists to increase their self-identity through donation, whether they already participate in a form of donation or not. Those who already donate should be encouraged to give to water organizations in other ways, specifically ways that send normative messages to the public. For example, people can buy merchandise from water protection organizations such as shirts, stickers, water bottles, etc., that can be worn and displayed for others to see. Social media is also a tool conservationists can use to show their support for water protection efforts. Some social media platforms have a direct way to donate to organizations and share the donation page with others. When targeting conservationists who do not already donate, communicators should stress the importance of donation to increase

successful water protection efforts. Many organizations that encourage donations have websites showcasing their efforts and projects that are successful because of donations from individuals. Environmental communicators should showcase these organizations' projects and need for donations to increase donations from water conservers that do not already donate. They should also stress organizations being able to reach more water conservation goals than individuals on their own capitalizing on the power of subjective norms and influence of self-identity [25].

Limitations of the study include lack of differentiation between income level and discretionary income. The study assumed higher income was related to higher discretionary income, which is not always the case, although the study results indicated higher level income respondents were more likely to donate to a water organization. Discretionary income can be difficult to determine. A higher overall income could result in a family having more bills to pay due to more children in the home resulting in less discretionary income. A person with a lower overall income could be single and have no children, and, in turn, have more discretionary income due to only having to provide for themself. There are different ways to measure income when researching its effect on donations such as salary, hourly wage, and hours worked. Additionally, evidence suggests there are different outcomes on volunteer hours in relation to income depending on how income is measured [31].

Another limitation of the study was that quasi-complete separation impacted the analysis of license plate ownership using personal water conservation behavioral intent and income level [60]. Quasi-complete separation can occur when the sample size is small and the distribution somewhat large (e.g., uneven groups in each category). In the sample, there were 18 responses in the $250,000 or more category, and none of the respondents owned a specialty license plate. There are a few solutions to quasi-complete separation. One option is to leave in the variable causing the separation and only interpret the other parameters. The test statistics for the other variables in the model still have maximum likelihood estimates that are valid [60].

Despite these limitations, the results indicated as income level increased, the likelihood of being a member of a water organization, owning a specialty license plate, and volunteering also increased except at the highest income level for each model. Respondents at the highest income level may not be as likely to be a member of a water organization or volunteer for water efforts due to time commitments. Those with the highest income levels may view their time as extremely valuable and are less likely to use it for membership requirements or volunteering. Respondents at the highest income level may not be as likely to own a specialty license plate, which may be a result of people with expensive, luxury cars not wanting to put a specialty license plate on their type cars. This may stem from social norms in the luxury car community.

The results may be further explained through additional research. Researchers should explore how respondents with low intent to engage in water conservation behaviors can be encouraged to engage and donate by testing specific communication messages. Those with low intention to engage in water conservation should also be studied to determine if self-identity and/or education on water issues could increase their intention levels. In addition, age could be analyzed in future research to determine if certain age brackets are more likely to volunteer, which would impact recommendations for different age groups. Future research could also explore the relationship between true discretionary income and intent to engage in conservation behavior. This could be carried out through a survey asking respondents to indicate their level of discretionary income. This may be a better approach to determine the relationship between income and personal water conservation behavioral intent as well as donation behaviors.

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