sustainability

MDPI

Article

Water Conservation and Environmental Sustainability from a Community Clinical Psychological Perspective

Andrea Caputo [1,*], Manuela Tomai [1], Elpiniki Pomoni [2], Hilda Cecilia Méndez [3], Bartolo Atilio Castellanos [3], on behalf of the "Agua Futura" Consortium [3,†] and Viviana Langher [1]

[1] Department of Dynamic and Clinical Psychology, and Health Studies, Sapienza University of Rome, 00185 Rome, Italy; manuela.tomai@uniroma1.it (M.T.); viviana.langher@uniroma1.it (V.L.)
[2] Institute of Geosciences and Earth Resources, National Research Council, 56127 Pisa, Italy; e.pomoni@igg.cnr.it
[3] Faculty of Medicine, University of El Salvador (UES), San Salvador 3222, El Salvador; hilda.mendez@ues.edu.sv (H.C.M.); bartolo.castellanos@ues.edu.sv (B.A.C.); claudia.cardoza@ues.edu.sv
* Correspondence: andrea.caputo@uniroma1.it
† Membership of the "Agua Futura" Consortium is provided in the acknowledgments.

Abstract: This study was carried out as a part of the international cooperation project "Agua Futura" for the improvement of water resource management in rural communities of Central America. Given the problem of water shortage, especially in El Salvador, the aim was to detect some key factors affecting water conservation and environmental sustainability from a community clinical psychological perspective. Ninety rural inhabitants (mean age = 46.84, SD = 17.05) of El Salvador were given a structured interview exploring their symbolizations about water conservation. Data were analyzed through computer-assisted thematic analysis, then complemented by a qualitative analysis. Several themes were identified highlighting some differences regarding the emotional salience given to water resources as a primary good, the sense of responsibility for the sustainability of water resources at the community level, as well as diverse motivations and purposes affecting water use in households. The findings support the role of emotions, representations about others' attitudes, and defenses against vulnerability and future uncertainty about water shortage. Additionally, the shift between an individualist or collectivist perspective underlying the decision to preserve water resources represents a significant matter to be taken into account for the understanding of effective pro-environmental behaviors in the long run.

Keywords: water; environment; sustainability; community clinical psychology

Citation: Caputo, A.; Tomai, M.; Pomoni, E.; Méndez, H.C.; Castellanos, B.A.; on behalf of the "Agua Futura" Consortium; Langher, V. Water Conservation and Environmental Sustainability from a Community Clinical Psychological Perspective. *Sustainability* **2022**, *14*, 9146. https://doi.org/10.3390/su14159146

Academic Editor: Fanli Jia

Received: 20 June 2022
Accepted: 24 July 2022
Published: 26 July 2022

1. Introduction

Among the continental American countries, El Salvador shows the lowest water availability per inhabitant [1,2]. Indeed, the human right to drinking water is not guaranteed, especially in rural areas, where only 32% of inhabitants have access to it. Accordingly, the sustainability of the water supply system represents the most significant challenge for the country [3,4]. Overall, the world is projected to experience a 40% freshwater shortage by 2030 due to several factors including climate change, increasing affluence, rapid urbanization, and the inadequate management of wastewater on an urban, industrial, and agricultural level [5]. Additionally, poor public environmental awareness and participation may contribute to worsening this situation, because these factors may prevent the adoption of effective domestic water conservation behaviors [6]. Most of research has focused on explanatory socio-economic factors affecting water management and conservation, such as family composition, income and water pricing; accordingly, pricing and formal use restrictions have been adopted to reduce water demand [7,8]. On the other hand, behavioral interventions focused on personal intentions and pro-environmental attitudes have been taken into account to enhance the sustainability of water resources [6]. Albeit a large body of

evidence has confirmed the strong correlation between psychological factors (e.g., attitudes, subjective norms, control, household culture) and water use [9], water conservation studies have often reported mixed findings about the effectiveness of behavioral interventions [10]. Specifically, people who have positive attitudes toward water conservation perceive social pressure from others, think of water as a finite resource, and feel vulnerable to drought are more committed to saving water (in terms of conservation intentions) [9,10]. However, the extent to which such intentions translate into actual water conservation behaviors is not clear from the existing literature, which highlight inconsistent findings, probably because of automatic and not always reasoned habits and routines [9,10]. For instance, those who report greater confidence in their ability to engage in everyday water conservation tend to use more water in their households [9–11]. Moreover, reinforcing personal capabilities in terms of knowledge and skills does not always result in reduced water usage (e.g., taking shorter showers, only doing full loads of washing, turning off the tap when brushing teeth) [9,10].

In this regard, different information processing routes have been hypothesized, which may influence water use behaviors in households and are grouped into reflective, semi-reflective and automatic [6]. Such routes are assumed within a continuum ranging from unconscious to conscious, in accordance with a dual system of information processing, where system 1 (which processes the most information) is unconscious, energy-efficient, quick, and based on intuition and emotions, whereas system 2 is conscious, energy-consuming, slow, intentional, and based on cognition [12]. Specifically, the reflective route implies a conscious processing of information (system 2) and attitudes that are consistent with rational arguments, past experiences, and acquired knowledge. From such a perspective, providing concrete information and timely advice could affect awareness and attitudes about water conservation. Whereas the semi-reflective route deals with a partially conscious processing of information, since attitudes are based on heuristics and rules of thumb mostly grounded in shared social norms. In this sense, decision-making relies on external stimuli, such as receiving personalized messages from a well-trusted source or following others' behaviors to conform to one's social surroundings. Then, the automatic route refers to an unconscious information processing (system 1), which consider attitudes and decisions as automatic responses based on the nature and quality of evoked feelings. Therefore, automatic tactics play on the unconscious mind and induce an automatic response to change behaviors without reasoning, for example through messages evoking guilt when dealing with water waste behaviors. The relevance of such automatic routes is also supported by further studies that found emotions as significant predictors of pro-environmental behaviors [13–15] and long-term practices about environmental sustainability [13,16]. For instance, positive emotions, such as gratitude, pride, and contentment, are associated with pro-environmental behaviors; whereas negative emotions imply proactive actions, especially when they involve moral or self-evaluation emotions, such as shame and guilt, rather than just fear or anxiety. However, enhancing positive affect results in more effective sustainable behaviors on the long run [13–15].

In this regard, a community clinical psychology perspective has been more recently proposed [17] as "a specialty area within clinical psychology that emphasizes new perspectives, as well as new roles, for psychologists collaborating with citizen groups and community based organizations" [16] (p. 201). The reference to community in this discipline highlights the perspective of intervention in collective and social processes aimed at achieving healthy conditions. To understand and explain individual–context interactions, clinical community psychology uses psychodynamic approaches; in particular, the affective and symbolic processes of the construction of experienced and shared reality are examined. Such a perspective emphasizes the emotional domain in community life as well as the unconscious intersubjective space co-created by community members [18–21]. Emotions are intended as socially shared feelings that connote social experiences pointing out the interrelations between individuals and communities. Social systems represent a shared source aimed at protecting individuals and preventing them from distress and anxiety. Consistently, community beliefs, norms, and behaviors may appear apparently contradictory

or irrational to some extent, given the existence of defensive patterns that aggregate at a societal level and are oriented to avoid painful realities and prevent change within communities [19,21,22]. Such automatic attempts (e.g., minimization, displacement, rationalization, sublimation) to defend against vulnerability and manage future uncertainty have been also found when dealing with water-related issues and concerns [23,24]. Therefore, community clinical psychological work focuses on the capacity to grasp the sense-making processes implicitly shared by community members in order to expand collective meanings and create new narratives about community's identity, purposes, and practices.

Based on these premises, the present research study aims at exploring how the emotional realm, mainly relying on unconscious processing in terms of automatic responses and affective and symbolic meanings, may have a role in water management and conservation. This could help to deepen the understanding about less reasoned habits and routines and explain some apparently irrational water use behaviors, thus contributing to filling the gap in previous research, highlighting the insufficiency of cognitive models in accounting for the relations between water conservation intentions and actual use behaviors. This study was conducted as part of the international cooperation project "Agua Futura" for the improvement of water resource management in rural communities of El Salvador, faced daily with issues of water shortage. Specifically, it adopts a community clinical psychological perspective, focused on the individual–community interface [17,18] and assuming an intersubjective emotional space that is co-created by community members [19–22]. According to this perspective, emotions are not individual responses pertaining to the inner world (e.g., anger, happiness, sadness) but feelings that stem from social dynamics involving affective symbolizations, i.e., the unconscious emotional representation of reality that is one of the motivational factors of human behavior. Consistently, affective symbolizations are shared by individuals participating in the same context and are used to categorize and adapt to reality [21]. This study may thus consistently contribute to detecting some key factors affecting water conservation and environmental sustainability from shared emotions and implicit attitudes, thus allowing the development of contextual knowledge and locally-based solutions [25].

2. Materials and Methods

2.1. Setting

This study was carried out at two pilot sites of San Salvador, San Marcos and Colima. They are small rural areas that are characterized by scarce residential connections to potable water and have a local economy mostly based on agriculture and itinerant trade. These sites were identified based on a participatory local analysis conducted by the project coordinators along with local informants (e.g., representatives of university institutions, ministerial bodies, administration officials, and community leaders), in accordance with the requirements by the Italian Agency for Cooperation and Development of El Salvador. Despite the establishment of the National Administration of Aqueducts and Sewers (ANDA) in 1961, as an autonomous organization of El Salvador State to ensure drinking water services and sanitation, water resource services are not always guaranteed across the whole country. In particular, since the requested charges are not sustainable for most of community members of rural areas (with an average monthly income of less than USD 300), water services are mostly managed by local water committees and rely on private domestic wells, which are generally not subjected to sanitation procedures. Moreover, despite San Marcos and Colima representing two important natural areas crossed by several rivers (i.e., Malatapa, Cuapa, and Aguachía in San Marcos and Lempa, Acelhuate, and Los Limones in Colima), water resources have rapidly decreased over the last decades because of urban growth, the over-exploitation of aquifers, soil change, riverbed alterations, and the degradation of wetlands (e.g., lakes, ponds, and estuaries). The situation is further worsened by problems of river overflow during the rainy season and pollution due to the use of agrochemical products in micro-basins and streams [3].

2.2. Sampling and Recruitment

A convenience and purposive sample was used in this research study, which consisted of participants from two rural communities of San Salvador (i.e., San Marcos and Colima) with different roles and knowledge about water-related issues. Indeed, the sample included both community inhabitants (92.2%) and community leaders, such as health promoters, environmental guards, representatives of ADESCO (Asociaciones de Desarrollo Comunal) and water management cooperatives. A sample size of 90 was considered adequate for computer-aided thematic analysis, based on the post hoc criterion of a type–token ratio (TTR; the ratio of different words or types to total words or tokens in the text) lower than 20%, indicating enough lexical variability for a statistical approach to textual data [26]. The recruitment was possible thanks to the intermediation of two NGOs (non-governmental organizations)—i.e., ACRA (Asociación de Cooperación Rural en África y América Latina) and ISCOS (Instituto de Cooperación Sindical en el Desarrollo)—and the logistical support by local leaders who facilitated informal contacts with possible participants within the communities. The main adopted inclusion criteria were age of majority and adequate language comprehension and production skills to complete informed consent and the interview administration. However, it should be noted that the sample cannot be considered as representative of the involved communities, given the voluntary participation and the lack of demographic information at a local level. Indeed, the pilot sites include small rural villages, mostly without access to primary services (e.g., utilities, transport, healthcare), where it is difficult to enter without the intermediation of local leaders because of public safety problems.

2.3. Data Collection

In-depth structured interviews were conducted, determining in advance questions' wordings and order of administration. The questions were open-ended in order to facilitate associative processes about the issue, thus valuing participants' lived experiences. A relevant topic covered by the interview guide related to the perceived water management and conservation practices in the community. Specifically, three open-ended questions were formulated for this purpose as reported below:

- What attitude does the community have towards water? (Question 1);
- What water conservation behaviors did you and your family implement? (Question 2);
- What do you think could be done to improve the water conditions in the community? (Question 3).

It should be noted that, from a methodological viewpoint, the aim was not inspecting the participants' factual knowledge or concrete behaviors about water management and conservation. Instead, such open-ended questions served as triggers to explore the interviewees' symbolizations on the issue from their thinking about other community members' mental states, giving meaning to their direct experience, and imagining possible future scenarios. The interviewers were Spanish native-speaking graduates enrolled in the specialization training course in Community Clinical Psychology of the University of El Salvador, who received specific training on the interview guide by the teachers and researchers involved in the project. All researchers had no further engagement with the study participants nor held specific positions within the communities.

The interviewers carried out interviews in pairs, with one of them in the role of observer for audio-recording the interview and annotating any relevant comments. In more detail, the interviews were mainly conducted in the participants' homes, in a quiet and confidential space, and lasted on average about 25 min (SD = 15). After having informed participants about the study aims, written informed consent was obtained for interview administration and audio-recording. The interview was conducted in accordance with the ethical principles and requirements of the Declaration of Helsinki with subsequent amendments. The study was approved by the Institutional Ethics Committee of the Department of Dynamic and Clinical Psychology, and Health Studies of "Sapienza" University of Rome.

2.4. Data Analysis

All the collected interviews were first transcribed verbatim by a researcher and then checked against the original recordings for accuracy by another researcher. Thematic analysis [27] was conducted through the computer-aided text analysis software program T-Lab PRO 4.1.1 [28] by using the "Context mining and automatic summary" tool. This tool facilitates an initial summary of text contents following a data-driven approach, without relying on categories previously established. Specifically, it assumes that meaning in a textual corpus can be derived from the "contextual effect" of word combinations, based on co-occurrences of semantic traits (i.e., isotopies). Therefore, it enables the deconstruction of the typical structuring or ordered constituent parts of language that express rational and intentional content, so as to focus on the syntagmatic relations between parts of the discourse during speech production, which instead reveal unconscious and implicit associations. In line with the bi-logic theory of the mind, language expresses the dialectical interaction between the conscious and unconscious functioning [29]. Beyond the manifestly reported contents and cognitive meanings, language allows people to emotionally categorize their experience of the reality. Therefore, through automatic text coding, the detection of isotopies shared by participants may help grasp those affective symbolizations on the issue underlying their discourses.

Accordingly, the software generates a digital "presence–absence" matrix with text segments (i.e., elementary context units, ECUs) in rows and lexical units (i.e., headwords or lemmas) in columns, and then performs an unsupervised clustering of ECUs using the bisecting K-means algorithm. The K-means method is a widely employed clustering technique, which is based on an iterative centroid-based divisive algorithm aimed at reducing the computational demand at the expense of sub-optimality. The following step consists of TF-IDF normalization and scales row vectors to unit length (Euclidean norm). Then, cosine coefficients are computed to inspect maximum similarity and cluster ECUs. In such a way, it is possible to obtain the groupings of text segments characterized by the same word-occurrence patterns. A chi-square test is applied to all the intersections of the contingency table and allows the detection of the most significant words/lemmas for each cluster, assuming a cut-off of 3.84 for $p < 0.05$ (one degree of freedom). Indeed, the chi-square test is computed for each lemma from a (2×2) contingency table reporting its frequency distribution, with two rows (examined cluster and other clusters) and two columns (presence and absence of each single lemma). The final output consists of an HTML file where the ECUs within the whole corpus are highlighted in different colors based on the identified clusters. In order to identify and systematize the emerging themes for each open-ended question, three researchers independently performed a qualitative analysis of the clusterized extracts by solving discrepancies by consensus. The theoretical approach adopted for interpretation relied on the Emotional Text Analysis (ETA) [29], which aims at grasping symbolic sense-making processes rather than factual knowledge or rational arguments. Specifically, ETA adopts a constructivist perspective oriented to detect some motivational and emotional dynamics (e.g., affiliation, power, achievement) shaping social interactions and representations shared by participants' narratives concerning a specific research object [30]. As stated above, beyond a mere content analysis, an interpretivist approach is used to identify the emotional core underpinning participants' statements for each emerging theme so as to understand their main affective symbolizations on the issue.

3. Results

Overall, the sample was mainly composed of women (60%) and had a mean age of 46.84 (SD = 17.05) years, ranging from 18 to 83. The performed thematic analysis allowed the identification of salient themes about the perceived water management and conservation practices in the community. Such findings may contribute to the understanding of how participants intend water resources sustainability within the community and how some crucial psychosocial dynamics may shape and affect management and conservation

practices at individual level. For each open-ended question, the emerging themes are presented below, followed by some examples of clusterized ECUs.

3.1. Community's Attitudes toward Water Management

Overall, six thematic domains have been identified regarding how the interviewees perceive the community's attitudes toward water management, relating to feelings of resentment, devaluation, irresponsibility, proactivity, sense of abandonment, and care. Table 1 shows the statistically significant lemmas for each thematic cluster based on the chi-square test.

Table 1. Lemmas for each thematic cluster about community's attitudes toward water management.

Cluster 1: Resentment		**Cluster 2: Devaluation**		**Cluster 3: Irresponsibility**	
Lemma	*Chi-square*	*Lemma*	*Chi-square*	*Lemma*	*Chi-square*
To cut off	43.00	Good	12.70	To waste	30.60
To pay	18.08	Drinking	7.08	Awareness	8.80
To take away	8.79	Contaminated	5.39	Resource	6.16
To complain	8.79	Dwell	5.22	To throw away	5.80
Month	4.75	Dirty	3.99	To value	5.15
Cluster 4: Proactivity		**Cluster 5: Sense of Abandonment**		**Cluster 6: Care**	
Lemma	*Chi-square*	*Lemma*	*Chi-square*	*Lemma*	*Chi-square*
Girl	11.83	To consume	24.69	Necessary	21.70
To work	7.38	Health	20.91	To use	9.15
Project	7.38	Badly	20.91	To water	7.38
Meeting	7.19	To care about	16.63	To employ	7.38
Neighbor	3.89	People	8.94	To take care of	4.36

3.1.1. Resentment

The community's attitude is perceived as characterized by feelings of resentment and complaints regarding the conditions of poor access and usability of potable water. The inadequacy of the water supply system is reported, mostly due to the problems of excessive costs and the daily rationalization of water as a primary asset of which inhabitants feel deprived.

> *"If a person does not pay a month, the following month s/he has to pay double, otherwise they cut off the water"* (Inhabitant, Man, 71 years old).

> *"Everyone complains about water management here. We have access to potable water only from 4 am to 7 am or from 4 pm to 7 pm every other month"* (Inhabitant, Woman, 60 years old).

3.1.2. Devaluation

The community's attitude is represented as featured by a general devaluation of the quality of water, as a contaminated resource that is inadequate for human consumption. Additionally, feelings of concern emerge about the actual efficacy of filtration and sanitation procedures, without the inhabitants feeling they can contribute to improving the situation.

> *"All the community's people know that this water is not good, it cannot be drunk because it is contaminated"* (Inhabitant, Woman, 51 years old).

> *"Water has a yellow color, comes out dirty, a day after being in the bucket you can see a black sedimentation"* (Inhabitant, Woman, 60 years old).

3.1.3. Irresponsibility

The community's attitude is featured by irresponsible behaviors with respect to the maintenance and sustainability of water resources for all the community's members. Water

is perceived as an infinite source, which is mostly taken for granted within a general frame of poor civic awareness.

> *"Some people do not value the fact that we have potable water so they waste this resource, wash the sidewalks, throw the water away"* (Inhabitant, Man, 72 years old).

> *"Many inhabitants do not have sufficient awareness because a high percentage of them waste a lot of water"* (Leader, Man, 52 years old).

3.1.4. Proactivity

The community's attitude is depicted as characterized by a general proactivity regarding the management of water resources as a collective good. The development of projects and water committees by the community members reveals a sense of direct participation and strong sharing with respect to water-related decisions and needs.

> *"A project on water management has started here; the members who are part of the steering committee hold constant meetings and work hard"* (Inhabitant, Woman, 45 years old).

> *"For whatever concerns water management and needs, people make themselves available to all the neighbors, especially girls"* (Inhabitant, Man, 61 years old).

3.1.5. Sense of Abandonment

The community's attitude is described as connoted by shared feelings of dissatisfaction and uncertainty about water management. A strong sense of abandonment of the community by institutions emerges. Additionally, a substantial indifference of the power groups is highlighted, within a general context of isolation and marginality.

> *"Here nobody informs about anything. Someone should come from the Health Unit to inform about what we consume, but I have never seen anyone, it is as if we did not exist"* (Inhabitant, Woman, 60 years old).

> *"We poor people are all in the same situation, we live badly, while the rich ones don't care about water issues, they have other things to deal with"* (Inhabitant, Man, 55 years old).

3.1.6. Care

The community's attitude is described as featured by substantial awareness of and care for water resources as a necessary good for the survival of the entire community. A greater sense of responsibility is expressed in ensuring a more sustainable system through rational and instrumental consumer behavior, especially for domestic use.

> *"We take care of water very well, we try not to waste it, to use it as necessary"* (Inhabitant, Woman, 42 years old).

> *"We do not waste water, it is employed only for various chores, for washing, cooking, washing dishes, drinking and watering the plants"* (Inhabitant, Woman, 35 years old).

3.2. Adopted Practices of Water Conservation

The analysis identified four thematic domains with respect to the adopted practices of water conservation, including harm reduction, saving, accumulation, and strategic use. Table 2 shows the statistically significant lemmas for each thematic cluster based on the chi-square test.

Table 2. Lemmas for each thematic cluster about adopted practices of water conservation.

Cluster 1: Environmental Damage Reduction		**Cluster 2: Saving**		**Cluster 3: Accumulation**		**Cluster 4: Strategic Use**	
Lemma	*Chi-square*	*Lemma*	*Chi-square*	*Lemma*	*Chi-square*	*Lemma*	*Chi-square*
People	15.27	Dollar	6.21	To accumulate	27.04	To take care of	7.27
To waste	10.93	To save	6.21	Awareness	8.66	To wash	4.59
Ministry of Health	10.81	Consumption	5.73	To take	7.60	Rain	4.40
Garbage	8.35	Little	5.73	Deposit	7.60	To use	4.26
To throw	5.12	Week	4.03	House	5.41	Tap	4.03

3.2.1. Environmental Damage Reduction

The behaviors adopted for water conservation are related to the reduction of possible damage to the environment, which can increase the risk of contamination and reduced sustainability overtime. In this sense, participants express fear and mistrust towards others when the focus is on the inhibition of their irresponsible and destructive behaviors, rather than on the effective management and care of water resources.

> *"It is important not to throw garbage into rivers; maybe ten percent of people take care of it and the others waste and destroy it"* (Inhabitant, Woman, 40 years old).

> *"Environmental prevention should be done by the Ministry of Health, as well as not cutting down trees and not contaminating water"* (Inhabitant, Man, 27 years old).

3.2.2. Saving

The behaviors adopted for water conservation are connected to careful use in domestic activities aimed at saving water resources so to avoid any waste. Participants mostly seem to express frustration feelings due to their dependence on a scarce resource they cannot do without. Indeed, the main focus is on the economic concern about the high costs that non-rationed use could entail for the entire family management and budget.

> *"Water costs eight dollars, when we buy it we have to use it little during the week to save money"* (Inhabitants, Woman, 43 years old).

> *"We lowered the power of the counter so that a lot of water doesn't come out because it costs us a lot of money, sometimes more than twenty dollars"* (Inhabitant, Woman, 65 years old).

3.2.3. Accumulation

The behaviors adopted for water conservation are connected to accumulation strategies to ensure a precautionary reserve at individual level. Participants implicitly express an intense sense of greed for possessing such valued goods, even at the expenses of others. Indeed, there is concern about future water availability and the actual capacity of collective wells to meet the needs of all the community members.

> *"We try to accumulate the water in a deposit, where we purify it through homemade filters"* (Inhabitant, Man, 29 years old).

> *"We take as much water from the well as possible, we do not know if the well will suffice for all the houses within the colony"* (Inhabitant, Man, 38 years old).

3.2.4. Strategic Use

The behaviors adopted for water conservation are connected to a strategic use of environmental resources and attention to any possible waste of potable water. Participants seem to enact a rational control dynamic aimed at attenuating their feelings of concerns for water scarcity and dependence on so important a resource. Accordingly, there is a

greater propensity to experiment with creative uses or to find alternative sources of water for carrying out some domestic activities.

> *"In winter, we consume less drinking water because rainwater is taken and used to wash the dishes instead of tap water"* (Leader, Man, 83 years old).

> *"We try to take care of water. Plants are given dirty water, the one with which clothes are washed, as long as it does not contain bleach"* (Inhabitant, Man, 23 years old).

3.3. Potential Improvement Proposals

The analysis identified four thematic domains with respect to the reported proposals for improving water sustainability, which refer to environmental awareness, need for funds, daily care, and supervision. Table 3 shows the statistically significant lemmas for each thematic cluster based on the chi-square test.

Table 3. Lemmas for each thematic cluster about potential improvement proposals.

Cluster 1: Environmental Awareness		**Cluster 2: Need for Funds**		**Cluster 3: Daily Care**		**Cluster 4: Supervision**	
Lemma	*Chi-square*	*Lemma*	*Chi-square*	*Lemma*	*Chi-square*	*Lemma*	*Chi-square*
Garbage	14.59	To improve	40.70	Well	11.07	To extract	36.99
River	13.72	Funds	26.02	Daily	7.13	Supervision	19.28
To contaminate	12.12	Quality	26.02	To take care of	5.38	To waste	19.28
Committee	7.38	To need	9.44	Meeting	5.12	To distribute	7.29
Plants	7.17	Colony	4.59	Actually	4.18	To put	5.84

3.3.1. Environmental Awareness

The improvement proposals are mostly focused on the environmental awareness of the entire community towards the preservation of natural resources. Participants seem to symbolically express a need for reparation, as the result of a guilty social misconduct. In fact, the main reported problem refers to the lack of conscientiousness about potential harmful practices, such as deforesting entire green areas or throwing garbage into rivers, which undermine water sustainability.

> *"Each of the inhabitants should be made aware mainly of the contamination generated by the garbage that ends up in the rivers"* (Inhabitant, Woman, 33 years old).

> *"Much of the problem is caused by deforestation; what we would have to do is encouraging people to always plant"* (Inhabitant, Man, 29 years old).

3.3.2. Need for Funds

A sense of reduced empowerment of the community emerges about making a substantial and significant contribution to the improvement of water conditions. Participants seem to emotionally express a sense of helplessness and incapacity to find autonomous solutions. Indeed, the main reported problem refers to the lack of external support and economic resources in order to enable the actual changes of some infrastructural/organizational conditions.

> *"Unfortunately, we have no financial resources to hire someone to come and give us lessons or carry out a study in this colony"* (Inhabitants, Man, 52 years old).

> *"There are certain areas where the pipes would need to be changed and improved, but funds are lacking now"* (Inhabitant, Man, 62 years old).

3.3.3. Daily Care

There are no specific proposals regarding the improvement of the conditions of water resources. On the contrary, there is a need to persevere in daily care activities, which are already implemented, including the use of filters for drinking water, the maintenance

and cleaning of the wells, and active participation in water committees. In other words, participants seem to enact a process of rationalization by displaying themselves mostly as self-sufficient.

> *"If we don't take care of water, there will be less and less water. Actually, a lot depends on how we manage the well"* (Inhabitant, Woman, 65 years old).

> *"During regular meetings, we can ask, we can know and even say what is not right for us"* (Leader, Man, 45 years old).

3.3.4. Supervision

The proposals for improving water conditions are mostly focused on receiving expert technical supervision. In this sense, participants express a need for support through establishing an anaclitic relationship with external others. Community members express the need for an external guide that can provide clear information on water quality, distribution and accessibility, as well as on correct disinfection and sanitization procedures to adopt.

> *"As users, we can only avoid being wasteful, we would need external support on how to put chlorine"* (Inhabitant, Man, 53 years old).

> *"We need supervision to assess how water is extracted and whether it is true that the well has the capacity to distribute water to the entire community"* (Inhabitant, Man, 70 years old).

4. Discussion

The present study followed a community clinical psychological perspective aimed at detecting some key factors potentially affecting water conservation and environmental sustainability by in-depth interviews with members of rural communities characterized by water scarcity issues.

Overall, when examining their perceptions about the community's attitudes toward water management, participants express heterogeneous feelings. A first difference refers to the emotional salience given to water resources as a primary good, since conflicting perspectives exist. On one hand, there are feelings of frustration and resentment due to a strong sense of dependence on water as a valued good that one feels deprived of. On the other hand, a tendency to devalue the quality of water—reported as polluted and contaminated—emerges, which seems to deny such dependence for one's survival, thus attenuating anxiety thoughts. This sheds light on the potential ambivalent attitudes towards water management, since some social maneuvers may be enacted to defend against vulnerability and manage future uncertainty about water availability and consumption [23,24]. Indeed, at a community level, water seems to be symbolically represented as a both good/desirable and bad/devalued object, something one is forced to pay despite not being apt for human consumption. Thus, even if water wasting behaviors appear as apparently illogic, they may emotionally express a form of contempt towards something one feels dependent on so as to regain control.

Another difference deals with the sense of responsibility for the sustainability of water resources at the community level, ranging from feelings of indignation towards the irresponsible and deplorable conduct of other inhabitants to trust in community's pro-environmental awareness and care behaviors. As found in previous studies, the view about other community members' actions seems to be a crucial factor since gratitude towards others' favorable actions may increase pro-environmental attitudes [31,32]; moreover, feelings of indignation and social disapproval may inhibit anti-ecological and destructive behaviors [33,34]. Then, a relevant aspect refers to the sense of empowerment and efficacy attributed to community in water resources management. On the one hand, community is depicted as powerless, abandoned by local institutions, and unable to realize any effective change; on the other hand, community is perceived as proactive, empowered, and able to participate in local decisions about water management. In this regard, the role of empowerment has been advocated as crucial for the development of shared rule systems allowing

the self-management of collective natural resources, especially in rural communities, since decentralization appears as a new promising water governance paradigm providing more power to the local level [35–37].

Concerning the adopted practices of water conservation by community inhabitants, participants express different motivations and purposes affecting water use in households. A first factor deals with the reasons underlying the decision to preserve water resources, ranging from harm reduction for ensuring environmental sustainability at collective level to accumulation for preserving individual interests. In this regard, individualism and collectivism have been found to play a diverse role as antecedents of environmental behavior [38]. Specifically, whereas valuing the environment for its own sake and for common wealth is a predictor of water resources protection, individualism makes people less aware of the negative consequences of their water management practices and less prone to environmental sustainability if this interferes with their personal goals [39].

Another relevant dimension refers to the different modalities related to water conservation practices as oriented, respectively, to find innovative solutions and strategic uses or just saving water resources so to avoid any waste and excessive costs for the family budget. From such a perspective, water reuse or recycling for other domestic activities are seen as an interesting alternative to water consumption reduction due to financial concerns, which instead may be mostly intertwined with negative feelings, such as guilt and remorse [34]. Moreover, more innovative and active practices to reuse water can contribute to the increasing self-efficacy in saving behaviors overtime [40], rather than perpetuating a helpless state of alert and concern about water waste.

This is also supported by our findings regarding potential improvement proposals to ensure better sustainability, where participants' reports reveal a different degree of control and personal commitment in daily care activities. Additionally, a diverse focus of change emerges, ranging from cultural to infrastructural solutions, in line with the need for consideration of both technical (e.g., physical environment, infrastructural aspects, and sanitation procedures) and psychosocial variables (e.g., behavioral intentions, motivations, and relational aspects) when planning and delivering community-based interventions [21]. However, the risk of attributing the water-related problems to external causes or merely objective conditions (e.g., limited funds, infrastructural problems, lack of institutional support) should be carefully taken into account when promoting environmental awareness and sustainability [6].

Overall, some limitations have to be acknowledged with regard to the present study. For instance, our findings cannot be generalized to the entire community population or other contexts, given the cross-sectional nature of the study design and the lack of a representative sample. Therefore, this should be considered just as a case study providing some preliminary cues, needing further confirmation in future research. Moreover, the absence of quantitative measures inspecting water management and conservation practices, in association with interview data, and of subgroup analyses by participants' sociodemographic characteristics (e.g., family composition, income, gender) represent further limitations. Future studies could thus deepen such potential differences and inspect whether community inhabitants hold diverse perspectives on the issue compared to community leaders or other stakeholder groups.

However, the main added value of the present study relies on the use of narratives that can allow the inspection of emotional, automatic, and implicit processes underlying water sustainability at a community level. In this sense, this study can contribute to planning tailored interventions and locally-based solutions, taking into account a contextual and local knowledge in line with more ecological and idiographic paradigms. In this regard, some practical implications can be derived from our key findings as follows. First, the sense of distrust towards other community members may represent an obstacle to the development of a sustainable water management system, thus suggesting the relevance of promoting a greater sense of community and participatory processes about the issue. Second, the heterogeneous motivations, purposes, and modalities concerning water conservation reveal

the need for increasing environmental awareness and collectivist goals for water resources protection, so as to avoid an individualistic perspective. Third, the sense of abandonment by decision-making bodies and the tendency to attribute the problem only to external or factual conditions may contribute to community's helplessness, thus needing the reinforcement of the relationship with local administrators.

5. Conclusions

Our preliminary conclusions support the need for inspecting an automatic information processing route when dealing with issues of water sustainability, given the relevance of the emotional domain at a community level. Apart from rational arguments and factual knowledge, human behavior concerning water conservation and environmental sustainability can be, indeed, oriented by implicit knowledge as well as affective and motivational factors. The role of emotions, representations about others' attitudes, and defenses against vulnerability and future uncertainty of water shortages seem to be of primary importance. Additionally, the individualist/collectivist logic is confirmed as a significant matter to be taken into account for the understanding of effective pro-environmental behaviors on the long run.

Author Contributions: Conceptualization, A.C., M.T., E.P., H.C.M., B.A.C., and V.L.; methodology, A.C., M.T., and V.L.; formal analysis, A.C.; investigation, A.C., M.T., E.P., H.C.M., B.A.C., V.L., and "Agua Futura" Consortium; resources, writing—original draft preparation, A.C.; writing—review and editing, A.C., M.T., and V.L.; visualization, A.C.; supervision, M.T. and V.L.; project administration, E.P. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the Italian Agency for Cooperation and Development, grant number XM-DAC-6-4-011458-01-6.

Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Institutional Ethics Committee of the Department of Dynamic and Clinical Psychology and Health Studies, Sapienza University of Rome, Italy (protocol code 0000367, 2 April 2021).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author.

Acknowledgments: Claudia Carolina Cardoza Hernández, Karla Elisa Gómez Mejía, Thania Katerene González Nolasco, Jacqueline Lissette Flores, Lidia Esperanza Flores López, Jesica Jasmín López Villalta, Yesenia Beatriz Martínez de Guzmán, Yesenia Ivette Flores Martínez, Erika Vanessa Martínez Sánchez, Floridalma Mayorga de Ramos, Ana Catalina Mejía de Guardado, María del Carmen Merino de Lozan, Julia Susana Monge Tobar, Carolina Monserratt Jiménez de Henríquez, Laura Sofía Moreno, Keila Albertina Peña Saravia, Ingrid Carolina Pineda de Ortega, Grissel Marcela Santos Gamero, Sonia Margarita Siciliano de Serpas, Tomás Siracides Juarez Contreras, Mónica Raquel Ventura de Ramos, Wendy Yamileth Gómez Menéndez, Lennin Yasser Valle Bravo. The authors would like to thank the communities of Colima and San Marcos for allowing them to learn about their country. The authors would also like to acknowledge the spokespeople of the "ACRA" and the "ISCOS" organizations for introducing them to the community leaders.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Rivera Magaña, R. Water and governability in El Salvador. *Altern. Para El Desarro.* **2006**, *101*, 1–17.
2. Ramírez-Sánchez, I.M.; Doll, S.; Bandala, E.R. Drinking water and sanitation in Central America: Challenges, perspectives, and Alternative Water Treatment. In *Water Challenges and Solutions on a Global Scale*; Ahuja, S., Andrade, J., Dionysiou, D., Hristovski, K., Loganathan, B.G., Eds.; American Chemical Society: Washington, DC, USA, 2015; pp. 53–70.
3. Fondo Ambiental de El Salvador (FONAES). Recurso Hidrico [Water Source]. Available online: http://fonaes.gob.sv/?page_id=555 (accessed on 20 May 2018).
4. World Health Organization (WHO). *GLAAS 2013/2014 Country Highlights: El Salvador*; WHO: Geneva, Switzerland, 2015; Available online: https://www.who.int/water_sanitation_health/glaas/2014/el-salvador.pdf (accessed on 30 June 2021).

5. Young, M.; Esau, C. (Eds.) *Investing in Water for a Green Economy: Services, Infrastructure, Policies and Management*; Routledge: New York, NY, USA, 2013.
6. Koop, S.H.A.; Van Dorssen, A.J.; Brouwer, S. Enhancing domestic water conservation behaviour: A review of empirical studies on influencing tactics. *J. Environ. Manag.* **2019**, *247*, 867–876. [CrossRef]
7. Palazzo, J.; Liu, O.R.; Stillinger, T.; Song, R.; Wang, Y.; Hiroyasu, E.H.T.; Zenteno, J.; Anderson, S.; Tague, C. Urban responses to restrictive conservation policy during drought. *Water Resour.* **2017**, *53*, 4459–4475. [CrossRef]
8. Renwick, M.E.; Renwick, M.E.; Archibald, S.O. Demand side management policies for residential water use: Who bears the conservation burden? *Econ. Water Resour.* **2019**, *74*, 373–389. [CrossRef]
9. Fielding, K.S.; Russell, S.; Spinks, A.; Mankad, A. Determinants of household water conservation: The role of demographic, infrastructure, behavior, and psychosocial variables. *Water Resour. Res.* **2012**, *48*, W105010. [CrossRef]
10. Ehret, P.J.; Hodges, H.E.; Kuehl, C.; Brick, C.; Mueller, S.; Anderson, S.E. Systematic review of household water conservation interventions using the information–motivation–behavioral skills model. *Environ. Behav.* **2021**, *53*, 485–519. [CrossRef]
11. Russell, S.; Fielding, K. Water demand management research: A psychological perspective. *Water Resour. Res.* **2010**, *46*, W05302. [CrossRef]
12. Kahneman, D. Maps of Bounded Rationality: Psychology for Behavioral Economics. *Am. Econ. Rev.* **2003**, *93*, 1449–1475. Available online: http://www.jstor.org/stable/3132137 (accessed on 19 June 2022). [CrossRef]
13. de Miranda Coelho, J.A.P.; Gouveia, V.V.; de Souza, G.H.S.; Milfont, T.L.; Barros, B.N.R. Emotions toward water consumption: Conservation and wastage. *Rev. Latinoam. De Psicol.* **2016**, *48*, 117–126. [CrossRef]
14. Brosch, T. Affect and emotions as drivers of climate change perception and action: A review. *Curr. Opin. Behav. Sci.* **2021**, *42*, 15–21. [CrossRef]
15. Spence, A.; Poortinga, W.; Butler, C.; Pidgeon, N.F. Perceptions of climate change and willingness to save energy related to flood experience. *Nat. Clim. Chang.* **2011**, *1*, 46–49. [CrossRef]
16. Fritsche, I.; Jonas, E.; Kayser, D.N.; Koranyi, N. Existential threat and compliance with pro-environmental norms. *J. Environ. Psychol.* **2010**, *30*, 67–79. [CrossRef]
17. Jason, L.A.; Aase, D.M. Community-clinical psychology. In *APA Handbooks in Psychology®. APA Handbook of Clinical Psychology: Roots and Branches*; Norcross, J.C., VandenBos, G.R., Freedheim, D.K., Rodríguez, M.M.D., Eds.; American Psychological Association: Washington, DC, USA, 2016; pp. 201–222. [CrossRef]
18. Caputo, A.; Giacchetta, A.; Langher, V.; Tomai, M. Towards a community clinical psychology? Insights from a systematic review of peer-reviewed literature. *Community Psychol. Glob. Perspect.* **2020**, *6*, 128–143.
19. Swartz, L.P.; Gibson, K.; Gelman, T. (Eds.) *Reflective Practice: Psychodynamic Ideas in the Community*; HSRC: Cape Town, South Africa, 2002.
20. Liang, B.; Tummala-Narra, P.; West, J. Revisiting community work from a psychodynamic perspective. *Prof. Psychol. Res. Pract.* **2011**, *42*, 398–404. [CrossRef]
21. Caputo, A.; Tomai, M. A systematic review of psychodynamic theories in community psychology: Discovering the unconscious in community work. *J. Community Psychol.* **2020**, *48*, 2069–2085. [CrossRef] [PubMed]
22. Borg, M.B., Jr. Community psychoanalysis: Developing a model of psychoanalytically-informed community crisis intervention. In *Community Psychology: New Directions*; Lange, N., Wagner, M., Eds.; Nova Science Publishers: New York, NY, USA, 2010; pp. 1–66.
23. Anthonj, C.; Diekkrüger, B.; Borgemeister, C.; Kistemann, T. Health risk perceptions and local knowledge of water-related infectious disease exposure among Kenyan wetland communities. *Int. J. Hyg. Environ. Health* **2019**, *222*, 34–48. [CrossRef]
24. Caputo, A.; Tomai, M.; Lai, C.; Desideri, A.; Pomoni, E.; Méndez, H.C.; Castellanos, B.A.; La Longa, F.; Crescimbene, M.; on behalf of the "Agua Futura" Consortium; et al. The Perception of Water Contamination and Risky Consumption in El Salvador from a Community Clinical Psychology Perspective. *Int. J. Environ. Res. Public Health* **2022**, *19*, 1109. [CrossRef]
25. De Buck, E.; Van Remoortel, H.; Hannes, K.; Govender, T.; Naidoo, S.; Avau, B.; Vande Veegaete, B.; Musekiwa, A.; Lutje, V.; Cargo, M.; et al. Approaches to promote handwashing and sanitation behaviour change in low-and middle-income countries: A mixed method systematic review. *Campbell Syst. Rev.* **2017**, *13*, 1–447. [CrossRef]
26. Bolasco, S. *L'analisi Multidimensionale Dei Dati*; Carocci: Rome, Italy, 1999.
27. Braun, V.; Clarke, V. Using thematic analysis in psychology. *Qual. Res. Psychol.* **2006**, *3*, 77–101. [CrossRef]
28. Lancia, F. *Strumenti per l'analisi dei Testi: Introduzione all'uso di T-LAB*; FrancoAngeli: Milan, Italy, 2004.
29. Carli, R.; Paniccia, R.M.; Giovagnoli, F.; Carbone, A.; Bucci, F. Emotional textual analysis. In *Handbook of Methodological Approaches to Community-Based Research: Qualitative, Quantitative, and Mixed Methods*; Jason, L.A., Glenwick, D.S., Eds.; Oxford University Press: Oxford, UK, 2016; pp. 111–117. [CrossRef]
30. Caputo, A. The Experience of Therapeutic Community: Emotional and Motivational Dynamics of People with Drug Addiction Following Rehabilitation. *Int. J. Ment. Health Addict.* **2019**, *17*, 151–165. [CrossRef]
31. Lambert, N.; Fincham, F.; Stillman, T.; Dean, L. More gratitude, less materialism: The mediating role of life satisfaction. *J. Posit. Psychol.* **2009**, *4*, 32–42. [CrossRef]
32. Manríquez-Betanzos, J.C.; Corral-Verdugo, V.; Vanegas-Rico, M.C.; Fraijo-Sing, B.S.; Tapia-Fonllem, C.O. Positive (gratitude, eudaimonia) and negative (scarcity, costs) determinants of water conservation behavior. *Psyecology* **2016**, *7*, 178–200. [CrossRef]

33. Tapia-Fonllem, C.; Corral-Verdugo, V.; Gutiérrez-Sida, C.; Mireles-Acosta, J.; Tirado-Medina, H. Emotions and Proenvironmental Behavior. In *Psychological Approaches to Sustainability: Current Trends in Theory, Research and Applications*; CorralVerdugo, V., García-Cadena, C., FríasArmenta, M., Eds.; Nova Science Publishers: New York, NY, USA, 2010; pp. 249–267.
34. Manríquez-Betanzos, J.C.; Lena, M.M.L. Validación de la Escala de Emociones hacia el Cuidado del Agua. *Rev. Iberoam. Diagn. Ev.* **2018**, *1*, 147–159. [CrossRef]
35. Kevany, K.; Huisingh, D. A review of progress in empowerment of women in rural water management decision-making processes. *J. Clean. Prod.* **2013**, *60*, 53–64. [CrossRef]
36. Tantoh, H.B.; McKay, T.J. Rural self-empowerment: The case of small water supply management in Northwest, Cameroon. *GeoJournal* **2020**, *85*, 159–171. [CrossRef]
37. Ostrom, E. *Governing the Commons: The Evolution of Institutions for Collective Action*; Cambridge University Press: Cambridge, UK, 1990.
38. Cho, Y.-N.; Thyroff, A.; Rapert, M.I.; Park, S.-Y.; Lee, H.J. To be or not to be green: Exploring individualism and collectivism as antecedents of environmental behavior. *J. Bus. Res.* **2013**, *66*, 1052–1059. [CrossRef]
39. Pradhananga, A.K.; Davenport, M.A. Predicting farmer adoption of water conservation practices using a norm-based moral obligation model. *Environ. Manag.* **2019**, *64*, 483–496. [CrossRef]
40. Perry, V.; Davenport, M.A. An inductive framework of self-efficacy to understand and support farmers in conservation agriculture. *J. Soil Water Conserv.* **2020**, *75*, 198–208. [CrossRef]