water

MDPI

Review

Barriers and Motivators of Household Water-Conservation Behavior: A Bibliometric and Systematic Literature Review

Carolina Sanchez [1], Carla Rodriguez-Sanchez [2] and Franco Sancho-Esper [2,*]

[1] Facultad de Ciencias Económicas, Universidad Católica de Córdoba, Córdoba X5016DHK, Argentina; csanchez@unc.edu.ar
[2] Department Marketing, Universidad de Alicante, San Vicente del Raspeig, 03690 Alicante, Spain; carla.rodriguez@ua.es
* Correspondence: franco.sancho@ua.es; Tel.: +34-965903400 (ext. 3169)

Abstract: Water scarcity, aggravated by growing demands, represents a significant challenge for humanity. Promoting household sustainable water-consumption behaviors has become vital. The Community-Based Social Marketing (CBSM) framework stands out among many strategies to promote water conservation. However, many interventions in this domain often neglect significant theoretical insights, leading to gaps in addressing key social and contextual drivers of behavior. This study conducts a systematic and bibliometric literature review aimed at identifying determinants underlying household water-conservation behaviors. This review encompasses 155 papers published from 1984 to early 2023. Our findings show that this is a highly multidisciplinary field of study with a marked increase in research attention discerned post-2010, particularly from water-stressed regions. Furthermore, our findings also reveal an often-overlooked integration of guiding theories and an over-reliance on self-reported measures in prior research. Factors such as attitude, perceived efficacy, emotions, and habits emerge as pivotal in understanding water conservation. However, while attitudes have been extensively analyzed in previous research, the other factors deserve greater attention from researchers. Inconsistencies in demographic predictors further hint at potential moderating roles. This paper offers valuable insights for designing effective household water-conservation interventions through a social marketing lens.

Keywords: barriers; motivators; water conservation; bibliometric; systematic; review

Citation: Sanchez, C.; Rodriguez-Sanchez, C.; Sancho-Esper, F. Barriers and Motivators of Household Water-Conservation Behavior: A Bibliometric and Systematic Literature Review. *Water* **2023**, *15*, 4114. https://doi.org/10.3390/w15234114

Academic Editors: Joaquin Melgarejo and Francisco De Borja Montaño Sanz

Received: 27 October 2023
Revised: 20 November 2023
Accepted: 21 November 2023
Published: 27 November 2023

1. Introduction

Climate change intensifies water scarcity and associated hazards such as floods, rising sea levels, and droughts. Rising temperatures disrupt the water cycle, posing threats to sustainable development, biodiversity, and access to water [1]. Water scarcity, driven by escalating demand, is a critical global challenge [2]. Fostering sustainable water use requires urging individuals to adopt conservation behaviors. The Community-Based Social Marketing (CBSM) framework [3] is recognized as a highly effective tool for this purpose [4]. The CBSM emphasizes the need to address barriers and enhance motivating factors for effective behavioral change. However, social marketing often neglects theoretical insights and overlooks social and contextual factors affecting the target audience [5–7]. Additionally, interventions often overlook the distinction between internal and external factors influencing individuals [4]. A thorough analysis of these issues is vital to ensure the efficacy of water-conservation programs.

To assess barriers and motivators, social marketing employs two approaches: formative research and theory [4]. Formative research, also called consumer or audience research, employs methods such as interviews and focus groups to explore consumer insights and the factors that either encourage or hinder their behaviors [8]. However, criticism arises due to heavy reliance on self-reported methods and the use of a single research method,

potentially limiting a complete understanding of the behavior [8,9]. In contrast, theory, such as a literature review, serves as a valuable research tool, bridging the theory-practice gap by summarizing empirical evidence and offering insights from various disciplinary perspectives [10].

Based on the above, this research aims to conduct a literature review to identify the determinants (barriers and motivators) previously used to explain water-conservation behavior at home. To do this, a systematic and bibliometric literature review to date is performed. By understanding these determinants, policymakers and social marketers can design tailored interventions and broaden the field of knowledge. Additionally, this study also examines prevalent theories, seeks to understand the evolution of the field of knowledge, and identifies potential future research directions.

This study has several contributions to the body of knowledge concerning household water conservation. Primarily, it pioneers an integrated approach by conducting both a bibliometric (quantitative) and systematic (qualitative) literature review to find the determinants of household water conservation. This synthesis fills a notable gap in the existing literature, as most prior studies (e.g., [11–14]) undertook either bibliometric or systematic reviews in isolation. Our approach not only minimizes potential researcher bias through a quantitative review but also offers a critical evaluation of the relevance of these determinants via qualitative analysis. Further, adopting a comprehensive lens, this research delineates both the internal factors (encompassing psychosocial and socio-demographic dimensions) and external (contextual) variables that explain water conservation and consumption patterns. This review also involves a great diversity of geographical, cultural, and social contexts, contributing to a comprehensive and empirically grounded understanding of the subject matter. Lastly, our in-depth analysis, coupled with a discerning discussion and ensuing conclusions, yields valuable managerial implications. These insights hold significant merit for social marketing professionals, offering them pragmatic strategies on how behavioral determinants can be effectively leveraged to craft campaigns that foster water-conservation behaviors.

2. Methodological Approach

The literature review in this research is based on two complementary methodologies: a bibliometric analysis and a systematic analysis. The bibliometric analysis offers a quantitative perspective, providing an objective assessment of the field's status through an exhaustive evaluation of published research, thus enhancing rigor and minimizing potential researcher bias [15]. This approach enables extracting and visualizing insights from a substantial volume of literature, providing objective references. Nonetheless, it is worth noting that the bibliometric approach, while highly valuable, cannot replace the manual systematic review undertaken by researchers, which extends the analysis with a critical perspective [16].

To complement the above quantitative approach, a secondary qualitative analysis has been performed. This qualitative review aims to identify existing related studies, meticulously selecting contributions and critically evaluating their relevance [17]. It is key to emphasize that this systematic review diverges from the conventional literature review in terms of its heightened objectivity, meticulous systematization, transparency, and replicability. This rigor is made possible by following a standardized and well-defined protocol [18]. The analysis conducted in this study adhered to the methodology outlined in the PRISMA review protocol (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) [19]. This systematic approach encompasses six distinct stages: (1) formulation of the research question(s), selection of relevant databases, and identification of key search terms (keywords); (2) specification of inclusion and exclusion criteria for articles; (3) preliminary search and initial selection of relevant materials; (4) scrutiny of search results against predefined selection criteria; (5) comprehensive critical assessment of the literature; and (6) synthesis of the obtained results. Figure 1 summarizes the main steps involving the systematic, bibliometric, and thematic research.

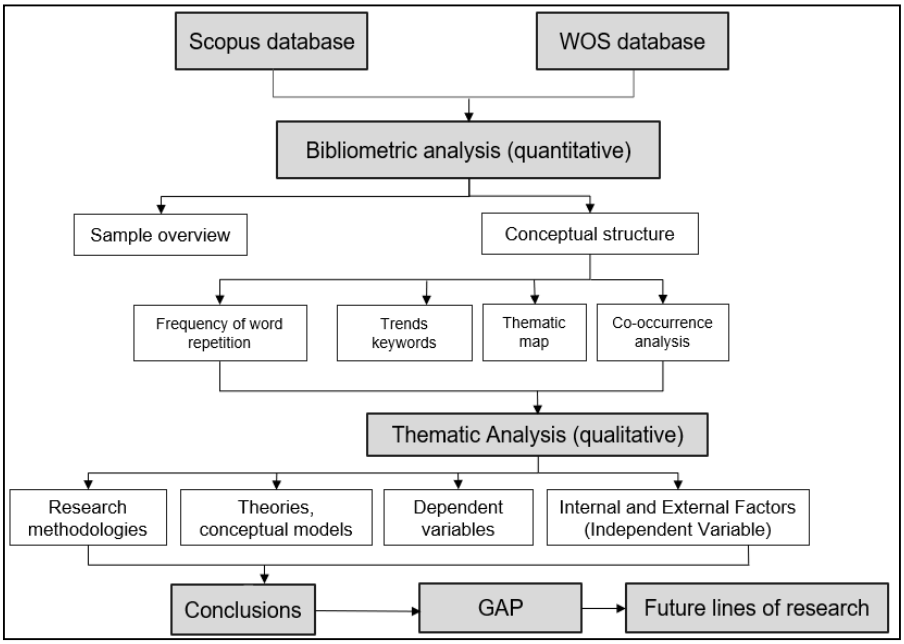


Figure 1. Stages in this bibliometric and systematic review. Source: Own elaboration, adapted from [16].

Step 1: Formulation of Research Questions, Database Selection, and Keyword Establishment

The primary focus of this research is to understand both internal factors (encompassing psychosocial and socio-demographic dimensions) and external (contextual) variables influencing household water-conservation behavior. Additionally, we aim to identify barriers hindering behavior change or adoption, along with its motivators. In light of this objective, the following research questions are stated:

1. What specific behavior is examined in the studies? (e.g., intention, behavior-reported or observed-, past behaviors, current behaviors).
2. Which theories or conceptual frameworks are used in these studies?
3. What are the main factors employed to explain the behavior, and what is their importance?
4. Which environmental psychology theories or factors have not been thoroughly explored in this context?
5. What are the main findings yielded by previous research?
6. What future research directions have been identified by scholars in this field?

To systematically search for research studies, two globally renowned databases, Web of Science (WOS) and Scopus, were selected for their respected peer review process, coverage of major international scientific publishers, and comprehensive inclusion of relevant works [16,17]. The substantial overlap between these databases ensures the inclusion of virtually all relevant articles, with Scopus, especially, offering comprehensive coverage across various research domains, crucial for the interdisciplinary nature of this study encompassing psychology, environmental psychology, marketing, economics, and communication [15,20].

The selection of search terms involved a comparative analysis of 23 literature review articles on water consumption and conservation from high-impact journals (see the list in Appendix A, Table A1), leading to the identification of keywords and thematic categories related to determinants of water behavior (Table A2). The search terms underwent refinement stages for precision, culminating in the compilation of terms in Table A3. Scopus and Web of Science (WOS) databases were used, employing Boolean operators "AND" and "OR". Keywords were entered hierarchically and grouped into blocks (context, behavior, water, motivators, barriers, behavioral determinants, theories), enhancing search efficiency. The search structure is detailed in Table A3.

Step 2: Defining the inclusion and exclusion criteria.

This literature review focuses on peer-reviewed journal articles aligned with the research goals of understanding motivating factors and barriers in household water consumption/conservation [12,18]. Inclusion criteria follow recommendations, considering only empirical research articles in English, excluding theoretical works, literature reviews, and non-journal sources [16,21,22]. The scope emphasizes studies investigating water-consumption or saving behavior in households and urban environments [11], excluding those in other domains such as water management, supply-related perspectives, or aggregate water demand [23].

Step 3: Search and preliminary selection of articles

The final article search in the WOS and Scopus databases was on 8 March 2023, encompassing all relevant research up to that date without setting any publication date restrictions. Out of the initial 9707 articles retrieved, 3018 duplicates were automatically detected and removed using the Mendeley management platform. A manual review, considering titles, authors, publication years, and DOIs, eliminated an additional 156 potential duplicates. The remaining 6533 articles underwent a detailed scrutiny of titles and abstracts, resulting in the exclusion of 5875 articles that did not meet inclusion criteria. [24]. Further refinement involved a meticulous examination of the methodology and conclusion sections, leading to the exclusion of an additional 503 records. The systematic process, detailed in Figure 2, culminated in a final sample of 155 articles.

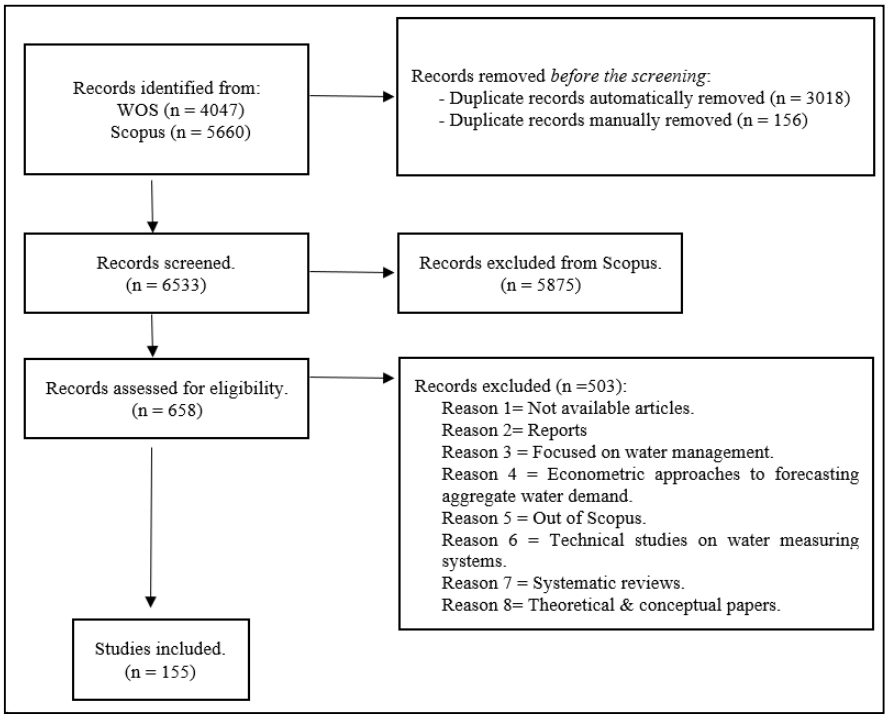


Figure 2. PRISMA diagram of the publication search and selection process. Source: own elaboration following PRISMA recommendations [19].

Step 4: Evaluation of the results related to the selection criteria.

To systematically organize and condense pertinent information, a working table was constructed. This table facilitated the thorough examination of key sections in each article, including the introduction, conceptual framework, methodology, results, discussions, and conclusions.

Step 5: Critical evaluation of the literature.

The article assessment involved a two-stage analysis [25]. The first stage included a bibliometric analysis of the 155 selected articles, following the model by Ricart et al. [23]. This initial stage focused on sample descriptive statistics. The second stage aimed to identify current and emerging research themes, patterns, and future directions. This involved keyword

frequency analysis, thematic mapping, and co-occurrence networks. Similar methodologies have been applied in pro-environmental behavior studies, covering areas such as climate change [26], environmental communication [27], and general pro-environmental behaviors, along with specific domains such as recycling behaviors [15] and solar panel adoption [28]. Several tools are available for conducting bibliometric analyses. For this research, R version 4.2.2 was used. The analysis was performed using the Bibliometrix library, accessed through the Biblioshiny package, which simplifies data usage and analysis. Moreover, it can import data from a wide range of databases such as WOS, Scopus, and PubMed [29]. It has been extensively employed for conducting bibliometric studies in fields such as marketing and sustainability [30,31], pro-environmental behaviors [32], and, specifically, water-conservation behavior [23,33].

The second stage entailed a qualitative examination of article content through thematic analysis, a flexible and accessible method that identifies recurring patterns within data [34]. Adopting a theoretical thematic analysis approach, closely aligned with the researcher's theoretical or analytical interest [25,34], facilitated a comprehensive exploration of data facets [35,36]. This analysis focused on barriers and determinants influencing household water-consumption/conservation behavior, with data coded according to initial research objectives. Data were compiled in Microsoft Excel and included relevant variables such as, e.g., authorship, research objectives, models or theories employed, and research methodology. Subsequently, a content analysis was conducted, employing inductive reasoning to process the information while also considering insights derived from the bibliometric analysis [25,37]. Section 3 (Results) provides comprehensive insights into this critical evaluation and synthesis process.

Step 6: Synthesis of results.

The section labeled "Discussion and Conclusions" offers a condensed summary of the findings derived from the literature review.

3. Results

3.1. Bibliometric Analysis

3.1.1. Main Characteristics of Contributions

A summary of the studies included in the sample is depicted in Figure 3. These 155 articles were published spanning the years 1982 to 2023 and appeared in 80 different academic journals. On average, each article garnered approximately 36 citations. The research in this field is published across a broad spectrum of academic journals, encompassing both Social Sciences and Science disciplines. As indicated in Table A4 (Appendix A), some of the most prominent academic journals in this domain include the *Journal of Environmental Management* (11 times, 7.1%), *Water* (9, 5.8%), *Journal of Environmental Psychology* (8, 5.2%), *Sustainability* (7, 4.5%), *Journal of Applied Social Psychology* (5, 3.2%), and *Water Policy* (5, 3.2%), among others. This extensive array of publication outlets reflects the interdisciplinary nature of the field, with journals spanning disciplines such as Management, Environmental Psychology, Social Psychology, Economics, Sustainability, Public Policy, and the Natural Sciences.

Timespan	**Sources**	**Documents**	**Authors**
1982–2023	80	155	406
Authors of single-authored	**Co-authors/doc**	**International co-authorship**	**Author's keywords**
13	3.08	20%	469
Annual growth rate	**References**	**Document Avg. age**	**Average citations/doc**
2.72%	7534	7.31	35.87

Figure 3. Overview of the analyzed articles. Source: Result from Biblioshiny.

One interesting aspect to evaluate is the significance and contemporary relevance of the topic under study. As illustrated in Figure 4, it becomes readily apparent that the

scientific community's interest in investigating behaviors related to water consumption, saving, or conservation has witnessed exponential growth since 2010, ultimately reaching a peak of 21 annual publications in 2021. When examining relative figures, a substantial 132% increase is observed between the periods of 1982–2010 and 2011–2023.

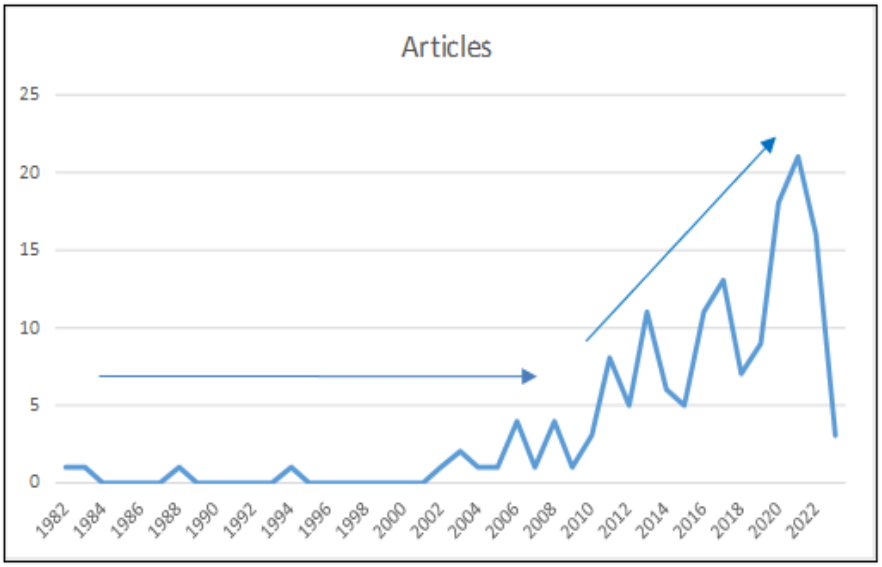


Figure 4. Annual scientific production. Source: Result from Biblioshiny. Note: By not fully including all months of 2023 in the analysis (see Step 3), the graph shows a very steep drop in the number of articles registered after 2022.

When assessing the global contributions to a particular area of knowledge, it is essential to consider their geographical distribution (Figure 5). In alignment with trends in sustainability research, the predominant regions were North America (USA, 93 articles, 60%, and Mexico, 13 articles, 8.3%). Additionally, Oceania, represented primarily by Australia (57 articles, 37%), has made significant contributions. Europe has also been a notable contributor, with Spain (34 articles, 22%), the United Kingdom (14 articles, 9%), and the Netherlands (11 articles, 7%) actively participating. Furthermore, though to a lesser extent, Asia has shown involvement, with China (17 articles, 11%) and Iran (7 articles, 4.5%) making contributions. Finally, Africa, primarily represented by South Africa (8 articles, 5.1%), and South America, where Chile (5 articles, 3.2%) is prominent, have also played roles in this research domain.

Examining the dispersion of research among authors and groups, Table A5 (Appendix A) outlines the frequency of author appearances in the sample. Prominent figures include Warner (5 articles, 1%), Corral-Verdugo (4 articles, 0.8%), Fielding (4 articles, 0.8%), and others, with 352 authors appearing only once. Assessing the impact of these publications, Table A6 presents citations and annual averages. Works by Willis et al. [38] (JEP, 22.9 citations/year), Schultz et al. [39] (E&B, 17.4 citations/year), and Fielding et al. [40] (JEM, 17.1 citations/year) stand out. Collaboration analysis in research is key to understanding the underlying structure of a particular knowledge domain. Results show that 9.03% of articles were single-authored, averaging 3.8 authors per study. International co-authorship is around 20% (Figure 6). Notably, the United States of America and Australia emerged as leaders in international research collaborations, closely followed by China, Spain, the Netherlands, and the United Kingdom. In contrast, research collaborations involving countries from Latin Northern Asia, South America, or Africa appear to be relatively scarce.

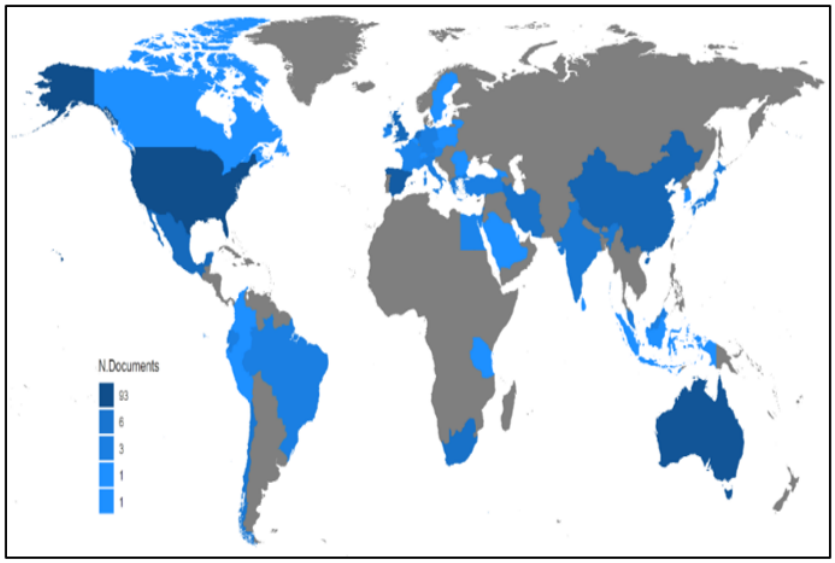


Figure 5. Scientific production by country researcher home institution. Source: Result from Biblioshiny.

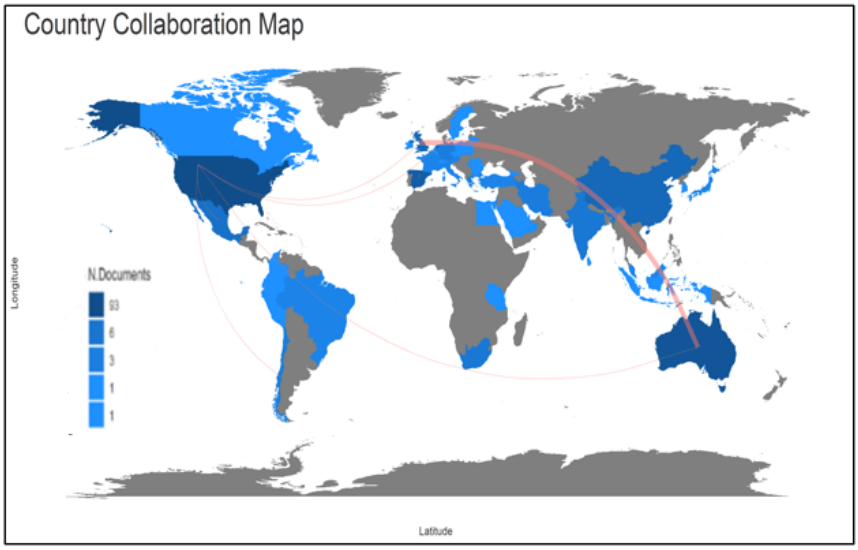


Figure 6. Author's collaboration network by country researcher home institution. Source: Result from Biblioshiny. Note: The strength of the blue means the intensity of publication by country, grey areas are countries without contributions in the sample. Pink lines indicate international collaborations.

To enhance the understanding of research dynamics, a collaborative network among authors was generated and is illustrated in Figure 7. This network visualizes the interactions among authors within the specified field of study, providing insights into the formation of author groups, influential figures, or author communities, as suggested by Aria and Cuccurullo [29]. Upon close examination of the figure, it becomes evident that research groups tend to be relatively small, with most consisting of two to three collaborators. Notably, there are a few cases with up to four collaborations. Judging by the size of the node and the number of collaborations, it can be inferred that Professor Kelly Fielding holds a prominent role as an influential author and a reference within the subject of study.

The joint analysis of the collaborating countries and the working groups of researchers reveals some interesting patterns. In comparison to other fields of knowledge, research teams tend to be relatively small, and international networks exhibit limited scope. Generally, authors tend to publish alongside co-authors from their own country or individuals with whom they have had prior academic interactions, such as sharing the same educational institution or originating from the same country. Moreover, it seems that cross-country

collaborations are typically concentrated. For instance, the United States displays 16 international collaborations, followed by Australia with 6, Spain with 4, and both the Netherlands, China, and the United Kingdom with 3 each (The full Table A7 is available in Appendix A).

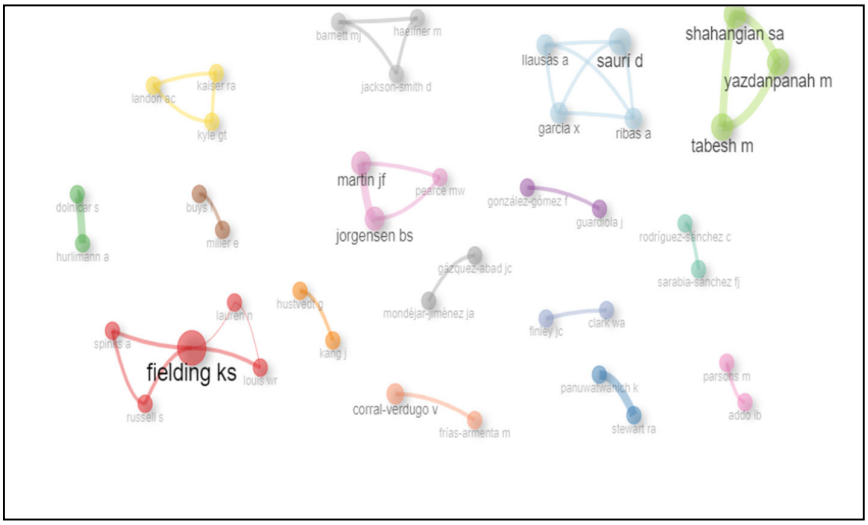


Figure 7. Collaboration networks between authors. Source: Result from Biblioshiny.

3.1.2. Conceptual Structure of Contributions

To conduct the conceptual analysis, several bibliometric instruments were used, including keyword frequency assessments, thematic mapping, and co-occurrence networks. These tools are instrumental in identifying present and emerging research themes and forecasting future areas of exploration [41]. The outcomes of this analysis provide insights into the conceptual frameworks and attributes associated with the topic under study [25,42].

This study involved a preliminary data cleansing aimed at removing synonyms and terms found in articles that are unrelated to the research objective [43]. Specifically, highly frequent words that were initially part of the article search criteria were excluded. For instance, following previous literature reviews (e.g., [43–45]) terms such as "water" or words related to research methodologies such as "survey" were removed (List of words deleted for these analyses in Biblioshiny: household survey, questionnaire, questionnaire survey, housing, surveys, surveys, water, water management, water supply, water conservation, water demand, water demand management, demand-side management, human, female, man, middle-aged, adult, controlled study, article, water, water resource, water use, water consumption, humans, aged, male, water resources, household, household water, priority journal, rural area, urban area, environmental issues, sampling, human behavior, local participation, conceptual framework, conservation of water resources, internal consistency, policymakers, resident population, environmental issue, theory).

A word cloud, shown in Figure 8, generated from "Authors' keywords" (The word cloud generated using the "keywords plus" approach was also examined, and its findings closely resembled those of the previous word cloud. Therefore, comparing both word clouds was deemed unnecessary), after data filtering, visually emphasizes prevalent terms [44,46]. "Social norms" stands out as an extensively studied variable in household water-conservation behavior, along with related terms such as "descriptive norms" and "injunctive norms". Other frequently mentioned words include "attitude", "habits", "feedback", "intention", "communication", "environmental knowledge", "credibility", and "environmental concern", identifying potential factors influencing water use/conservation. Terms such as "conservation behavior", "behavioral intention", "domestic water consumption", and "water saving" likely denote outcome variables in the studies. Notably, "theory of planned behavior" suggests Ajzen's theory [47] as a predominant conceptual framework.

Figure 8. Word cloud based on "authors' keywords". Source: Result from Biblioshiny.

An analysis of the past decade's trends, with a focus on frequently occurring words, was performed using the "keyword plus" criterion generated by the Biblioshiny algorithm. These keywords, extracted from article titles in bibliographic references, may differ from the authors' original keywords or the article title (Refs. [48,49] used a similar approach). Notable trends since 2020 encompass terms such as "water insecurity", "perception", "motivation", "efficient water use", and "behaviors and psychology". Figure 9 underscores that key internal factors affecting water consumption/conservation are "perception", "attitude", and "motivation", while external factors beyond individual control encompass "water quality" and climatic variables such as "drought".

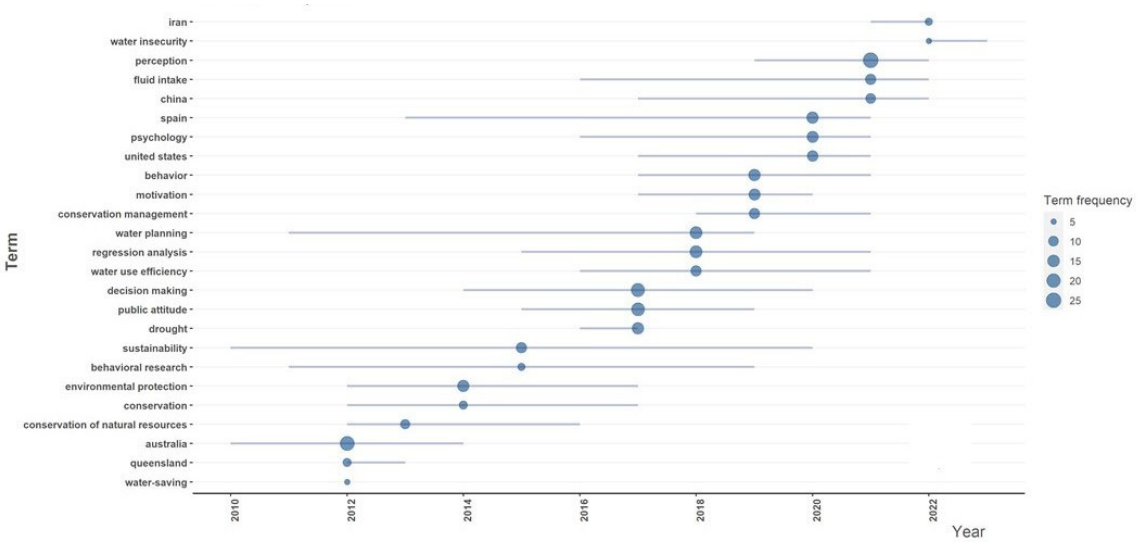


Figure 9. Trends "Keywords Plus", 2010–2023. Source: Result from Biblioshiny.

A thematic map, employing density (theme development) on the vertical axis and centrality (topic relevance) on the horizontal axis, defines key themes in four quadrants: (1) niche themes, highly developed or isolated; (2) motor themes, the most relevant and central; (3) emerging or declining themes; and (4) basic themes. This approach aligns with prior bibliometric studies [31,44]. Figure 10 displays the thematic map in this study using author keywords. In the "niche topics" quadrant, notable proximity is observed between "water tariffs" and "behavior change", reflecting interest in the relationship between water pricing and consumption. Keywords such as "attitude", "efficient water-saving behavior", and "attitude towards the environment" are present, suggesting a connection to efficient

behavior, possibly involving devices such as "dishwashers" for conservation. Moving to the "motor themes" quadrant, terms such as "social norms", "habits", "environmental knowledge", "communication", and "feedback" are prominent. While "smart water meters" remains relevant, its development seems to decline. In the lower quadrants, the significance of studying the "theory of planned behavior" and "water use in the home" is evident, with a diminishing relevance.

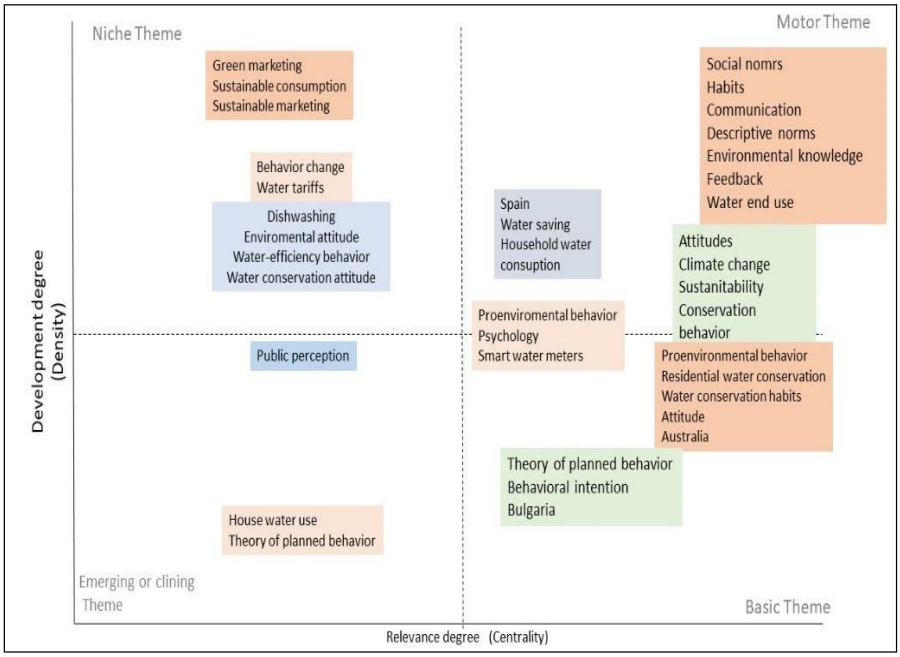


Figure 10. Thematic map based on *authors' keywords*. Source: Result from Biblioshiny.

Expanding on insights from the thematic map, the determinants impacting water use/conservation behavior fall into two groups: internal (individual factors) and external (outside the individual). Internal factors encompass "attitude", "intention", "perception", "habits", "social norms", and "knowledge", while external factors include "water tariffs", "water-saving devices", "water-consumption measurement systems", and the "feedback effect of that information". Using the same thematic mapping tool, temporal evolution was examined across two periods: (i) 1982 to 2017 and (ii) 2018 to 2023. Figure A1 in Appendix A provides a comparative analysis of these thematic maps.

The comparison between both periods reveals interesting results. First, it is clear that certain fundamental themes such as "perception", "motivation", "behavior change", and "attitude" remain relevant. Second, during 2017–2023, there was an emergence of pivotal themes, including "communication", "irrigation and landscaping systems", "social behavior", "intention", "environmental psychology", and "efficient water utilization". Third, interestingly the concept of "water efficiency" transitions from being an emerging theme to consolidating its place among the core themes. Fourth, the 2017–2023 period introduces new basic themes such as "environmental values and household structure" (encompassing factors such as household size and age), "household income", and the interrelation between "social norms and environmental determinants". Finally, the scrutiny of "feedback" (related to water consumption on an individual or household basis) is gradually becoming a focal research area, whereas the prominence of "incentives" seems to be diminishing.

This temporal review delves into the progression of water use and conservation behavior research. Rooted in environmental psychology, elements such as "attitude", "motivation", and "perception" engage scholars consistently. Intrinsic factors such as "values", "knowledge", "intention", and "social norms" remain significant. External determinants, including socio-demographics, household attributes, climate change, and economic incentives, are

explored. Research methods exhibit shifts, with "regression" studies initially in the core themes but descending in later periods. "Structural equations", absent initially, emerge as a core theme, while "experimental studies" transition from niche to declining.

The co-occurrence network is the primary tool for understanding the conceptual structure of contributions, offering a comprehensive view of potential subjects in papers' content [25]. Graphical representations in the co-occurrence map capture synergies within bibliographic metadata [29]. By linking pivotal terms provided by authors, a matrix reveals how often term pairs co-appear, resulting in labeled circles (graphs) of varying sizes and colors, smoothly connected [43]. Graph size indicates occurrence frequency, reflecting a term's prevalence in articles [29]. Color signifies the assigned group or cluster. This analysis implicitly explores authors' established relationships between keywords [50], exemplified by "motivation" and "water saving".

In Figure 11, the co-occurrence network from 155 contributions reveals three distinct clusters with varying nodes. Prominent nodes include "perception" (blue cluster), "environmental protection" (red cluster), and "Australia" (green cluster). The blue cluster centers on perception, attitude, social behavior, water insecurity, knowledge, and water consumption, intertwining with terms such as marketing, conservation programs, water efficiency, and strategic planning. The red cluster, emphasizing environmental protection, includes themes such as motivation, attitude, education, public opinion, and conservation. The green cluster, labeled "Australia", predominantly addresses climate change, drought, Australian context, and demographic variables.

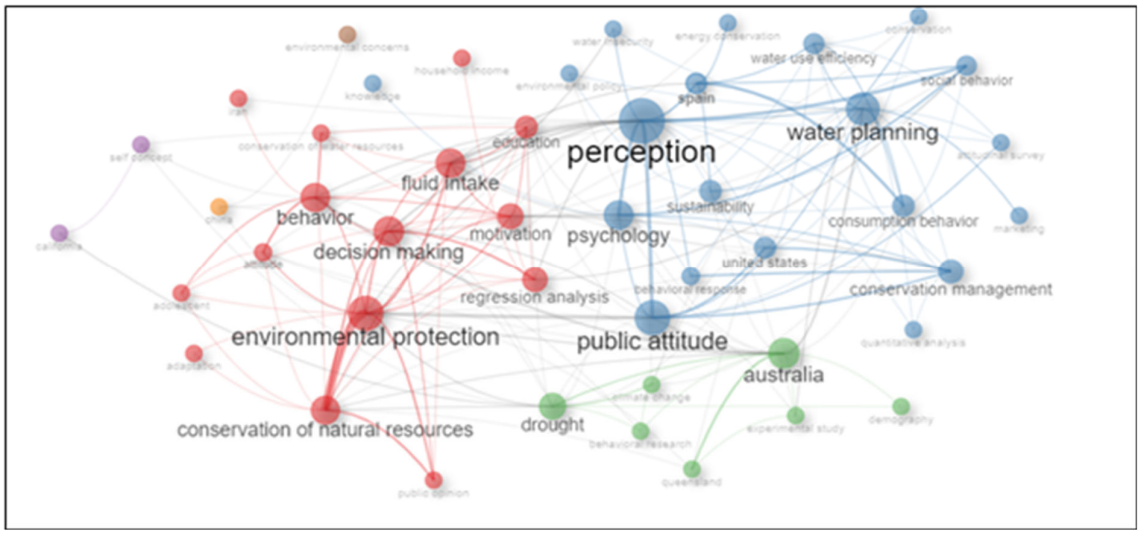


Figure 11. Co-occurrence of key terms. Source: Result from Biblioshiny.

3.2. Thematic Analysis (Qualitative–Exploratory)

In this section, a qualitative analysis of the 155 publications was conducted following the previous bibliometric analysis. In essence, this section summarizes the constructs, methodologies, theories, and variables applied in the examination of water-conservation/consumption behavior at home.

3.2.1. Research Methodologies Used in the Literature

The first aspect to be analyzed is the methodological characteristics of the empirical studies comprised by this literature review. More precisely, we focus on delineating the study type and the estimation procedure employed in each instance. Within this framework, studies can be categorized into four research domains: (i) qualitative and exploratory studies, (ii) quantitative and correlational studies, (iii) experimental and longitudinal studies, and (iv) simulation studies. See Table 1 for a comprehensive overview.

Table 1. Analysis of contributions by research approach and methodologies.

Research Approach	Data Analysis Method	Frequency	%
(i) Qualitative–exploratory	Qualitative research	6	3.6%
	Case studies	1	0.6%
	Mixed methods (quali–quanti)	9	5.5%
SUB-TOTAL QUALITATIVE EXPLORATORY		**16**	**9.7%**
(ii) Quantitative correlational	Structural Modeling: CB-SEM	31	18.8%
	Structural Modeling: PLS-SEM	2	1.2%
	Latent-growth curve modeling (SEM-based)	1	0.6%
	Factor analysis: EFA	3	1.8%
	Multiple regression model	25	15.2%
	Discrete data analysis (Probit, Logit, and Poisson)	20	12.1%
	Spatial autoregressive models (SARs)	1	0.6%
	Regression tree	2	1.2%
	Cluster analysis + Latent profile analysis (LPA)	5	3.0%
	Jackknife grouping approach	1	0.6%
	ANOVA	4	2.4%
	ANCOVA	1	0.6%
	MANOVA	3	1.8%
	Mixed methods (quali–quanti)	9	5.5%
	Descriptive statistics	8	4.8%
	Correlation analysis	2	1.2%
	Multivariate methods	1	0.6%
SUB-TOTAL QUANTITATIVE CORRELATIONAL		**119**	**72.1%**
(iii) Longitudinal and experimental quantitative	Experiments	25	15.2%
	Longitudinal studies	3	1.8%
SUB-TOTAL LONGITUDINAL AND EXPERIMENTAL		**28**	**17.0%**
(iv) Simulation models	Simulation models	1	0.6%
	Agent-based modeling (ABM)	1	0.6%
SUB-TOTAL SIMULATION		**2**	**1.2%**
TOTAL ANALYSIS TECHNIQUES		**165 ***	

Note: CB-SEM = Structural models of covariances; PLS-SEM = Structural models of variances. * n = 155. Some of the 155 papers use more than one analysis technique. Source: Own elaboration.

Firstly, it is important to note that several studies employed multiple research methods. Consequently, the sample size comprises 155 articles, with a total of 165 research methods utilized. Globally, the majority of studies (72.1%) rely on cross-sectional data with a quantitative and correlational approach. Common methodologies within this category include structural equation models (CB 18.8%, PLS 1.2%), multiple regression models (15.2%), and discrete choice models (12.1%). The next category involves studies based on experimental or longitudinal data (17%), followed by more qualitative or exploratory studies (9.7%), with fewer focusing on data simulation applications (1.2%). Quantitative studies dominate, with only 5.5% using a mixed methodology [51]. Notably, a limited 1.8% adopt a time series and longitudinal approach, despite calls for long-term monitoring [52–56]. Moreover, these studies are scarce, even considering high water-consumption seasonality [57,58].

3.2.2. Theoretical and Conceptual Approaches

In examining studies, a critical aspect requiring in-depth analysis is the conceptual framework and theoretical underpinnings. Notably, 54% of the analyzed studies lack explicit reference to the theoretical framework used for studying the barriers or motivators of the behavior (see Table A8 in the Appendix A). The majority present concepts and theoretical precedents without a direct linkage to a specific theory. Among the 46% that do reference theoretical foundations, the Theory of Planned Behavior (TPB, [58] (10%), (NAM, [59] (3%), and New Environmental Paradigm [60] (3%) are noted. However, this list is non-exhaustive, reflecting the interdisciplinary nature of research in psychology, behavioral economics, health, communication, persuasion, and environmental psychology. Furthermore, 8.4% explicitly draw on more than one theory or model, such as Construal Level Theory and TPB [61], TRA and NEP [62], TPB and Social Cognitive Theory [63], or TRA and ELM [64]. Combining theories is justified for enhancing predictive capacity and deepening understanding of the intention–behavior gap in water conservation.

3.2.3. Behaviors Analyzed: Dependent Variable

Another key consideration when comparing studies focused on pro-environmental behavior change is the specific dependent variables being examined. In our particular case, the primary dependent variables under investigation include (1) water-conservation or saving behavior and (2) water use or consumption (for specific measurements, see Appendix A Table A9), both at the household level. Thus, within the types of environmentally significant behavior most frequently used in the literature, we focus on private-sphere environmentalism [65]. Water consumption can be classified into two categories: efficiency and curtailment behaviors. Efficiency behavior requires the purchase of water-efficiency equipment to be able to save water, while water curtailment behaviors are highly dependent on consumers' awareness and understanding of how to save water [66]. However, in this review, only five articles (3%) explicitly categorized behaviors as efficient or curtailment (e.g., [63,67,68]).

The predominant method of measuring the dependent variable in the analyzed studies is self-reported measures (57%) (e.g., [68,69]), followed by behavioral intention to conserve or save water (27%) (e.g., [70,71]). To a lesser degree, actual water consumption has been used as a metric, encompassing variations such as "per-capita consumption" or "consumption per household" (7%). These data often come from water supply companies and/or smart water metering systems (e.g., [53,72]). It is noteworthy that only 3% of the studies employ a combination of different methods to measure water consumption or saving. For instance, Haeffner et al. [73] investigate water-conservation behavior by scrutinizing consumption bills (reflecting actual target consumption) and assessing behavioral intentions.

3.2.4. Determinants of Behavior: Independent Variables

In exploring the determinants of household water-conservation behavior, this review categorizes the factors based on the criteria established by Stern [65]. Initially, our analysis focuses on personal-sphere variables, which include both psychosocial and socio-demographic aspects. This is followed by an examination of contextual factors as outlined by Stern [65]. Personal-sphere variables reflect the internal attributes of an individual, whereas contextual factors denote external elements beyond an individual's control that affect behavior [74]. This review reveals that prior research has analyzed personal-sphere variables such as attitudes, knowledge, environmental awareness, moral obligation, social norms (descriptive and injunctive norms), perceived effectiveness and perceived response efficacy, adscription of responsibility, time distance or future orientation, emotions, and habits. The main socio-demographic variables analyzed are age, gender, income level, education, and homeownership status. In contrast, the contextual variable exploration has highlighted external factors, including household features (number of people), physical characteristics (size, age, presence of gardens and pools), financial costs, and incentives, along with broader economic, political, and social factors. Facilitating elements, including

the availability of water-saving devices and climatic conditions, must also be considered as external factors.

Personal-Sphere (Internal) Factors Related to Water-Conservation Behavior

These antecedents are systematically detailed in Table A10 (included in Appendix A). An in-depth examination of the most salient ones follows below.

Attitudes

A substantial body of research has centered on analyzing attitudes. Although there is widespread agreement on evaluating attitudes toward water conservation and use, research has delved into other types of attitudes as well. These include attitudes toward "responsible consumption" [75], "water pricing and water restrictions" [76], "routine (curtailment) and non-routine (efficiency) behaviors" [67], "water-saving devices" [77], and so forth. While attitudes significantly influence intentions for water-saving behaviors, a persistent gap exists between positive attitudes and actual choices. Individuals predisposed to saving water (positive attitude) may not always translate this attitude into specific conservation efforts [53,78]. This incongruence underscores the complex relationships influencing water-related decisions. Attitudinal variables, while crucial, account for only a modest portion of behavioral variance [79]. Understanding water conservation requires considering contextual and structural household factors, highlighting the need for a comprehensive understanding of multifaceted influences on water-related behaviors [77,79–81].

Knowledge

Numerous studies, such as [33,82], emphasize the role of knowledge in water conservation. Madias et al. [83] argue that water-related knowledge directly influences the intention to adopt water-saving devices and indirectly impacts overall water-conservation intention. Lack of knowledge hinders understanding the environmental impact and may lead to a lack of responsibility and intent to save water. High environmental knowledge correlates with the positive attitudes, behaviors, and habits supporting efficient water use [82]. Addo et al. [84] emphasize the significance of water-saving knowledge, environmental education gaps, and inadequate information about personal water consumption as substantial psychological barriers to adopting water-saving behaviors. Studies such as [85,86] explore the impact of information provision on water consumption, revealing positive effects and behavioral changes in water use, especially under conditions of scarcity.

Environmental awareness

Environmental awareness is defined as individuals' understanding of the impact of human activities on the environment [87]. Several studies in the field of water-conservation behavior have examined this construct (e.g., [52,88]). Overall, this literature indicates that while awareness does play a role in shaping behavioral intentions, it alone is insufficient to drive behavioral changes [89,90]. Environmental awareness is frequently investigated together with environmental concerns. Environmental concern relates to individuals' awareness of environmental issues and their disposition to address those issues [91]. Within the scope of this thematic review, studies have documented a positive correlation between participants' degree of environmental concern and their self-reported behaviors [92]. Nevertheless, certain studies suggest that this correlation is relatively weak (e.g., [93,94]) or that they are unrelated constructs (e.g., [95,96]).

Moral obligation

Individuals, motivated by a sense of moral obligation, engage in influencing water-conservation attitudes and intentions [97–99]. However, conflicting findings arise as some express a moral duty to conserve water without aligning actual consumption with beliefs [100]. While Marzouk et al. [101] argue that moral obligation, combined with other factors, explains water conservation, Lowe et al. [102] find no association. The lack of consensus highlights the need for additional research to unravel the complexities surrounding moral obligation and water-conservation behavior.

Social norms

Social norms have received extensive attention in the domain of water-conservation research. They are usually defined as the informal guidelines that govern and shape social behaviors, determining whether a specific behavior is deemed acceptable within a given society or group [103]. They reflect whether significant others endorse or discourage a certain behavior [64]. Despite their positive impact on water conservation [73], Landon et al. [79] suggest social norms explain only a small portion of variance in water use. Some studies explore the combined impacts of social norms and water-consumption feedback, revealing contributions to reducing consumption, though this effect diminishes over time [40,104]. Furthermore, social norms are often categorized into two distinct types: descriptive norms, referring to the perceptions of how most people commonly behave, and injunctive norms, which pertain to the societal perceptions of behaviors that are generally deemed acceptable or unacceptable. Seventy-one percent of studies make no norm distinction, 24% distinguish both descriptive and injunctive norms, and 5% analyze only descriptive norms. While descriptive norms influence conservation (e.g., [67,105]), injunctive norms, especially considering neighbors' behaviors, often exert a more profound impact on water-saving actions. Messages with explicit social judgments amplify this effect, with individuals seeking approval from neighbors more than other significant figures [106]. Studies linked to descriptive norms and consumption information suggest a bias in self-consumption perception, where individuals tend to either underestimate or overestimate their consumption compared to others [73,107]. Associating social norms with social identity enhances normative messages' efficacy, emphasizing the norm's association with the referent group [108].

Perceived efficacy

This variable has been denoted by different terms within the literature, even when not always referencing the same concept. This can generate confusion and misinterpretation. Specifically, perceived efficacy is also referred to as (1) perceived effectiveness, (2) outcome expectations, or (3) personal response efficacy. These three terms share a common definition, including the extent to which individuals believe their actions can contribute to solving an environmental problem. Notably, it is crucial to distinguish between the concept of perceived efficacy and self-efficacy. Self-efficacy relates to individuals' beliefs regarding their capability to perform specific actions or whether they perceive proposed behaviors as easy or challenging to execute [68]. This construct bears similarity to perceived behavioral control, as proposed in Ajzen's TPB [47].

Adscription of responsibility

Adscription of responsibility involves the sense of accountability for adverse consequences resulting from environmentally unfriendly consumption behaviors [109]. This sense also includes opinions on who should be held responsible for such conduct [65]. Limited research within this thematic review explores the connection between adscription of responsibility and water-conservation behavior [110–112]. Antecedents of responsibility adscription include knowledge of environmental problems, awareness of consequences, and awareness of water care [83,113]. For responsibility to be triggered, individuals must possess knowledge about environmental problems and/or the impacts of their consumption behaviors. Studies diverge on the role of adscription of responsibility, with some linking it to social norms and intention to save water [83,113], while others find no connection to pro-environmental behavior intention and actual behavior [112]. The literature also explores attributions of responsibility to different actors, such as local or national governments, companies, individuals, social groups, or society as a whole [114].

Emotions

A scarce number of studies explore emotional variables in water consumption/conservation. Andrade et al. [70] examine moral emotions related to irresponsible water use, finding a modest relationship with water objective knowledge. Díaz et al. [69] show that perceived happiness predicts current behavior, while stress predicts both present and future behavior. "Subjective wellness or well-being" is tied to positive emotions; however, there is a lack of consensus regarding its relationship with water consumption [115]. Some authors argue that well-being consistently predicts conservation behavior (e.g., [69]), while others find

limited evidence (e.g., [95]). Finally, Manríquez-Betanzos et al. [116] explore gratitude and eudaimonia's effects on water-saving practices, revealing that eudaimonia promotes water saving and is negatively affected by water scarcity, suggesting a need for further research on eudaimonia due to limited evidence [116].

Habits

A habit is an automatic, unconscious behavior, resistant to change [64,117]. While some studies aim to explore habits, most of them operationalize the concept as past behavior (e.g., [40,56,81,82,118]). Past water-conservation behavior predicts intentions [40,56,81,118,119], indicating a link between self-efficacy and adopting new conservation behaviors. Individuals who reported performing simple (easy) water-conservation behaviors had greater intentions to adopt new, more complex water-conservation behaviors. However, Jorgensen et al. [120] find evidence of a negative association between past and future saving behavior. Participants who reported more savings in the past were likely to show less water-saving behavior in the future [120].

Socio-demographic variables

Researchers have scrutinized socio-demographic variables such as age, gender, education, income, and homeownership to understand their impact on water-saving behavior. Despite some consensus, differences in findings persist. Gender's role remains mixed; while some studies suggest that females tend to exhibit higher levels of water-saving behavior (e.g., [52,121]), others support the opposite [122]. Older individuals tend to consume more water than younger counterparts (e.g., [53,123]). Education's impact on water-saving behavior varies, with some studies finding no significant link (e.g., [52,90]), while others observe differences based on educational attainment (e.g., [124]). Higher-income households with advanced education tend to have lower water consumption [125], attributed to greater resources for water-saving devices [121].

Contextual (External) Factors Related to Water-Conservation Behavior

An additional aim of this review is to identify the external factors that impact water-conservation/saving behaviors. These antecedents are thoroughly presented in Table A11 (Appendix A) and are further elaborated upon in this.

Climatic and seasonal factors

The literature strongly supports the impact of external factors such as climate and season on household water consumption. Geographical location [78], exposure to drought or restrictions [125], seasonal variations [72], and temperature and rainfall patterns [126] significantly influence both intention and behavior in conserving water. Regions facing water stress exhibit lower consumption [49]. Water scarcity affects individual variables such as environmental concern and trust in conservation information [127]. Seasonality also influences perception, with individuals underestimating water consumption in summer and aligning more closely with actual use in winter [72].

Household composition

Previous research explores factors such as family size (e.g., [126,128]) and the presence of children or adolescents in relation to water consumption [129] but yields inconclusive results. Some studies suggest larger households exhibit lower per-capita water consumption (e.g., [121]), while others report a positive relationship [130]. The presence of children and adolescents consistently correlates with increased water consumption, with the number of adolescents having a substantial impact, especially in shower water usage [129,131].

Characteristics of the property

Property attributes affecting water consumption include house size and building age, correlating with indoor water use. Conversely, factors such as swimming pools, gardens, park presence, landscaping irrigation systems, and vegetation type impact outdoor water use. Larger homes, gardens, and pools drive higher water consumption, influencing consumption variations [52,132]. The literature indicates larger homes consume more water for cleaning, irrigation, and appliances, while mortgaged or rented households show water-consumption mitigation. The existing literature states that (i) larger homes

tend to consume more water for activities such as cleaning, irrigation, and various water-consuming appliances [133]; (ii) households with mortgages or rentals tend to exhibit water-consumption mitigation [131]; and (iii) garden irrigation accounts for the highest proportion of external water consumption, primarily in outdoor settings [134].

4. Discussion and Conclusions

Bibliometric Analysis (Quantitative)

Analyzing household water-conservation/consumption behavior is a complex task due to the multifaceted relationship of diverse social, individual, and contextual factors influencing consumer decisions [12]. Consequently, our findings show that this is a highly multidisciplinary research field, drawing contributions from disciplines such as environmental psychology, social psychology, economics, management, marketing, engineering, and ecology, among others. Notably, since 2010, there has been a significant increase in interest within the scientific community regarding this topic. This heightened attention likely reflects the growing global concerns surrounding water scarcity in numerous regions and the imperative of addressing the United Nations' Sustainable Development Goals. A closer examination of the scientific production by country reveals that an extensive number of studies originate in regions struggling with water crises, including Australia, certain areas in the United States, Spain, South Africa, and Chile, among others. However, it might also be of interest to conduct water-conservation studies in regions where water scarcity issues are not present to determine if the results can be extrapolated to other hydrological contexts. Likewise, it would be worthwhile to carry out studies comparing both hydrological situations (e.g., [135]). Additionally, it is necessary to conduct studies in countries where this topic has not been previously investigated (e.g., in Russia and countries in Northern Africa). Conceptual analysis has also been used to identify key variables, current study trends, and important insights to design future lines of research. This valuable information, in turn, has facilitated a comprehensive response to the research inquiries articulated in the subsequent phase of the systematic literature review (qualitative thematic analysis). During this subsequent stage, a more profound examination of the observed statistical outcomes has been feasible, enabling the formulation of recommendations for future research directions. The main findings will be discussed further below.

Thematic analysis (qualitative)

Despite the growing number of studies regarding the determinants of household water conservation/consumption, it is surprising that the vast majority do not integrate guiding theories or frameworks into their investigations. This finding diverges from the foundational principles of CBSM programs. As emphasized by the CBSM, the formulation and execution of effective social marketing strategies require a foundational understanding of the perceived benefits and barriers (whether internal or external) that individuals associate with that specific activity [3]. This prior knowledge is key because it will be used to design a social marketing strategy that overcomes the barriers and increases the perceived benefits of the behavior targeted to generate long-term voluntary behavioral changes [136]. Nevertheless, it is notable that a substantial number of environmental CBSM-based interventions do not incorporate theories or models into their environmental social marketing strategies. For instance, Anibaldi et al. [137] found in their literature review on environmentally sustainable farming practices that most studies do not explicitly detail how theories were selected and how they were applied in the design of the intervention.

Among those studies that do explicitly mention their grounding in particular theories, three predominant frameworks stand out: The Theory of Planned Behavior (TPB, [59]), the Norm Activation model (NAM, [60]), and the New Environmental Paradigm [61]. A subset of studies has opted for a combination of theories and models that, while not entirely novel, increase their explanatory capacity. For example, Shahangian et al. [63] combine TPB and Social Cognitive Theory, Maduku [64] extend TRA with ELM and habits, and Deng et al. [61] study Construal level theory and TPB. However, other theories can also play an essential role in bridging the gap between intention and behavior, but they have been un-

derexplored in the domain of household water behavior [91]. One of them is the Construal Level Theory [138]. This framework suggests that individuals perceive people, objects, or events as psychologically proximate or distant. This perceived distance—whether social, spatial, or temporal—subsequently shapes attitudes, emotions, and actions [139]. For example, water-saving actions are typically perceived as tangible and near, resulting in a low structural level [62]. In contrast, concepts such as climate change assume a more abstract form, rendering them psychologically distant with a high construal level. Future research into the role of perceived psychological distances in water conservation is essential [62]. Thus, Zhuang et al. [140] suggest a better understanding of the role of culture (social distance) as a moderating variable that influences attitude and behavior. Likewise, this review shows that the Value-Belief-Norm model (VBN, [65]) has received scant attention in examining household water-conservation behaviors. Furthermore, Rodriguez-Sanchez et al. [4] have recently suggested the Goal Framing Theory [60] as a potential avenue. This theory supplements existing models such as the NAM, the TPB, and the VBN by focusing on goal attainment spanning hedonic, gain-based, and normative objectives. Owing to its comprehensive approach to addressing goal conflicts, situational variables, and both conscious and unconscious processes, the Goal Framing Theory presents a promising foundation for instigating pro-environmental behaviors such as water-conservation behavior [141].

Regarding the dependent variables used in previous research, most studies rely on self-reported measures to assess household water conservation or consumption. However, self-reported measures often exhibit perceptual biases, suggesting that individuals may either underestimate or overestimate their actual water consumption [73]. This cognitive distortion acts as a barrier to water conservation [142]. The need to observe real water-consumption behaviors is highlighted. Furthermore, there is a tangible interest in understanding the duration for which a behavior change persists over time; however, longitudinal measurements have been infrequently conducted [52,53,143]. Moreover, given the influence of climatic and seasonal elements on water consumption, it becomes imperative to perform measurements at different times of the year [57,58]. In addition, Rusell and Knoeri [56] call for a longitudinal approach to understand why the installation of water-efficiency technology does not result in a reduction in water use. Lastly, the academic landscape shows a scarce amount (15%) of causal research, especially experimental designs that could shed light on the impact of specific factors on individuals' real-time behaviors [73]. Furthermore, only five studies have explicitly distinguished between curtailment behavior and efficiency behavior, while in the rest of the sample the behavior (water saving or water use) is analyzed generically without specifying the type of behavior, and to a lesser extent both behaviors are mixed. Previous studies have shown that the determinants of curtailment and efficiency behavior are different [143] and call to explore the differences between these two types of behaviors [144]. For example, Pérez Urdiales and García Valinas [145] demonstrate that the type of water device (e.g., electric or non-electric) influences the water-conservation habit and intention, which shows that a future line of research could understand the barriers or motivators to water-efficiency intention or behavior depending on the type of device.

Focusing on the determinants of water-conservation/consumption behavior, several key factors emerge in this review. Regarding personal-sphere (internal) factors, attitude is the most frequently examined variable. However, while attitude undeniably serves as an antecedent to intention, it offers a limited explanation for actual behavior, suggesting a myriad of other variables at play. Thus, it is essential for studies to look beyond attitudinal variables, and if they employ them, to do so in conjunction with other more explanatory variables. Likewise, social norms have also been examined by a significant number of studies. This is further corroborated by the bibliometric analysis (word cloud). Regarding descriptive and injunctive norms, this review shows that the majority of studies use the concept of social norms, without distinguishing between descriptive and injunctive norms, even though both constructs are different [146]. In addition, however, researchers usually analyzed both constructs together. Warner [106] proposes an independent exploration of

each to reveal their individual impacts on behavior. The revised literature exhibits gaps concerning how descriptive and injunctive social norms affect actual water-use behaviors [101,147]. For instance, descriptive norms may not be effective for individuals with a high level of involvement in water conservation [40]. Future research could analyze the influence of descriptive and injunctive norms moderated by personal involvement, considering that involvement influences conservation behavior [148]. Still, the implications of injunctive norms, when contrasted in different populations or within varied contexts, remain ambiguous [106]. For example, for some individuals, it is more significant to obtain approval for conservation practices from their neighbors (closer) rather than from those whom they consider important (more distant) [106]. In this context, the notion of spatial psychological distance [139], together with social comparison theory, offers a promising avenue for forthcoming investigations.

On the contrary, the factors that have been less examined in household water-conservation studies, and which should be analyzed in greater depth due to their potential explanatory value, are perceived efficacy, emotions, and habits. The evidence indicated that perceived efficacy is directly and positively linked to intention, and indirectly to actual behavior [144,149]. It is quite an important construct because it helps people to recognize the tangible consequences of their behavior [148]. On the contrary, it is becoming a barrier to behavior if individuals perceive their actions will not be effective in resolving water problems [148]. Additionally, future research should analyze personal and collective response efficacy. In the domain of communication and social marketing, Rodriguez-Sanchez et al. [4] state that personal response efficacy can offer a suitable framework for fostering changes in individual pro-environmental behaviors. This approach centers on the individual, avoiding the diffusion of responsibility within society or to "others". This phenomenon is based on the idea that "when people perceive that their actions contribute to solving a specific environmental problem, they are more likely to perform such behaviors" ([148], p. 195).

Concerning emotions, while there is a general agreement that they influence behavioral intentions, a more in-depth examination is essential to identify the specific emotions triggered by water-consumption patterns [69,150]. In past research, the primary focus has been on positive emotions, such as happiness, eudaimonia, gratitude, mood, and well-being. Positive emotions are positively linked to engagement with climate change, but positive emotions do not always motivate more pro-environmental engagement [150], so it could be interesting to analyze future research on the relationship between positive emotions and engagement in water-conservation behavior. However, only two negative emotions have been extensively studied: stress and emotions linked to irresponsible water use. In addition, further research is needed to understand the moderation effect that positive and negative emotions cause in cognitive determinants of water-conservation behavior [69]. Past research states that including emotion in cognitive models enhances their model explanatory capacity regarding pro-environmental behavior [70]. Finally, concerning habits, our findings show that most research predominantly focuses on the link between past behavior and water consumption. A very limited number of studies have thoroughly analyzed and operationalized the habit construct (habit strength). Consequently, future research should delve deeper into the correlation between habit construct and water consumption. This emphasis is critical, given that habits are an important barrier to water behavior change [151]. The challenge of promoting changes in these habits remains largely unaddressed [64]. Some scholars propose the application of communication or persuasion frameworks to encourage habit change [64], for instance, by appealing to self-efficacy by showing an audience that habit change is easy to achieve or by simply describing water-saving tips [119].

The predictability of socio-demographic variables for water conservation actions remains inconsistent [152]. Demographics might be examined as potential moderators that might be found to influence the relationship between conservation behaviors and other internal variables such as attitudes, values, and moral norms [153]. For example,

Kang et al. [92] suggest the need to explore the differences in water beliefs and perceptions according to gender and age.

Regarding the external determinants of household water use, scholars advocate for deeper inquiries into contemporary urban lifestyles and more understanding of how shifts in family structures might affect water-consumption levels [132]. It is crucial to integrate family characteristics and seasonal variations into research models since both factors are key in shaping water-consumption habits [154]. Prior experiences in water-scarce environments shape attitudes toward water conservation and seasonal consumption patterns [15,40,72]. Households with children, especially adolescents, tend to consume more water [129,131], while single-occupancy households show higher per-capita consumption compared to larger households [128]. Future research should analyze how external factors influence individual-level variables, for example, by exploring the influences of water-conservation messages in different climatic regions [155], or how water scarcity affects the credibility of water-conservation information [127] or the influence of seasonality on bias perception of consumption [72].

In conclusion, our review underscores the need for future research in the domain of household water conservation, presenting three overarching areas worthy of exploration. Firstly, expanding the geographical scope beyond regions with known water scarcity issues would allow us to assess the generalizability of findings to diverse hydrological contexts. Additionally, comparative studies involving regions with different hydrological situations could offer valuable insights. Secondly, despite the increasing number of studies on household water behavior, a noteworthy gap persists as most fail to integrate guiding theories or frameworks. Aligning with the principles of Community-Based Social Marketing (CBSM), effective social marketing strategies require a foundational understanding of perceived benefits and barriers. Incorporating relevant theories and underexplored theories such as Construal Level Theory and Goal Framing Theory could bridge existing gaps. Importantly, relying on self-reported measures to assess water behavior introduces perceptual biases, emphasizing the imperative for real-time observations. Longitudinal measurements, especially considering climatic and seasonal influences, are warranted to deepen our understanding of behavior persistence. Furthermore, distinguishing between curtailment and efficiency behaviors, examining the influence of psychological distances, and exploring the moderating effects of emotions on cognitive determinants are areas requiring more comprehensive exploration. Thirdly, future research should prioritize less-explored internal factors such as perceived efficacy, emotions, and habits, along with key external factors. Finally, investigating the inconsistent predictability of socio-demographic variables and their potential moderation effects on conservation behaviors is crucial for a comprehensive understanding of the factors influencing water-saving actions.

4.1. Managerial Implications

Our research provides insights into how to develop effective interventions following a social marketing approach. Firstly, household water-conservation programs must clearly define the behavior they aim to promote, distinguishing between curtailment and efficiency behaviors due to their distinct internal and external determinants. Even further specification is recommended, such as differentiating curtailment behaviors (e.g., indoor vs. outdoor) or efficiency types (e.g., electric vs. non-electric water devices). Secondly, audience segmentation is crucial, encompassing socio-demographic factors, family composition (e.g., households with children, teenagers, or singles), and homeownership status. Additionally, climatic and seasonal variables, as well as neighborhood housing features (e.g., the presence of swimming pools, gardens, or the age of the residences), should be considered. Once the target audience has been segmented, the next step is to research and understand the determinants that act as barriers or motivators associated with the behavior, and finally design an intervention that targets these key determinants [146].

According to our findings, there are several determinants that should be triggered by interventions (The recommendations outlined below are primarily based on the work

conducted by van Valkengoed et al. [147], recently published in the journal *Nature Human Behavior*) either because they play a significant role in explaining water-conservation intention or behavior, or because they have been underutilized in the past. Further research is needed on the subjects of attitudes, social norms, outcome efficacy, emotions, and habits.

Attitudes towards water conservation could be influenced by the following three strategies. First, providing information about the environmental consequences associated with specific water-related actions, such as excessive lawn watering or extended shower durations. In this sense, individuals are anticipated to view these behaviors less favorably, thus encouraging more sustainable water use. Second, providing information about the (non-environmental) co-benefits and costs associated with behavior. Highlighting, for instance, the financial savings from reduced water bills or the long-term property benefits of maintaining a drought-resistant garden can further motivate households to embrace water conservation. Third, introducing direct incentives, such as rebates for installing rainwater harvesting systems or discounts for using water-efficient appliances. By highlighting these additional benefits, people may be more likely to perceive a behavior positively and engage in it.

Furthermore, the following managerial strategies leveraging social norms can also be performed. First, providing people with descriptive norm information. This intervention reveals what the majority of people are doing concerning water-saving behaviors. For instance, if individuals learn that most households in their neighborhood are collecting rainwater for gardening, they might be more inclined to adopt the same. Second, provide dynamic norm information. This intervention involves providing people with information that indicates that an increasing number of people are changing their behavior. Such information may signal to people what behavior may be normative in the near future, to which people may already want to conform. Finally, providing information about injunctive norms. This intervention involves providing people with information about whether a behavior is commonly approved or disapproved of by people or groups that are important to them. For example, knowing that the local community values households that have drought-resistant gardens can spur others to consider such practices.

One possible intervention that could enhance outcome efficacy is providing households with detailed instructions on how to execute water-conservation measures, such as rainwater harvesting or fixing leaky faucets. This can bolster individuals' confidence in their capability to implement the behavior appropriately and realize the anticipated benefits. Furthermore, offering feedback on the outcomes of their actions, such as quantifying the amount of water saved by shortening shower durations, can allow individuals to recognize the positive impact of their endeavors and amplify their assurance in achieving the intended water-saving results.

Regarding emotions, several interventions can be effective by eliciting specific emotions. Firstly, providing feedback on behavioral outcomes can heighten a sense of achievement. For instance, informing households of the liters of water saved by fixing leaks or using efficient fixtures can foster a sense of pride in their proactive choices. Secondly, employing prompts and reminders can serve as continual nudges toward sustainable actions. A sticker near the sink reminding occupants to turn off the tap when brushing their teeth, for example, can stimulate a sense of responsibility and motivation to conserve. Lastly, the strategy of social comparison capitalizes on the power of peer influence. When households receive data illustrating their water usage in comparison to their neighbors, emotions such as pride, for those excelling, or guilt, for those lagging behind, can be triggered. Such emotional responses can be strong catalysts driving households toward more judicious water use.

Finally, the following interventions can be effective for triggering automatic decision-making (habits). Predominantly, choice architecture interventions or "nudges" have been employed to subtly direct individuals toward pro-environmental behaviors without constricting their choices or altering perceived costs and benefits. For instance, setting water-saving behaviors as default options, such as a washing machine automatically starting on

an eco-friendly setting, simplifies pro-environmental choices, making them more instinctual. Additionally, integrating visual cues, such as installing water meters in visible areas, makes water consumption more apparent, nudging individuals towards conservation. Lastly, placing reminders, such as stickers near showers prompting shorter water usage, serves as cues, seamlessly guiding individuals towards water-saving behaviors without overtly dictating their actions.

4.2. Limitations of the Study

This study presents a series of limitations that it is important to highlight. First, the exhaustive review process spanned several months. As a result, there is potential that the most recent publications from the latter stages of this period may not have been incorporated into this analysis. Second, the keyword selection plays a crucial role in a systematic review. Despite meticulous efforts to curate a comprehensive set of keywords and Boolean operators to include all relevant literature (see Tables A1–A3), there remains a possibility that some significant publications could have been missed. Third, this systematic research is based on bibliographic databases such as Scopus and Web of Science (WoS), which predominantly includes studies published in English. As a result, potentially significant research from non-traditional sources or those embedded within grey literature might have been overlooked. This could also introduce a geographical bias, potentially constraining the applicability of findings to regions that are underrepresented. Fourth, the bibliometric review carries its own set of limitations. Outcomes rely on citations and bibliometric metrics (e.g., h-index, impact factor, etc.) that might not necessarily reflect the quality or influence of a given publication. Inherent biases in this approach include issues such as self-citations and the temporal gap between the publication date and the bibliometric review. To mitigate this latter limitation, the average annual citation count is computed to gauge the significance and relevance of the research articles.

Author Contributions: Conceptualization, C.S., C.R.-S. and F.S.-E.; methodology, C.S. and F.S.-E.; software, C.S.; validation, C.S., C.R.-S. and F.S.-E.; formal analysis, C.S. and F.S.-E.; investigation, C.S., C.R.-S. and F.S.-E. data curation, C.S.; writing—original draft preparation, C.S., C.R.-S. and F.S.-E.; writing—review and editing, C.S., C.R.-S. and F.S.-E.; visualization, C.S., C.R.-S. and F.S.-E.; supervision, C.R.-S. and F.S.-E.; project administration, C.R.-S. and F.S.-E.; funding acquisition, C.S., C.R.-S. and F.S.-E. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by Generalitat Valenciana (Emerging Project GV2022 number: CIGE/2022/051), Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET) doctoral research scholarship, and Universidad Católica de Córdoba (Argentina).

Data Availability Statement: Data are available upon request.

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

Appendix A

Table A1. Literature reviews used to select the keywords for this review.

Author	Article Title	Journal
Abu-Bakar et al. (2021) [156]	A review of household water demand management and consumption measurement	Journal of Cleaner Production
Asprilla Echeverria, (2020) [157]	Cross-country evidence for social dimensions of urban water consumption during droughts	Journal of Cleaner Production
Benzoni & Telenko (2016) [158]	A Review of Intervention Studies Aimed at Domestic Water Conservation	Springer International Pub.
Carvalho et al. (2013) [159]	Sustainable airport environments: A review of water conservation practices in airports	Resources, Conservation, & Recycling

Table A1. *Cont.*

Author	Article Title	Journal
Ehret et al. (2021) [11]	Systematic Review of Household Water-Conservation Interventions Using the Information–Motivation– Behavioral Skills Model	Environment and Behavior
Grilli & Curtis (2021) [160]	Encouraging pro-environmental behaviors: A review of methods and approaches	Renewable and Sustainable Energy Reviews
Hall et al. (2016) [161]	Accommodation Consumers and Providers' Attitudes, Behaviors and Practices for Sustainability: A Systematic Review	Sustainability
Hurlimann et al. (2009) [162]	Understanding behavior to inform water supply management in developed nations—A review of literature, conceptual model and research agenda	Journal of Environmental Management
Inman & Jeffrey (2007) [163]	A review of residential water conservation tool performance and influences on implementation effectiveness	Urban Water Journal
Jorgensen et al. (2009) [164]	Household water use behavior: An integrated model	Journal of Environmental Management
Koop et al. (2019) [165]	Enhancing domestic water conservation behavior: A review of empirical studies on influencing tactics	Journal of Environmental Management
Liu & Mukheibir (2018) [166]	Digital metering feedback and changes in water consumption—A review	Resources, Conservation & Recycling
Moglia et al. (2018) [13]	Promoting Water Conservation: Where to from here?	Water
Moore & Boldero (2017) [167]	Designing Interventions that Last: A Classification of Environmental Behaviors in Relation to the Activities, Costs, and Effort Involved for Adoption and Maintenance	Frontiers in Psychology
Ricart et al. (2021) [168]	Extending Natural Limits to Address Water Scarcity? The Role of Non-Conventional Water Fluxes in Climate Change Adaptation Capacity: A Review	Sustainability
Russell & Fielding (2010) [74]	Water demand management research: A psychological perspective	Water Resources Research
Sanguinetti et al. (2018) [169]	Information, timing, and display: A design-behavior framework for improving the effectiveness of eco-feedback	Energy Research & Social Science
Stankuniene et al. (2020) [170]	Systematic Literature Review on Behavioral Barriers of Climate Change Mitigation in Households	Sustainability
Syme et al. (2000) [171]	The evaluation of information campaigns to promote voluntary household water conservation	Evaluation Review
Warren & Becken (2017) [172]	Saving energy and water in tourist accommodation: A systematic literature review (1987–2015)	International Journal of Tourism Research
Weis (2019) [173]	Systematic literature review on impacts and indicators for measuring costs and benefits of water sector-related interventions	SSRN
Voskamp et al. (2020) [174]	A systematic review of factors influencing spatiotemporal variability in urban water and energy consumption	Journal of Cleaner Production

Note: Source: Own elaboration.

Table A2. Thematic categories and keywords initially identified.

Thematic Category	Search Terms Used in the Search Engines
General	Factors, determinants, antecedents, influences, psychological-social drivers, economics drivers.
Contextual	Household/domestic /residential water.
	Indoor/outdoor uses. Internal/external consumption. Urban/local. Droughts. Climate/seasonal factors. Physical environmental variables.
	Property characteristics: lot size, pool, garden, house size, house age.
	Household characteristics or situational influences: household composition, household income, home ownership, water-saving technology, water supply technology.
	Household culture of water conservation.
Behavioral	Behavior, behavioral change, community-based behavior change. Social change. Curtailment/efficiency behavior.
Water	Water use. Actual water use. Water save/saving, water conservation, water consumption, Water scarcity, waste/wasting water.
Motivators	Drivers, motivation, conservation motives.
	Non-rational behavioral drivers. Incentives.
Barriers	Barrier. Resistance.
Factors determinants of behavior	Attitude/attitudinal factors. Intentions. Perceived self-efficacy. Social and personal Norms. Subjective norm.
	Cognitive behavior. Habits behavior. Past water-use behavior. Routines.
	Personal capabilities: Awareness, knowledge, education, environmental conscious/concerns.
	Beliefs. Normative beliefs. Cultural/environmental beliefs. Trust.
	Personal involvement. Perceived behavioral control. Locus of control. Perceptions of other behavior.
	Values. Moral obligation. Perceived responsibility. Hedonic values.
	Negative/positive emotions.
	Cost: time cost, cognitive cost. Lifestyle.
Theories	Theory of Reasoned action (TRA).
	Value-Belief-Norms (VBN).
	The goal norm.
	Behavioral economics.

Note: Source: Own elaboration.

Table A3. Final key search terms and Boolean operators used in Scopus and WoS.

Database	Search Terms
Scopus	(TITLE-ABS-KEY ((“water us*” OR “us* water” OR “actual water” OR “water sav*” OR “sav* water” OR “water conserv*” OR “conserv* water” OR “water consumpt*” OR “consum* water” OR “water scarc*” OR “water demand”)) AND TITLE-ABS-KEY ((“individual*” OR “household” OR “behavi*” OR “action”) AND TITLE-ABS-KEY ((“factor*” OR “determinant*” OR “force*” OR “antecedent*” OR “influenc*” OR “driver*” OR “motiv*” OR “conserv*” OR “incentive*” OR “barrier” OR “resistance” OR “inhibit*”)) AND TITLE-ABS-KEY ((“domestic” OR “residential” OR “indoor” OR “outdoor” OR “internal” OR “external” OR “urban” OR “local” OR “drought*” OR “climate” OR “season*” OR “property*” OR “house*” OR “ownership”)) AND TITLE-ABS-KEY ((“inform*” OR “attitu*” OR “intention” OR “self-efficacy” OR (“social” OR “personal *” OR “subjective” AND “norm”) OR “cogniti*” OR “habit*” OR “routine*” OR “capabilit*” OR “awareness” OR “knowledge” OR “educat*” OR “environment*” OR “concern*” OR “belie*” OR “cultur*” OR “trust” OR “involve*” OR “control” OR “locus” OR “values” OR “moral” OR “responsib*” OR (“hedonic” AND “values”) OR “emot*” OR “cost” OR “lifestyle” OR “demographic”) AND (LIMIT-TO (LANGUAGE, “English”) AND (LIMIT-TO (DOCTYPE, “ar”) OR LIMIT-TO (DOCTYPE, “re”))

Table A3. *Cont.*

Database	Search Terms
Web of Science	(TS = ((“water us*” OR “us* water” OR “actual water” OR “water sav*” OR “sav* water” OR “water conserv*” OR “conserv* water” OR “water consumpt*” OR “consum* water” OR “water scarc*” OR “water demand”)) AND TS = ((“individual*” OR “household” OR “behavi*” OR “action”))) AND TS = ((“factor*” OR “determinant*” OR “force*” OR “antecedent*” OR “influenc*” OR “driver*” OR “motiv*” OR “conserv*” OR “incentive*” OR “barrier” OR “resistance” OR “inhibit*”)) AND TS = ((“domestic” OR “residential” OR “indoor” OR “outdoor” OR “internal” OR “external” OR “urban” OR “local” OR “drought*” OR “climate” OR “season*” OR “property*” OR “house*” OR “ownership”)) AND TS = ((“inform*” OR “attitu*” OR “intention” OR “self-efficacy” OR (“social” OR “personal *” OR “subjective” AND “norm”) OR “cogniti*” OR “habit*” OR “routine*” OR “capabilit*” OR “awareness” OR “knowledge” OR “educat*” OR “environment*” OR “concern*” OR “belie*” OR “cultur*” OR “trust” OR “involve*” OR “control” OR “locus” OR “values” OR “moral” OR “responsib*” OR (“hedonic” AND “values”) OR “emot*” OR “cost” OR “lifestyle” OR “demographic”)))) AND (DT == (“ARTICLE” OR “REVIEW”) AND LA == (“ENGLISH”))

Note: Source: Own elaboration. * = truncation sign in Boolean search. For instance, “sav*” indicates that the search is done for all terms beginning by “sav” and with any ending letters.

Table A4. Academic journals where included contributions were published.

Source (Journal Name)	Publisher	Articles	%
Journal of Environmental Management	Academic Press Inc.	11	7.1%
Water	MDPI	9	5.8%
Journal of Environmental Psychology	Academic Press Inc.	8	5.2%
Sustainability	Springer Nature Switz.	7	4.5%
Journal of Applied Social Psychology	Wiley-Blackwell	5	3.2%
Water Policy	IWA	5	3.2%
Ecological Economics	Elsevier	4	2.6%
Environment & Behavior	SAGE Pub. Ltd.	4	2.6%
Resources, Conservation & Recycling	Elsevier	4	2.6%
Science of The Total Environment	Elsevier	4	2.6%
Society & Natural Resources	Taylor and Francis Ltd.	4	2.6%
International Journal of Consumer Studies	Wiley-Blackwell Pub. Ltd.	3	1.9%
Journal of Cleaner Production	Elsevier Ltd.	3	1.9%
Urban Water Journal	Taylor and Francis Ltd.	3	1.9%
Water International	Taylor and Francis Ltd.	3	1.9%
Water Resources Research	Wiley-Blackwell Pub. Ltd.	3	1.9%
Australasian Journal of Environmental Management	Taylor and Francis Ltd.	2	1.3%
Frontiers In Water	Frontiers Media S.A.	2	1.3%
International Journal of Water Resources Development	Routledge	2	1.3%
Journal of Environmental Economics & Management	Academic Press Inc.	2	1.3%
Landscape And Urban Planning	Elsevier	2	1.3%
Proceedings of The National Academy of Sciences of the USA	National Academy of Sciences	2	1.3%
Psyecology	Taylor and Francis Ltd.	2	1.3%
Sustainable Cities & Society	Elsevier BV	2	1.3%
Sustainable Water Resources Management	Springer Nature Switz.	2	1.3%
Urban Forestry & Urban Greening	Urban und Fischer Verlag GmbH und Co. KG	2	1.3%
Water Resources Management	Springer Netherlands	2	1.3%

Table A4. *Cont.*

Source (Journal Name)	Publisher	Articles	%
Ahuri Final Report	Australian Housing and Urban Research Institute (AHURI)	1	0.6%
Applied Environmental Education & Communication	Routledge	1	0.6%
Applied Geography	Elsevier BV	1	0.6%
Applied Research in Quality & Life	Springer Netherlands	1	0.6%
Applied Water Science	Springer Science and Business Media Deutschland GmbH	1	0.6%
Australian Journal & Water Resources	Taylor and Francis Ltd.	1	0.6%
Behavior & Information Technology	Taylor and Francis Ltd.	1	0.6%
Design Journal	Taylor and Francis Ltd.	1	0.6%
Ecopsychology	Mary Ann Liebert Inc.	1	0.6%
Environment & Ecology Research	Horizon Research Publishing	1	0.6%
Environmental Engineering & Management Journal	Gh. Asachi Technical University of Iasi	1	0.6%
Environmental Management	Academic Press Inc.	1	0.6%
Environmental Science & Policy	Elsevier BV	1	0.6%
Environmental Science & Pollution Research	Springer Science + Business Media	1	0.6%
Frontiers In Environmental Science	Frontiers Media S.A.	1	0.6%
Geoforum	Elsevier BV	1	0.6%
Global Business Review	Sage Publications India Pvt. Ltd.	1	0.6%
Great Plains Research	Center for Great Plains Studies	1	0.6%
H2open Journal	IWA	1	0.6%
Health Communication	Routledge	1	0.6%
International Journal of Advertising	Taylor and Francis Ltd.	1	0.6%
International Journal of Environmental Research	Springer International Publishing AG	1	0.6%
International Journal of Environmental Research & Public Health	MDPI	1	0.6%
International Journal of Sustainable Energy	Taylor and Francis Ltd.	1	0.6%
Irish Geography	Routledge	1	0.6%
Khawra Journal of The American Water Resources Association	Wiley-Blackwell Pub. Ltd.	1	0.6%
Journal of Agricultural Education & Extension	Association for International Agricultural and Extension Education	1	0.6%
Journal of Consumer Behavior	Wiley-Blackwell	1	0.6%
Journal of Economic Psychology	Elsevier	1	0.6%
Journal of Environmental Planning & Management	Routledge	1	0.6%
Journal of Extension	Extension Journal, Inc.	1	0.6%
Journal of Global Marketing	Routledge	1	0.6%
Journal of Health Communication	Taylor and Francis Ltd.	1	0.6%
Journal of Hydrology	Elsevier	1	0.6%
Journal of Marketing Management	Taylor and Francis Ltd.	1	0.6%
Journal of Policy Analysis & Management	Wiley-Liss Inc.	1	0.6%
Journal of Water Resources Planning & Management	American Society of Civil Engineers (ASCE)	1	0.6%

Table A4. *Cont.*

Source (Journal Name)	Publisher	Articles	%
Journal of Water Sanitation & Hygiene for Development	IWA	1	0.6%
Journal of Water Supply: Research & Technology—Aqua	IWA	1	0.6%
Methodsx	Elsevier BV	1	0.6%
Organizational Behavior & Human Decision Processes	Academic Press Inc.	1	0.6%
PLOS One	Public Library of Science	1	0.6%
Population And Environment	Springer Netherlands	1	0.6%
Social Influence	Taylor and Francis Ltd.	1	0.6%
Social Science Journal	Taylor and Francis Ltd.	1	0.6%
Sociological Perspectives	SAGE Publications Inc.	1	0.6%
South East European Journal & Economics & Business	School of Economics and Business in Sarajevo	1	0.6%
Urban Climate	Elsevier BV	1	0.6%
Urban Studies	SAGE Publications Inc.	1	0.6%
Water And Environment Journal	Wiley-Blackwell	1	0.6%
Water Conservation & Management	Zibeline International Publishing Sdn. Bhd.	1	0.6%
Water Science & Technology: Water Supply	IWA	1	0.6%
World Development Perspectives	Elsevier Ltd.	1	0.6%
Total		155	100.0%

Note: Source: Own elaboration.

Table A5. Number of articles by author in the sample.

Author	Number Articles	%
Warner	5	1.0%
Corral-Verdugo V	4	0.8%
Fielding KS	4	0.8%
Dolnicar S	3	0.6%
Hurlimann A	3	0.6%
Jorgensen BS	3	0.6%
Martin JF	3	0.6%
Panuwatwanich K	3	0.6%
Sauri D	3	0.6%
Shahangian SA	3	0.6%
Stewart RA	3	0.6%
Tabesh M	3	0.6%
Yazdanpanah M	3	0.6%
Addo IB	2	0.4%
Al-Maadid A	2	0.4%
Barnett MJ	2	0.4%
Bhanot SP	2	0.4%
Buys L	2	0.4%
Clark WA	2	0.4%

Table A5. *Cont.*

Author	Number Articles	%
Demetriades SZ	2	0.4%
Finley JC	2	0.4%
Frías-Armenta M	2	0.4%
Garcia X	2	0.4%
Gonzalez-Gomez F	2	0.4%
Guardiola J	2	0.4%
Gázquez-Abad JC	2	0.4%
Haeffner M	2	0.4%
Hustvedt G	2	0.4%
Jackson-Smith D	2	0.4%
Kaiser RA	2	0.4%
Kang J	2	0.4%
Katz D	2	0.4%
Kyle GT	2	0.4%
LandonAC	2	0.4%
Lauren N	2	0.4%
Llausàs A	2	0.4%
Louis WR	2	0.4%
Miller E	2	0.4%
Mondéjar-Jiménez JA	2	0.4%
Otaki AND	2	0.4%
Parsons M	2	0.4%
Pearce MW	2	0.4%
Ribas A	2	0.4%
Ritcher CP	2	0.4%
Rodriguez-Sanchez C	2	0.4%
Russell S	2	0.4%
Sarabia-Sanchez FJ	2	0.4%
Schultz PW	2	0.4%
Spinks A	2	0.4%
Syme GJ	2	0.4%
Thoms MC	2	0.4%
Walter N	2	0.4%
Willis EM	2	0.4%
Willis RM	2	0.4%
Authors with only one article	352	73.8%
Total	477	100%

Source: Own elaboration.

Table A6. Contributions included in the review by number of citations.

Author	Year	Contribution	Total Cites	Cites/Year
Willis et al. [38]	2011	Willis, R. M., Stewart, R. A., Panuwatwanich, K., Williams, P. R., & Hollingsworth, A. L. (2011). Quantifying the influence of environmental and water conservation attitudes on household end use water consumption. Journal of Environmental Management, 92(8), 1996–2009.	275	22.9
Domene et al. [132]	2006	Domene, E., & Saurí, D. (2006). Urbanisation and water consumption: Influencing factors in the metropolitan region of Barcelona. Urban Studies, 43(9), 1605–1623.	264	15.5
Gilg & Barr [175]	2006	Gilg, A., & Barr, S. (2006). Behavioral attitudes towards water saving? Evidence from a study of environmental actions. Ecological Economics, 57(3), 400–414.	249	14.6
Gregoy & Di Leo [81]	2003	Gregory, G. D., & Di Leo, M. (2003). Repeated Behavior and Environmental Psychology: The Role of Personal Involvement and Habit Formation in Explaining Water Consumption. Journal of Applied Social Psychology, 33(6), 1261–1296.	229	11.5
Fielding et al. [40]	2012	Fielding, K. S., Russell, S., Spinks, A., & Mankad, A. (2012). Determinants of household water conservation: The role of demographic, infrastructure, behavior, and psychosocial variables. Water Resources Research, 48(10).	183	16.6
Lam [176]	2006	Lam, S. P. (2006). Predicting intention to save water: Theory of planned behavior, response efficacy, vulnerability, and perceived efficiency of alternative solutions. Journal of Applied Social Psychology, 36(11), 2803–2824.	177	10.4
Corral-Verdugo et al. [122]	2003	Corral-Verdugo, V., Bechtel, R. B., & Fraijo-Sing, B. (2003). Environmental beliefs and water conservation: An empirical study. Journal of Environmental Psychology, 23(3), 247–257.	172	8.6
Fielding et al. [40]	2013	Fielding, K. S., Spinks, A., Russell, S., McCrea, R., Stewart, R., & Gardner, J. (2013). An experimental test of voluntary strategies to promote urban water demand management. Journal of Environmental Management, 114, 343–351.	171	17.1
Grafton et al. [96]	2011	Grafton, R. Q., Ward, M. B., To, H., & Kompas, T. (2011). Determinants of residential water consumption: Evidence and analysis from a 10-country household survey. Water Resources Research, 47(8).	162	13.5
Randolph & Troy [177]	2008	Randolph, B., & Troy, P. (2008). Attitudes to conservation and water consumption. Environmental Science and Policy, 11(5), 441–455.	159	10.6
Syme et al. [134]	2004	Syme, G. J., Shao, Q., Po, M., & Campbell, E. (2004). Predicting and understanding home garden water use. Landscape and Urban Planning, 68(1), 121–128.	151	7.9
Harlan et al. [178]	2009	Harlan, S. L., Yabiku, S. T., Larsen, L., & Brazel, A. J. (2009). Household water consumption in an arid city: Affluence, affordance, and attitudes. Society and Natural Resources, 22(8), 691–709.	138	9.9
Clark & Finley [93]	2007	Clark, W. A., & Finley, J. C. (2008). Household water conservation challenges in Blagoevgrad, Bulgaria: A descriptive study. Water International, 33(2), 175–188.	134	8.4

Table A6. *Cont.*

Author	Year	Contribution	Total Cites	Cites/Year
Attari [179]	2014	Attari, S. Z. (2014). Perceptions of water use. Proceedings of the National Academy of Sciences of the United States of America, 111(14), 5129–5134.	131	14.6
Schultz et al. [39]	2016	Schultz, P. W., Messina, A., Tronu, G., Limas, E. F., Gupta, R., & Estrada, M. (2016). Personalized Normative Feedback and the Moderating Role of Personal Norms: A Field Experiment to Reduce Residential Water Consumption. Environment and Behavior, 48(5), 686–710.	122	17.4
Kurz et al. [180]	2005	Kurz, T., Donaghue, N., & Walker, I. (2005). Utilizing a social-ecological framework to promote water and energy conservation: A field experiment. Journal of Applied Social Psychology, 35(6), 1281–1300.	110	6.1
Lauren et al. [119]	2016	Lauren, N., Fielding, K. S., Smith, L., & Louis, W. R. (2016). You did, so you can and you will: Self-efficacy as a mediator of spillover from easy to more difficult pro-environmental behavior. JOURNAL OF ENVIRONMENTAL PSYCHOLOGY, 48, 191–199.	102	14.6
Corral-Verdugo et al. [123]	2002	Corral-Verdugo, V., Frías-Armenta, M., Pérez-Urias, F., Orduña-Cabrera, V., & Espinoza-Gallego, N. (2002). Residential water consumption, motivation for conserving water and the continuing tragedy of the commons. Environmental Management, 30(4), 527–535.	97	4.6
Dolnicar et al. [97]	2012	Dolnicar, S., Hurlimann, A., & Grun, B. (2012). Water conservation behavior in Australia. Journal of Environmental Management, 105, 44–52.	95	8.6
Makki et al. [129]	2013	Makki, A. A., Stewart, R. A., Panuwatwanich, K., & Beal, C. (2013). Revealing the determinants of shower water end use consumption: Enabling better targeted urban water conservation strategies. Journal of Cleaner Production, 60, 129–146.	92	9.2
Bronfman et al. [111]	2015	Bronfman, N. C., Cisternas, P. C., López-Vázquez, E., la Maza, C., & Oyanedel, J. C. (2015). Understanding attitudes and pro-environmental behaviors in a Chilean community. Sustainability (Switzerland), 7(10), 14133–14152.	86	10.8
Corral-Verdugo & Frías-Armenta [123]	2006	Corral-Verdugo, V., & Frías-Armenta, M. (2006). Personal normative beliefs, antisocial behavior, and residential water conservation. Environment and Behavior, 38(3), 406–421.	80	4.7
Gilbertson et al. [181]	2011	Gilbertson, M., Hurlimann, A., & Dolnicar, S. (2011). Does water context influence behavior and attitudes to water conservation? Australasian Journal of Environmental Management, 18(1), 47–60.	76	6.3
Miller & Buys [112]	2008	Miller, E., & Buys, L. (2008a). The impact of social capital on residential water-affecting behaviors in a drought-prone Australian community. Society and Natural Resources, 21(3), 244–257.	73	4.9
Seyranian et al. [57]	2015	Seyranian, V., Sinatra, G. M., & Polikoff, M. S. (2015). Comparing communication strategies for reducing residential water consumption. Journal of Environmental Psychology, 41, 81–90.	70	8,8
Aprile & Fiorillo [182]	2017	Aprile, M. C., & Fiorillo, D. (2017). Water conservation behavior and environmental concerns: Evidence from a representative sample of Italian individuals. Journal of Cleaner Production, 159, 119–129.	62	10.3

Table A6. *Cont.*

Author	Year	Contribution	Total Cites	Cites/Year
Dolnicar & Hurlimann [77]	2010	Dolnicar, S., & Hurlimann, A. (2010). Australians' water conservation behaviors and attitudes. Australian Journal of Water Resources, 14(1), 43–53.	60	4.6
Kantola et al. [183]	1982	Kantola, S. J., Syme, G. J., & Campbell, N. A. (1982). The Role of Individual Differences and External Variables in a Test of the Sufficiency of Fishbein's Model to Explain Behavioral Intentions to Conserve Water. Journal of Applied Social Psychology, 12(1), 70–83.	60	1.5
Wolters [62]	2014	Wolters, E. A. (2014). Attitude-behavior consistency in household water consumption. Social Science Journal, 51(3), 455–463.	59	6.6
Lowe et al. [102]	2015	Lowe, B., Lynch, D., & Lowe, J. (2015). Reducing household water consumption: a social marketing approach. Journal of Marketing Management, 31(3–4), 378–408.	55	6.9
Stewart et al. [184]	2013	Stewart, R. A., Willis, R. M., Panuwatwanich, K., & Sahin, O. (2013). Showering behavioral response to alarming visual display monitors: Longitudinal mixed method study. Behavior and Information Technology, 32(7), 695–711.	53	5.3
Deng et al. [61]	2017	Deng, Y., Wang, M., & Yousefpour, R. (2017). How do people's perceptions and climatic disaster experiences influence their daily behaviors regarding adaptation to climate change?—A case study among young generations. Science of the Total Environment, 581–582, 840–847.	45	7.5
Jaeger & Schultz [148]	2017	Jaeger, C. M., & Schultz, P. W. (2017). Coupling social norms and commitments: Testing the underdetected nature of social influence. Journal of Environmental Psychology, 51, 199–208.	44	7.3
Suárez Varela et al. [185]	2016	Suárez Varela, M., Guardiola, J., & González Gómez, F. (2016). Do Pro-environmental Behaviors and Awareness Contribute to Improve Subjective Well-being? Applied Research in Quality of Life, 11(2), 429–444.	42	6.0
Mondéjar Jiménez et al. [186]	2011	Mondéjar Jiménez, J. A., Cordente Rodríguez, M., Meseguer Santamaría, M. L., & Gázquez Abad, J. C. (2011). Environmental Behavior and Water Saving in Spanish Housing. International Journal of Environmental Research, 5(1), 1–10.	41	3.4
Lede et al. [108]	2019	Lede, E., Meleady, R., & Seger, C. R. (2019). Optimizing the influence of social norms interventions: Applying social identity insights to motivate residential water conservation. JOURNAL OF ENVIRONMENTAL PSYCHOLOGY, 62, 105–114.	40	10.0
Russell & Knoeri [56]	2020	Russell, S. V, & Knoeri, C. (2020). Exploring the psychosocial and behavioral determinants of household water conservation and intention. International Journal of Water Resources Development, 36(6), 940–955.	39	13.0
Hamilton [187]	1983	Hamilton, L. C. (1983). Saving water: A Causal Model of Household Conservation. Sociological Perspectives, 26(4), 355–374.	39	1.0

Table A6. *Cont.*

Author	Year	Contribution	Total Cites	Cites/Year
Moore et al. [188]	1994	Moore, S., Murphy, M., & Watson, R. (1994). A longitudinal study of domestic water conservation behavior. Population and Environment, 16(2), 175–189.	37	1.3
Torres & Carlsson [189]	2018	Torres, M. M. J., & Carlsson, F. (2018). Direct and spillover effects of a social information campaign on residential water-savings. Journal of Environmental Economics and Management, 92, 222–243.	35	7.0
Richter [190]	2011	Richter, C. P. (2011). Usage of dishwashers: Observation of consumer habits in the domestic environment. International Journal of Consumer Studies, 35(2), 180–186.	35	2,9
Rajapaksa et al. [191]	2019	Rajapaksa, D., Gifford, R., Torgler, B., Garcia-Valiñas, M., Athukorala, W., Managi, S., & Wilson, C. (2019). Do monetary and non-monetary incentives influence environmental attitudes and behavior? Evidence from an experimental analysis. Resources, Conservation and Recycling, 149, 168–176.	34	8.5
Jorgensen et al. [76]	2014	Jorgensen, B. S., Martin, J. F., Pearce, M. W., & Willis, E. M. (2014). Predicting Household Water Consumption With Individual-Level Variables. Environment and Behavior, 46(7), 872–897.	34	3.8
Martínez Espiñeira & García Valiñas [192]	2013	Martínez Espiñeira, R., & García Valiñas, M. Á. (2013). Adopting versus adapting: Adoption of water-saving technology versus water conservation habits in Spain. International Journal of Water Resources Development, 29(3), 400–414.	33	3.3
Otaki et al. [86]	2017	Otaki, Y., Ueda, K., & Sakura, O. (2017). Effects of feedback about community water consumption on residential water conservation. Journal of Cleaner Production, 143, 719–730.	32	5,3
Fan et al. [133]	2013	Fan, L., Liu, G., Wang, F., Geissen, V., Ritsema, C. J., & Tong, Y. (2013). Water use patterns and conservation in households of Wei River Basin, China. Resources, Conservation and Recycling, 74, 45–53.	32	3.2
Segev [193]	2015	Segev, S. (2015). Modelling household conservation behavior among ethnic consumers: The path from values to behaviors. International Journal of Consumer Studies, 39(3), 193–202.	30	3.8
Sarabia Sánchez et al. [149]	2014	Sarabia Sánchez, F. J., Rodríguez Sánchez, C., & Hyder, A. (2014). The role of personal involvement, credibility and efficacy of conduct in reported water conservation behavior. Journal of Environmental Psychology, 38, 206–216.	29	3.2
Ramsey et al. [90]	2017	Ramsey, E., Berglund, E. Z., & Goyal, R. (2017). The impact of demographic factors, beliefs, and social influences on residential water consumption and implications for non-price policies in urban India. Water (Switzerland), 9(11).	27	4.5
Landon et al. [79]	2017	Landon, A. C., Kyle, G. T., & Kaiser, R. A. (2017). An Augmented Norm Activation Model: The Case of Residential Outdoor Water Use. Society and Natural Resources, 30(8), 903–918.	27	4.5
Pérez Urdiales & García Valiñas [145]	2016	Pérez Urdiales, M., & García Valiñas, M. T. (2016). Efficient water-using technologies and habits: A disaggregated analysis in the water sector. Ecological Economics, 128, 117–129.	27	3.9

Table A6. *Cont.*

Author	Year	Contribution	Total Cites	Cites/Year
Dascher et al. [150]	2014	Dascher, E. D., Kang, J., & Hustvedt, G. (2014). Water sustainability: Environmental attitude, drought attitude and motivation. International Journal of Consumer Studies, 38(5), 467–474.	27	3.0
Richter & Stamminger [194]	2012	Richter, C. P., & Stamminger, R. (2012). Water Consumption in the Kitchen—A Case Study in Four European Countries. Water Resources Management, 26(6), 1639–1649.	27	2.5
Gómez-Llanos et al. [54]	2020	Gómez-Llanos, E., Durán-Barroso, P., & Robina-Ramírez, R. (2020). Analysis of consumer awareness of sustainable water consumption by the water footprint concept. Science of the Total Environment, 721.	26	8.7
Garcia et al. [195]	2013	Garcia, X., Ribas, A., Llausàs, A., & Saurí, D. (2013a). Socio-demographic profiles in suburban developments: Implications for water-related attitudes and behaviors along the Mediterranean coast. Applied Geography, 41, 46–54.	26	2.6
Shahangian et al. [153]	2021	Shahangian, S. A., Tabesh, M., & Yazdanpanah, M. (2021b). How can socio-psychological factors be related to water-efficiency intention and behaviors among Iranian residential water consumers? Journal of Environmental Management, 288.	25	12.5
Straus et al. [118]	2016	Straus, J., Chang, H., & Hong, C.-Y. (2016). An exploratory path analysis of attitudes, behaviors and summer water consumption in the Portland Metropolitan Area. Sustainable Cities and Society, 23, 68–77.	25	3,6
Maas et al. [130]	2017	Maas, A., Goemans, C., Manning, D., Kroll, S., Arabi, M., & Rodriguez-McGoffina, M. (2017). Evaluating the effect of conservation motivations on residential water demand. Journal of Environmental Management, 196, 394–401.	23	3.8
Chang [196]	2013	Chang, G. (2013). Factors influencing water conservation behavior among urban residents in China's arid areas. Water Policy, 15(5), 691–704.	22	2.2
Bhanot [197]	2021	Bhanot, S. P. (2021). Isolating the effect of injunctive norms on conservation behavior: New evidence from a field experiment in California. Organizational Behavior and Human Decision Processes, 163, 30–42.	21	10.5
Addo et al. [84]	2018	Addo, I. B., Thoms, M. C., & Parsons, M. (2018). Barriers and Drivers of Household Water-Conservation Behavior: A Profiling Approach. Water, 10(12).	21	4.2
Landon et al. [79]	2016	Landon, A. C., Kyle, G. T., & Kaiser, R. A. (2016). Predicting compliance with an information-based residential outdoor water conservation program. Journal of Hydrology, 536, 26–36.	21	3.0
Marzouk & Mahrous [101]	2020	Marzouk, O. A., & Mahrous, A. A. (2020). Sustainable Consumption Behavior of Energy and Water-Efficient Products in a Resource-Constrained Environment. Journal of Global Marketing, 33(5), 335–353.	20	6.7
Jorgensen et al. [120]	2013	Jorgensen, B. S., Martin, J. F., Pearce, M., & Willis, E. (2013). Some difficulties and inconsistencies when using habit strength and reasoned action variables in models of metered household water conservation. Journal of Environmental Management, 115, 124–135.	20	2.0

Table A6. *Cont.*

Author	Year	Contribution	Total Cites	Cites/Year
Liobikiene & Minelgaite [198]	2021	Liobikiene, G., & Minelgaite, A. (2021). Energy and resource-saving behaviors in European Union countries: The Campbell paradigm and goal framing theory approaches. Science of the Total Environment, 750.	19	9.5
Gu et al. [199]	2020	Gu, D., Jiang, J., Zhang, Y., Sun, Y., Jiang, W., & Du, X. P. (2020). Concern for the future and saving the earth: When does ecological resource scarcity promote pro-environmental behavior? Journal of Environmental Psychology, 72.	19	6.3
Bhanot et al. [200]	2017	Bhanot, S. P. (2017). Rank and response: A field experiment on peer information and water use behavior. Journal of Economic Psychology, 62, 155–172.	19	3.2
Schultz et al. [201]	2019	Schultz, W., Javey, S., & Sorokina, A. (2019). Social Comparison as a Tool to Promote Residential Water Conservation. Frontiers in Water, 1.	18	4.5
Matikinca et al. [202]	2020	Matikinca, P., Ziervogel, G., & Enqvist, J. P. (2020). Drought response impacts on household water use practices in Cape Town, South Africa. Water Policy, 22(3), 483–500.	17	5,7
Goette et al. [203]	2019	Goette, L., Leong, C., & Qian, N. (2019). Motivating household water conservation: A field experiment in Singapore. PLOS ONE, 14(3).	17	4,3
Chenoweth et al. [95]	2016	Chenoweth, J., López-Avilés, A., Morse, S., & Druckman, A. (2016). Water consumption and subjective wellbeing: An analysis of British households. Ecological Economics, 130, 186–194.	17	2,4
Addo et al. [84]	2019	Addo, I. B., Thoms, M. C., & Parsons, M. (2019). The influence of water-conservation messages on reducing household water use. Applied Water Science, 9(5).	16	4.0
Arbués et al. [78]	2016	Arbués, F., Bolsa, M. Á., & Villanúa, I. (2016). Which factors determine water saving behavior? evidence from Spanish households. Urban Water Journal, 13(5), 511–520.	16	2.3
Keramitsoglou & Tsagarakis [89]	2011	Keramitsoglou, K. M., & Tsagarakis, K. P. (2011). Raising effective awareness for domestic water saving: evidence from an environmental educational programme in Greece. Water Policy, 13(6), 828–844.	15	1.3
Clark & Finley [93]	2008	Clark, W. A., & Finley, J. C. (2007). Determinants of water conservation intention in Blagoevgrad, Bulgaria. Society and Natural Resources, 20(7), 613–627.	15	1,0
Lindsay & Supski [204]	2017	Lindsay, J., & Supski, S. (2017). Changing household water consumption practices after drought in three Australian cities. Geoforum, 84, 51–58. https://doi.org/10.1016/j.geoforum.2017.06.001	14	2,3
Kang et al. [92]	2017	Kang, J., Grable, K., Hustvedt, G., & Ahn, M. (2017). Sustainable water consumption: The perspective of Hispanic consumers. Journal of Environmental Psychology, 50, 94–103.	14	2,3
Bruvold & Smith [126]	1988	Bruvold, W. H., & Smith, B. R. (1988). Developing and assessing a model of residential water conservation. JAWRA Journal of the American Water Resources Association, 24(3), 661–669.	14	0.4

Table A6. *Cont.*

Author	Year	Contribution	Total Cites	Cites/Year
Dean et al. [105]	2021	Dean, A. J., Kneebone, S., Tull, F., Lauren, N., & Smith, L. D. G. (2021). 'Stickiness' of water-saving behaviors: What factors influence whether behaviors are maintained or given up? Resources, Conservation and Recycling, 169.	13	6.5
Rogers & Bragg [205]	2012	Rogers, Z., & Bragg, E. (2012). The power of connection: Sustainable lifestyles and sense of place. Ecopsychology, 4(4), 307–318.	13	1.2
Tom et al. [206]	2011	Tom, G., Tauchus, G., Williams, J., & Tong, S. (2011). The role of communicative feedback in successful water conservation programs. Applied Environmental Education and Communication, 10(2), 80–90.	13	1.1
Wang & Dong [207]	2017	Wang, C. H., & Dong, H. (2017). Responding to the drought: A spatial statistical approach to investigating residential water consumption in Fresno, California. Sustainability (Switzerland), 9(2).	12	2.0
Garcia et al. [208]	2013	Garcia, X., Muro, M., Ribas, A., Llausàs, A., Jeffrey, P., & Saurí, D. (2013b). Attitudes and behaviors towards water conservation on the Mediterranean coast: the role of socio-demographic and place-attachment factors. Water International, 38(3), 283–296.	12	1.2
Céspedes Restrepo & Morales-Pinzón [85]	2020	Céspedes Restrepo, J. D., & Morales-Pinzón, T. (2020). Effects of feedback information on the household consumption of water and electricity: A case study in Colombia. Journal of Environmental Management, 262.	11	3.7
Zhuang et al. [140]	2018	Zhuang, J., Lapinski, M. K., & Peng, W. (2018). Crafting messages to promote water conservation: Using time-framed messages to boost conservation actions in the United States and China. Journal of Applied Social Psychology, 48(5), 248–256.	11	2.2
Tijs et al. [209]	2017	Tijs, M. S., Karremans, J. C., Veling, H., de Lange, M. A., van Meegeren, P., & Lion, R. (2017). Saving water to save the environment: contrasting the effectiveness of environmental and monetary appeals in a residential water saving intervention. Social Influence, 12(2–3), 69–79.	11	1.8
Sadalla et al. [210]	2014	Sadalla, E., Berlin, A., Neel, R., & Ledlow, S. (2014). Priorities in Residential Water Use: A Trade-Off Analysis. Environment and Behavior, 46(3), 303–328.	11	1,2
Jorgensen et al. [120]	2015	Jorgensen, B. S., Martin, J. F., Pearce, M. W., & Willis, E. M. (2015). Aligning theory and measurement in behavioral models of water conservation. Water Policy, 17(4), 762–776.	10	1,3
Shahangian et al. [153]	2021	Shahangian, S. A., Tabesh, M., & Yazdanpanah, M. (2021b). Psychosocial determinants of household adoption of water-efficiency behaviors in Tehran capital, Iran: Application of the social cognitive theory. Urban Climate, 39.	9	4.5
Warner [106]	2021	Warner, L. A. (2021). Who conserves and who approves? Predicting water conservation intentions in urban landscapes with referent groups beyond the traditional 'important others.' Urban Forestry and Urban Greening, 60.	9	4.5

Table A6. *Cont.*

Author	Year	Contribution	Total Cites	Cites/Year
Díaz et al. [69]	2020	Díaz, J., Odera, E., & Warner, L. (2020). Delving deeper: Exploring the influence of psycho-social wellness on water conservation behavior. Journal of Environmental Management, 264.	9	3.0
Rondinel Oviedo & Sarmiento Pastor [121]	2020	Rondinel Oviedo, D. R., & Sarmiento Pastor, J. M. (2020). Water: consumption, usage patterns, and residential infrastructure. A comparative analysis of three regions in the Lima metropolitan area. Water International, 45(7–8), 824–846.	9	3.0
Wang et al. [211]	2019	Wang, Y. H., Chang, M. C., & Liou, J. R. (2019). Effects of water-saving education in Taiwan on public water knowledge, attitude, and behavior intention change. Water Policy, 21(5), 964–979.	9	2,3
Katz et al. [212]	2018	Katz, D., Kronrod, A., Grinstein, A., & Nisan, U. (2018). Still Waters Run Deep: Comparing Assertive and Suggestive Language in Water Conservation Campaigns. WATER, 10(3).	9	1.8
Walter et al. [154]	2017	Walter, N., Demetriades, S. Z., & Murphy, S. T. (2017). Involved, United, and Efficacious: Could Self-Affirmation Be the Solution to California's Drought? Health Communication, 32(9), 1161–1170.	9	1.5
Manríquez Betanzos et al. [116]	2016	Manríquez Betanzos, J. C., Corral Verdugo, V., Vanegas Rico, M. C., Fraijo Sing, B. S., & Tapia Fonllem, C. O. (2016). Positive (Gratitude, eudaimonia) and negative (scarcity, costs) determinants of water conservation behavior [Determinantes positivos (Gratitud, eudaimonia) y negativos (escasez, costos) del ahorro de agua]. Psyecology, 7(2), 178–200.	9	1.3
Rodríguez Sánchez et al. [135]	2020	Rodríguez Sánchez, C., & Sarabia Sanchez, F. J. (2020). Does Water Context Matter in Water Conservation Decision Behavior? Sustainability, 12(7).	8	2.7
Chaudhary et al. [213]	2019	Chaudhary, A. K., Warner, L. A., & Ali, A. D. (2019). Using perceived benefits to segment residential landscape irrigation users. Urban Forestry & Urban Greening, 38, 318–329.	8	2.0
Holland et al. [127]	2019	Holland, D., Janet, K., & Landrum, A. (2019). Experience is Key: Examining the Relative Importance of Factors Influencing Individuals' Water Conservation. Water, 11(9).	8	2.0
Demetriades & Walter [154]	2016	Demetriades, S. Z., & Walter, N. (2016). You Should Know Better: Can Self-Affirmation Facilitate Information-Seeking Behavior and Interpersonal Discussion? Journal of Health Communication, 21(11), 1131–1140.	8	1.1
Fielding et al. [67]	2010	Fielding, K. S., Thompson, A., Louis, W. R., & Warren, C. (2010). Environmental sustainability: Understanding the attitudes and behavior of Australian households. AHURI Final Report, 152, 1–132.	8	0,6
Miller & Buys [112]	2008	Miller, E., & Buys, L. (2008). The role of social capital in predicting and promoting 'feelings of responsibility' for local environmental issues in an Australian community. Australasian Journal of Environmental Management, 15(4), 231–240.	8	0.5
Hasan et al. [214]	2021	Hasan, H. H., Razali, S. F. M., & Razali, N. H. M. (2021). Does the household save water? Evidence from behavioral analysis. Sustainability (Switzerland), 13(2), 1–20.	7	3.5

Table A6. *Cont.*

Author	Year	Contribution	Total Cites	Cites/Year
Maduku [64]	2021	Maduku, D. K. (2021). Water conservation campaigns in an emerging economy: how effective are they? International Journal of Advertising, 40(3), 452–472.	7	3.5
Araya et al. [72]	2020	Araya, F., Osman, K., & Faust, K. M. (2020). Perceptions versus reality: Assessing residential water conservation efforts in the household. Resources, Conservation and Recycling, 162.	7	2.3
Timm & Deal [80]	2018	Timm, S. N., & Deal, B. M. (2018). Understanding the behavioral influences behind Singapore's water management strategies. Journal of Environmental Planning and Management, 61(10), 1654–1673.	7	1.4
Aisa & Larramona [215]	2012	Aisa, R., & Larramona, G. (2012). Household water saving: Evidence from Spain. Water Resources Research, 48(12).	7	0.6
Shahangian et al. [153]	2022	Shahangian, S. A., Tabesh, M., Yazdanpanah, M., Zobeidi, T., & Raoof, M. A. (2022). Promoting the adoption of residential water conservation behaviors as a preventive policy to sustainable urban water management. Journal of Environmental Management, 313.	6	6,0
Barnett et al. [53]	2020	Barnett, M. J., Jackson-Smith, D., Endter-Wada, J., & Haeffner, M. (2020). A multilevel analysis of the drivers of household water consumption in a semi-arid region. Science of the Total Environment, 712.	6	2.0
Lamm et al. [216]	2018	Lamm, A. J., Warner, L. A., Lundy, L. K., Bommidi, J. S., & Beattie, P. N. (2018). Informing water-saving communication in the United States using the situational theory of problem solving. Landscape and Urban Planning, 180, 217–222.	6	1.2
Untaru et al. [99]	2020	Untaru, E.-N., Ispas, A., & Han, H. (2020). Exploring the synergy between customer home-based and hotel-based water consumption and conservation behaviors: An empirical approach. Journal of Consumer Behavior, 19(6), 542–555.	5	1.7
Cahn et al. [217]	2020	Cahn, A., Katz, D., & Ghermandi, A. (2020). Analyzing Water Customer Preferences for Online Feedback Technologies in Israel: A Prototype Study. Journal of Water Resources Planning and Management, 146(4).	5	1.7
Ananga et al. [110]	2019	Ananga, E. O., Becerra, T. A., Peaden, C., & Pappas, C. (2019). Examining water conservation behaviors and attitudes: evidence from the city of Ada, Oklahoma, USA. Sustainable Water Resources Management, 5(4), 1651–1663.	5	1.3
Lavelle & Fahy [94]	2016	Lavelle, M. J., & Fahy, F. (2016). What's consuming Ireland? Exploring expressed attitudes and reported behaviors towards the environment and consumption across three case study locations on the island of Ireland. Irish Geography, 49(2), 29–54.	5	0.7
Balnave & Adeyeye [143]	2013	Balnave, J., & Adeyeye, K. (2013). A comparative study of attitudes and preferences for water efficiency in homes. Journal of Water Supply: Research and Technology—AQUA, 62(8), 515–524.	5	0.5
Daniel et al. [218]	2022	Daniel, D., Pande, S., & Rietveld, L. (2022). Endogeneity in water use behavior across case studies of household water treatment adoption in developing countries. World Development Perspectives, 25.	4	4,0

Table A6. *Cont.*

Author	Year	Contribution	Total Cites	Cites/Year
Alvarado Espejo et al. [52]	2021	Alvarado Espejo, J. M., Ontaneda, W. I. T., Padilla, N. I. A., Ochoa-Moreno, W. S., Alvarado Espejo, J. M., Torres Ontaneda, W. I., Aguirre Padilla, N. I., & Ochoa-Moreno, W. S. (2021). Water saving practices conditioned by socioeconomic factors: A case study of Ecuadorian households. Journal of Environmental Management, 293.	4	2,0
Koop et al. [12]	2021	Koop, S. H. A., Clevers, S. H. P., Blokker, E. J. M., & Brouwer, S. (2021). Public attitudes towards digital water meters for households. Sustainability (Switzerland), 13(11).	4	2,0
Wang & Chermak [139]	2021	Wang, J., & Chermak, J. M. (2021). Is less always more? Conservation, efficiency and water education programs. Ecological Economics, 184.	4	2.0
Warner et al. [219]	2021	Warner, L. A., Diaz, J. M., Díaz, J. M., & Diaz, J. M. (2021). Amplifying the Theory of Planned behavior with connectedness to water to inform impactful water conservation program planning and evaluation. Journal of Agricultural Education and Extension, 27(2), 229–253.	4	2.0
Sarabia Sánchez & Rodríguez Sánchez [51]	2013	Sarabia Sánchez, F. J., & Rodríguez Sánchez, C. (2013). Attitudes towards saving water, household structural characteristics and water consumption [Actitudes hacia el ahorro de agua, características estructurales del hogar y consumo de agua]. Psyecology, 4(2), 115–137.	4	0.4
Graymore et al. [220]	2010	Graymore, M. L. M., Wallis, A., & O'Toole, K. (2010). Understanding drivers and barriers: The key to water use behavior change. Water Science and Technology: Water Supply, 10(5), 679–688.	4	0.3
Ibáñez-Rueda et al. [221]	2022	Ibáñez-Rueda, N., Guardiola, J., & González-Gómez, F. (2022). The role of nature contact and connectedness to nature as determinants of household water use: A case study from Spain. Water and Environment Journal, 36(2), 282-291.	3	3.0
Martinez et al. [222]	2021	Martinez, D. M., Maia, A. G., Martínez, D. M., & Maia, A. G. (2021). The Effect of Social Behavior on Residential Water Consumption. Water (Switzerland), 13(9).	3	1.5
Hodges et al. [223]	2020	Hodges, H., Kuehl, C., Anderson, S. E., Ehret, P. J., & Brick, C. (2020). How Managers Can Reduce Household Water Use Through Communication: A Field Experiment. Journal of Policy Analysis and Management, 39(4), 1076–1099.	3	1.0
Caspers [75]	2020	Caspers, C. G. W. (2020). Role of Trust in Adopting Consumer Social Responsible Behavior in the Context of Water Use in Domestic Households. South East European Journal of Economics and Business, 15(1), 1–13.	3	1.0
Liu et al. [155]	2020	Liu, H., Zhao, Y., Li, H., Wang, L., & Wang, Q. (2020). Individual water-saving response based on complex adaptive system theory: Case study of Beijing City, China. Water (Switzerland), 12(5).	3	1.0
Barberán et al. [224]	2022	Barberán, R., López-Laborda, J., Rodrigo, F., Barberan, R., Lopez-Laborda, J., & Rodrigo, F. (2022). The Perception of Residential Water Tariff, Consumption, and Cost: Evidence of its Determinants Using Survey Data. Water Resources Management, 36(9), 2933–2952.	2	2.0

Table A6. *Cont.*

Author	Year	Contribution	Total Cites	Cites/Year
Jessoe et al. [225]	2021	Jessoe, K., Lade, G. E., Loge, F., & Spang, E. (2021). Residential water conservation during drought: Experimental evidence from three behavioral interventions. Journal of Environmental Economics and Management, 110.	2	1.0
Delistavrou [146]	2021	Delistavrou, A. (2021). Water and energy conservation in Greece: the impact of values and attitudes. International Journal of Sustainable Energy, 40(6), 602–615.	2	1.0
Akpinar et al. [88]	2018	Akpinar, M. G., Gul, M., Ceylan, R. F., & Gulcan, S. (2018). Evaluation of the factors affecting water-saving attitudes of urban life on the verge of the next century: a case study of the Mediterranean region of Turkey. Journal of Water Sanitation and Hygiene for Development, 8(2), 340–348.	2	0.4
Gázquez-Abad et al. [226]	2011	Gázquez-Abad, J. C., Mondéjar-Jiménez, J.-A., & Vargas-Vargas, M. (2011). Factors influencing water saving behavior for Spanish households. Environmental Engineering and Management Journal, 10(12), 1873–1881.	2	0.2
Haeffner et al. [73]	2023	Haeffner, M., Jackson-Smith, D., & Barnett, M. J. (2023). Categorizing relative water use perception bias using household surveys and monthly water bills. Journal of Environmental Management, 334.	1	1.0
Long et al. [128]	2022	Long, H., Shi, S., Tang, Z., & Zhang, S. (2022). Does living alone increase the consumption of social resources? Environmental Science and Pollution Research, 29(47), 71911–71922.	1	1.0
Li et al. [91]	2022	Li, Y., Wang, B., & Cui, M. (2022). Environmental Concern, Environmental Knowledge, and Residents' Water Conservation Behavior: Evidence from China. Water (Switzerland), 14(13).	1	1.0
Wahid et al. [113]	2022	Wahid, N. A., Fadzil, S. F. S., & Ariffin, S. K. (2022). Influences of Problem Awareness, Awareness of Consequences and Ascription of Responsibility on Consumer's Personal Norm to Prevent Water Wastage Behavior. Environment and Ecology Research, 10(2), 275–283.	1	1.0
Vivek et al. [227]	2021	Vivek, Malghan, D., & Mukherjee, K. (2021). Toward achieving persistent behavior change in household water conservation. Proceedings of the National Academy of Sciences of the United States of America, 118(24).	1	0,5
Andrade et al. [70]	2021	Andrade, E., Seoane, G., Vila-Tojo, S., Gómez-Román, C., & Sabucedo, J.-M. (2021). Psychological and situational variables associated with objective knowledge on water-related issues in a northern Spanish city. International Journal of Environmental Research and Public Health, 18(6), 1–16.	1	0.5
Bermejo-Martín et al. [228]	2021	Bermejo-Martín, G., Rodríguez-Monroy, C., & Núñez-Guerrero, Y. M. (2021). Water consumption range prediction in Huelva's households using classification and regression trees. Water (Switzerland), 13(4).	1	0.5
Kalifa et al. [100]	2021	Kalifa, A., Al-Maadid, A., Koutiva, I., & Makropoulos, C. (2021). Individual water consumption behavior in relation to urban residential dynamics: The Case of Qatar. Urban Water Journal, 18(10), 806–816.	1	0.5

Table A6. *Cont.*

Author	Year	Contribution	Total Cites	Cites/Year
Warner et al. [229]	2020	Warner, L. A., Turner, S., & Lundy, L. (2020). Comparing Linkages Between Descriptive Norms and Current and Intended Outdoor Water Conservation. Journal of Extension, 58(6), 1–9.	1	0.3
Lyach & Remr [230]	2023	Lyach, R., & Remr, J. (2023). Motivations of Households towards Conserving Water and Using Purified Water in Czechia. Sustainability (Switzerland), 15(3).	0	0.0
Thakur et al. [231]	2022	Thakur, R., Onwubu, S. C., Harris, G., & Thakur, S. (2022). Examining the factors influencing water conservation intentions amongst peri urban communities of Ethekwini Municipality, South Africa. Water Conservation and Management, 6(2), 81–88.	0	0.0
Reddy et al. [98]	2023	Reddy, R. A., Sengupta, R., Jackson, B. M., & Lewis, C. (2023). Development of a new measure to check attitude towards water conservation☆. MethodsX, 10.	0	0.0
Grespan et al. [131]	2022	Grespan, A., Garcia, J., Brikalski, M. P., Henning, E., & Kalbusch, A. (2022). Assessment of water consumption in households using statistical analysis and regression trees. Sustainable Cities and Society, 87.	0	0.0
Madias et al. [33]	2022	Madias, K., Borusiak, B., & Szymkowiak, A. (2022). The role of knowledge about water consumption in the context of intentions to use IoT water metrics. Frontiers in Environmental Science, 10.	0	0.0
Sarpong & Amankwaa [82]	2022	Sarpong, K. A., & Amankwaa, G. (2022). Household behavioral intention, environmental habit and attitude related to efficient water management: an empirical analysis on pro-environmental behavior among urban residents. H2Open Journal, 5(3), 438–455.	0	0.0
Otaki & Maeda [86]	2022	Otaki, Y., & Maeda, A. (2022). Water-Saving Tips With a Visualized Indicator Related to the Environment. Frontiers in Water, 4.	0	0.0
Khodadad et al. [124]	2022	Khodadad, M., Sanei, M., Narvaez-Montoya, C., & Aguilar-Barajas, I. (2022). Climatic Hazards and the Associated Impacts on Households' Willingness to Adopt Water-Saving Measures: Evidence from Mexico. Sustainability (Switzerland), 14(10).	0	0.0
Oğur Aydın & Doğan [232]	2022	Oğur Aydın, D., & Doğan, Ç. (2022). Exploring water-consuming personal care and hygiene practices in the bathroom environment and user intentions for improving effective water consumption. Design Journal, 25(5), 828–848.	0	0.0
Al-Maadid et al. [107]	2022	Al-Maadid, A., Akesson, J., Bernstein, D. H., Chakravarti, J., & Khalifa, A. (2022). Understanding Water Consumption in Qatar: Evidence From a Nationally Representative Survey. Urban Water Journal.	0	0.0
Njoku et al. [125]	2022	Njoku, P. O., Durowoju, O. S., Uhunamure, S. E., & Makungo, R. (2022). Investigating the Attitude of Domestic Water Use in Urban and Rural Households in South Africa. Water (Switzerland), 14(2).	0	0.0

Table A6. *Cont.*

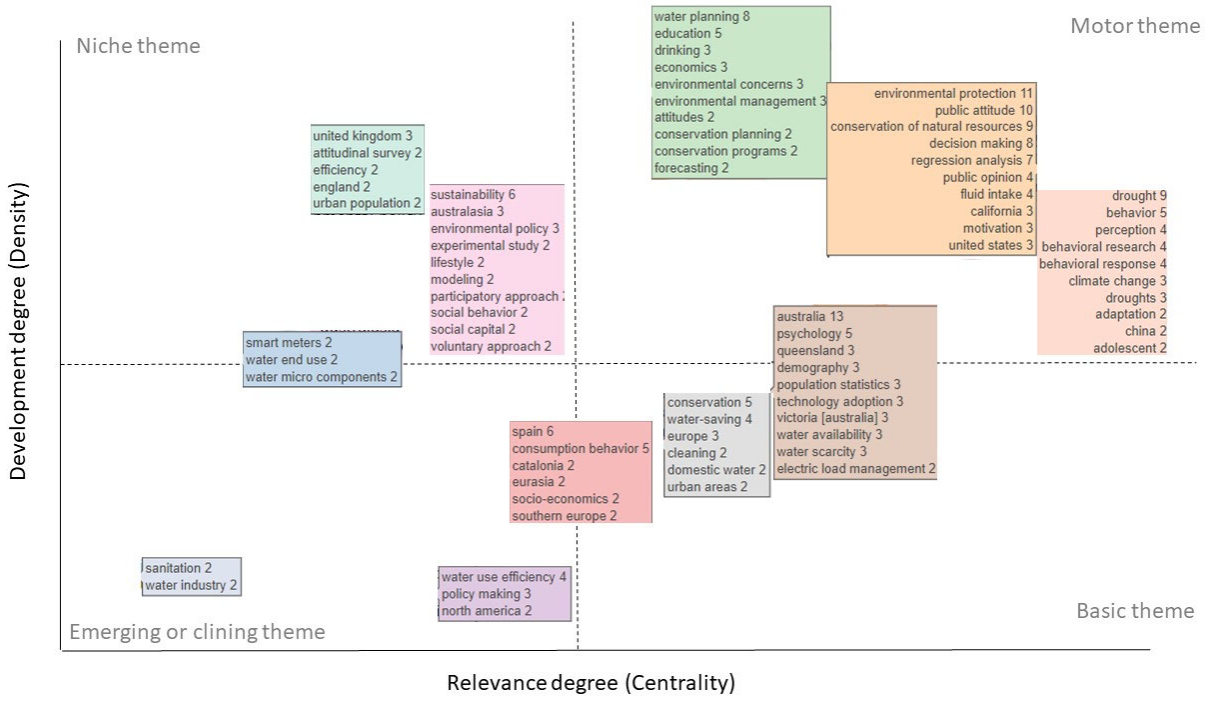
Author	Year	Contribution	Total Cites	Cites/Year
Lameck et al. [233]	2021	Lameck, E., Sesabo, J., & Mkuna, E. (2021). Household behavior towards water conservation activities in Mvomero District in Tanzania: a convergent parallel mixed approach. Sustainable Water Resources Management, 7(3).	0	0.0
Buday et al. [71]	2021	Buday, A., Zollinger, B., Hammersmith, A., & Heine, K. (2021). Thirsting for sustainability: Water conservation in a great plains city. Great Plains Research, 31(1), 1–16.	0	0.0
Sengupta [234]	2020	Sengupta, J. (2020). The Effect of Non-pecuniary-based Incentive Mechanisms to Reduce Water Usage at the Household Level and to Achieve Positive Environmental Outcomes. Global Business Review, 21(5), 1232–1248.	0	0.0

Note: Source: Own elaboration.

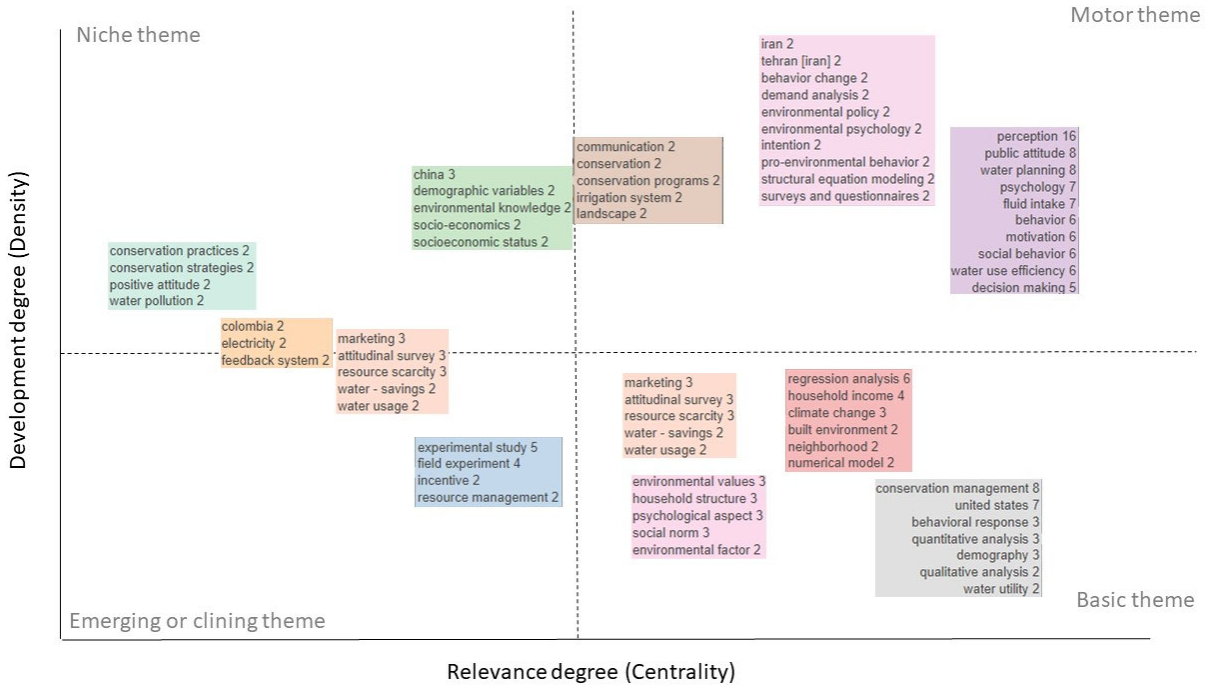
Table A7. International collaboration between countries.

Country 1	Country 2	Frequency
USA	Australia	2
USA	Bulgaria	1
USA	Chile	2
USA	China	1
USA	India	1
USA	Israel	1
USA	Italy	1
USA	Mexico	2
USA	Netherlands	2
USA	Qatar	1
USA	UK	2
Australia	c	1
Australia	Saudi Arabia	1
Australia	Spain	1
Australia	UK	3
Spain	Canada	1
Spain	France	2
Spain	UK	1
Netherlands	Belgium	1
Netherlands	Indonesia	1
Netherlands	Israel	1
UK	Netherlands	1
UK	Qatar	1
UK	Switzerland	1
China	Germany	1
China	Hong Kong	1
China	Netherlands	1
France	Canada	1
Greece	Qatar	1
Iran	Canada	1
Chile	Sweden	1
Mexico	Chile	1
South Korea	Romania	1

Note: Source: Own elaboration.



(**a**)



(**b**)

Figure A1. Thematic maps: temporal comparisons 1982–2017 and 2018–2023. (**a**) Thematic map based on authors' keywords: 1982–2017. (**b**) Thematic map based on authors' keywords: 2018–2023. Source: Result from Biblioshiny.

Table A8. Main theories and theoretical frameworks.

Theories and/or Theoretical Frameworks	**Frequency**	**%**
Studies that applied a single theory or model		
Theory of Planned Behavior (TPB)	16	10%
New Environmental Paradigm (NEP)	4	3%
Standards Activation Method (NAM)	4	3%
Behavior Change Wheel (BCW) Model	3	2%
Social Influence Approach	2	1%
Theory of Reasoning Action (TRA)	2	1%
Values–Attitudes–Behavior	2	1%
Value-Belief Norms (VBN)	2	1%
Consumer Behavior Model	1	1%
Behavioral Economics	1	1%
Theory of Commitment	1	1%
Theory of Complex Adaptive Systems	1	1%
Construal Level Theory (CLT)	1	1%
Demarketing	1	1%
Ecological Economics	1	1%
Grounded Theory	1	1%
Theory of Habits	1	1%
Health Belief Model (HBM)	1	1%
Information Motivation Behavior Model (IMB)	1	1%
Knowledge Deficit Model	1	1%
Situational Problem-Solving Theory (STOPS)	1	1%
Randomized Controlled Trials (RCTs)	1	1%
Self-affirmation Theory	1	1%
Trade-off Paradigm	1	1%
Socio-ecological Framework	1	1%
Social Identity Framework	1	1%
Social Impact Theory	1	1%
Theory of Social Norms	1	1%
Theory of Social Practice	1	1%
Theory of the Tragedy of the Commons	1	1%
Theory of Ecological Attitude	1	1%
Studies that combined theories and/or models		
Level of Interpretation Theory (CLT) + Theory of Planned Behavior (TPB)	1	1%
Self-Affirmation Theory + Planned Behavior Theory (BPT)	1	1%
Propagation Theory (Spillover theory) + Self-affirmation theory	1	1%
The Campbell Paradigm + The Goal Framework Theory	1	1%
Social Norms Theory + Social Comparison Theory	1	1%
Theory of Normative Conduct	1	1%
Theory of Planned Behavior (TPB) + Connection with Nature (CTN)	1	1%
Theory of Planned Behavior (TPB) + Extended TPB	1	1%

Table A8. *Cont.*

Theories and/or Theoretical Frameworks	Frequency	%
Theory of Planned Behavior (TPB) + Social Marketing	1	1%
Theory of Planned Behavior (TPB) + Utilitarian Belief of Water	1	1%
Theory of Reasoned Action (ART) + Elaboration Probability Model (ELM) + Habits	1	1%
Reasoned Action Theory (ART) + New Environmental Paradigm (NEP)	1	1%
Prospect Theory + Communication Frameworks + Political Ideology	1	1%
Values + Intention Model + Social Cognitive Theory	1	1%
Does not explicitly present a theory or framework	83	54%
TOTAL	155	100%

Note: Source: Own elaboration.

Table A9. Dependent variables used in the contributions.

Dependent Variable	Frequency	%
Water Conservation	40	26%
Water Consumption	30	19%
Water Use	19	12%
Water Saving	16	10%
Behavioral Intention	11	7%
Water Conservation Intention	8	5%
Water Consumption (Water meter)	5	3%
Water Saving Attitude	4	3%
Current Water Consumption	3	2%
Showering Behavior	2	1%
Current Water Conservation	2	1%
Actual Behavior	2	1%
Spillover Effect	2	1%
Pro-environmental Behavior	2	1%
Water Objective Knowledge	1	1%
Subjective Well-being	1	1%
Personal Norms	1	1%
Past Water Conservation	1	1%
Intention to Adopt a Smart Water Meter	1	1%
Household Responses	1	1%
Engagement in Sustainability Actions	1	1%
Communicative Action	1	1%
Difficult Behavior	1	1%
Total	155	100%

Note: Source: Own elaboration.

Table A10. Internal factors to the individual related to water-conservation behavior and/or consumption.

PERSONAL-SPHERE VARIABLES		
Variable/Factor	**Specific Example**	**Contributions**
1.1. Habits related to water user	Habit. Past water consumption/saving behavior.	Aisa and Larramona (2012) [215]; García et al. (2013) [195]; Gregory and Di Leo (2003) [81]; Jorgensen et al. (2013) [76]; Jorgensen et al. (2015) [120]; Maduku (2021) [64]; Lauren et al. (2016) [119]; Martínez Espiñeira and García Valiñas (2013) [192]; Pérez Uridales and García Valiñas (2016) [145]; Russell and Knoeri (2020) [56]; Sarabia Sánchez et al. (2014) [149]; Sarpong and Amankwaa (2022) [82]; Straus et al. (2016) [118].
1.2. Familiarity with the behavior	Familiarity with water-related behavior	Shahangian et al. (2021) [153].
1.3. Perception regarding water consumption/saving.	Perception regarding water consumption/saving.	Al-Maadid et al. (2022) [107]; Andrade et al. (2021) [70]; Araya et al. (2020) [72]; Attari (2014) [179]; Deng et al. (2017) [61]; Domene and Sauri (2006) [132]; Hasan et al. (2021) [214].
1.4. Commitment to water conservation	Commitment to water conservation	Jorgensen et al. (2014) [76].
1.5. Antisocial behavior	Antisocial behavior linked to water	Corral Verdugo and Frias Armenta (2006) [123].
1.6. Information on water consumption	Information on water consumption. Councils. Feedback (smart meter data).	Addo et al. (2019) [84]; Al-Maadid et al. (2022) [107]; Bhanot (2017) [200]; Cahn et al. (2020) [217]; Céspedes Restrepo and Morales Pinzon (2020) [85]; Dascher et al. (2014) [150]; Dolnicar et al. (2012) [97]; Goette et al. (2019) [203]; Gu et al. (2020) [199]; Hodges et al. (2020) [223]; Holland et al. (2019) [127]; Jaeger and Schultz (2017) [148]; Katz et al. (2018) [212]; Kurz et al. (2005) [180]; Lede et al. (2019) [108]; Liu et al. (2020) [155]; Otaki and Maeda (2022) [55]; Otaki et al. (2017) [86]; Ramli (2021) [104]; Schultz et al. (2016) [39]; Schultz et al. (2019) [201]; Tijs et al. (2017) [209]; Tom et al. (2011) [206]; Torres and Carlsson (2018) [189].
1.7. Participation in water-related practices/behaviors	Participation in water-related practices/behaviors	Chaudhary et al. (2019) [213].
1.8. Descriptive and injunctive norms	Social norms. Subjective norms. Injunctive norms. Precautionary and descriptive rules. Social comparison, relating to water.	Barnett et al. (2020) [53]; Bhanot (2021) [197]; Cahn et al. (2020) [217]; Daniel et al. (2018) [220]; Dean et al. (2021) [105]; Fielding et al. (2012) [40]; Fielding et al. (2010) [67]; Harlan et al. (2009) [178]; Kantola et al. (1982) [183]. Goette et al. (2019) [203]; Gómez Llanos et al. (2020) [54]; Haeffner et al. (2023) [73]; Hodges et al. (2020) [223]; Jaeger and Schultz (2017) [148]; Jorgensen et al. (2014) [76]; Kang et al. (2017) [92]. Landon et al. (2016) [79]; Lavelle and Fahy (2016) [94]; Lede et al. (2019) [108]; Lowe et al. (2015) [102]; Maduku (2021) [64]; Martínez and Maia (2021) [222]; Ramli (2021) [104]; Ramsey et al. (2017) [90]; Russell and Knoeri (2020) [56]; Sengupta (2020) [234]; Seyranian et al. (2015) [57]; Schultz et al. (2019) [201]; Schultz et al. (2016) [39]; Thakur et al. (2022) [231]; Timm and Deal (2017) [80]; Torres and Carlsson (2018) [189]; Wahid et al. (2022) [113]; Warner et al. (2020) [229]; Warner (2021) [106]; Warner and Diaz (2021) [219].
1.9. Perception of the behavior of other people	Perception of other people's water consumption behavior	Shahangian et al. (2021) [63].
1.10. Social awareness	Social awareness. Awareness of consequences/actions. Environmental knowledge. Understanding of the actions, regarding water.	Addo et al. (2018) [84]; Akpinar et al. (2018) [88]; Al-Maadid et al. (2022) [107]; Alvarado Espejo et al. (2021) [52]; Andrade et al. (2021) [70]; Aprile and Fiorillo (2017) [182]; Bronfman et al. (2015) [111]; Dean et al. (2021) [105]; Gazquez-Abad et al. (2011) [226]; Gregory and Di Leo (2003) [81]; Hasan et al. (2021) [214]; Hodges et al. (2020) [223]; Landon et al. (2017) [79]; Li et al. (2022) [91]; Madias et al. (2022) [33]; Matikinca et al. (2020) [202]; Moore et al. (1994) [188]; Ramsey et al. (2017) [90]; Rajapaksa et al. (2019) [191]; Sarpong and Amankwaa (2022) [82]; Segev (2015) [193]; Suarez Varela et al. (2016) [185]; Wang and Chermak (2021) [139]; Wahid et al. (2022) [113]; Wang et al. (2019) [211]; Willis et al. (2011) [38].
1.11. Identity	Environmental identity. Social identity. Personal identity.	Dean et al. (2021) [105]; Seyranian et al. (2015) [57].
1.12. Community attachment	Community attachment.	Landon et al. (2017) [79]; Miller and Buys (2008) [112].
1.13. Collectivism	Collectivism	Segev (2015) [193].

Table A10. *Cont.*

PERSONAL-SPHERE VARIABLES		
Variable/Factor	**Specific Example**	**Contributions**
1.14. Political ideology. Political affiliation.	Political ideology. Political affiliation.	Andrade et al. (2021) [70]; Buday et al. (2021) [71]; Holland et al. (2019) [127]; Wolters (2014) [62].
1.15. Support for the policy	Policy support	Walter et al. (2017) [154].
1.16. Moral norms	Moral obligation. Moral norm concerning water. Personal norm.	Addo et al. (2018) [84]; Bronfman et al. (2015) [111]; Dolnicar et al. (2012) [97]; Kang et al. (2017) [92]; Landon et al. (2017) [79]; Lowe et al. (2015) [102]; Madias et al. (2022) [33]; Rajapaksa et al. (2019) [191]; Reddy et al. (2023) [98]; Shahangian et al. (2021) [153]; Torres and Carlsson (2018) [189]; Untaru et al. (2020) [99].
1.17. Emotions	Emotions (guilt, shame) related to saving water.	Andrade et al. (2021) [70]; Chenoweth et al. (2016) [95]; Martínez Betanzos et al. (2016) [116]; Walter et al. (2017) [154].
1.18. Perceived risk	Perception of risk of water scarcity.	Daniel et al. (2022) [218]; Rodríguez Sánchez and Sarabia Sánchez (2017) [135]; Shahangian et al. (2021) [153]; Walter et al. (2017) [154].
1.19. Impact of individual actions	Perceived importance of actions	Buday et al. (2021) [71]; Matikinca et al. (2020) [202]; Sarabia Sánchez et al. (2014) [149].
1.20. Attitude	Attitude towards saving water. Attitude towards water consumption. Attitude towards the price of water. Attitude towards efficient water devices. Attitude towards routine behaviors (curtailment). Attitude towards water restrictions.	Addo et al. (2018) [84]; Al-Maadid et al. (2022) [117]; Ananga et al. (2019) [110]; Andrade et al. (2021) [70]; Barnett et al. (2020) [53]; Bermejo et al. (2021) [228]; Casper (2020) [75]; Chenoweth et al. (2016) [95]; Daniel et al. (2022) [218]; Fielding et al. (2010) [67]; Fielding et al. (2012) [40]; Gazquez Abad et al. (2011) [226]; Gilbertson et al. (2011) [181]; Gregory and Di Leo (2003) [81]; Haeffner et al. (2023) [73]; Harlan et al. (2009) [178]; Hasan et al. (2021) [214]; Jorgensen et al. (2014) [76]; Kalifa et al. (2021) [100]; Kantola et al. (1982) [183]; Kang et al. (2017) [92]; Kurz et al. (2005) [180]; Landon et al. (2016) [79]; Lowe et al. (2015) [102]; Moore et al. (1994) [188]; Reddy et al. (2023) [98]; Russell and Knoeri (2020) [56]; Sarpong and Amankwaa (2022) [82]; Shahangian et al. (2021) [153]; Syme et al. (2004) [134]; Timm and Deal (2017) [80]; Untaru et al. (2020) [99]; Wang et al. (2019) [211]; Wang and Dong (2017) [207]; Warner et al. (2020) [229]; Warner (2021) [106]; Warner and Diaz (2021) [219]; Willis et al. (2011) [38]; Zhuang et al. (2018) [140].
1.21. Control	Perceived control of water-related behavior.	Addo et al. (2018) [84]; Fielding et al. (2012) [40]; Jorgensen et al. (2013) [73]; Kang et al. (2017) [92]; Landon et al. (2016) [79]; Lowe et al. (2015) [102]; Russell and Knoeri (2020) [56]; Shahangian et al. (2021) [153]; Timm and Deal (2017) [80]; Warner (2021) [106]; Warner and Diaz (2021) [221]. Warner et al. (2020) [230].
1.22. Perceived effectiveness	Perceived self-efficacy and perceived collective efficacy. Effectiveness of results related to water.	Dascher et al. (2014) [150]; Fielding et al. (2010) [67]; Lauren et al. (2016) [119]; Ramsey et al. (2017) [90]; Sarabia Sánchez et al. (2014) [149]; Segev (2015) [193]; Shahangian et al. (2022) [68]; Shahangian et al. (2021) [63]; Walter et al. (2017) [154].
1.23. Impact of individual actions	Importance of saving water. Perceived importance of actions	Buday et al. (2021) [71]; Matikinca et al. (2020) [202]; Sarabia Sánchez et al. (2014) [149].
1.24. Responsibility	Environmental responsibility. Assignment of liability.	Alvarado Espejo et al. (2021) [52]; Ananga et al. (2019) [110]; Bronfman et al.](2015) [111]; Madias et al. (2022) [33]; Wahid et al. (2022) [113].
1.25. Beliefs	Beliefs. Personal normative beliefs. Belief in utilitarian water and ecological water.	Bermejo et al. (2021) [228]; Corral Verdugo and Frias (2006) [123]; Kalifa et al. (2021) [10]; Kang et al. (2017) [92]; Russell and Knoeri (2020) [56].
1.26. Motivation	Motivation to save water. Motivation to reduce water according to different climatic contexts. Motivation to use devices to save water. Motivation to adopt sustainable behaviors.	Ananga et al. (2019) [110]; Fan et al. (2013 [133]); Hodges et al. (2020) [223]; Lamm et al. (2016) [218]; Lyach and Remr (2023) [230]; Maas et al. (2017) [130].
1.27. Psychological distance	Psychological distance from the consequences of water use, psychological distance from the effects of climate change. Psychological distance with future water scarcity.	Gu et al. (2020) [199]; Zhuang et al. (2018) [140].
1.28. Environmental awareness	Environmental awareness	Akpinar et al. (2018) [88]; Kalifa et al. (2021) [100]; Lindsay and Supski (2017) [204]; Sadalla et al. (2014) [211].

Table A10. *Cont.*

PERSONAL-SPHERE VARIABLES		
Variable/Factor	**Specific Example**	**Contributions**
1.29. Environmental concern	Selfish/altruistic/biospheric environmental concern.	Addo et al. (2018) [84]; Akpinar et al. (2018) [88]; Alvarado Espejo et al. (2021) [52]; Aprile and Fiorillo (2017) [182]; Barnett et al. (2020) [53]; Bronfman et al. (2015) [111]; Chenoweth et al. (2016) [95]; Dascher et al. (2014) [150]; Delistavrou (2021) [146]; Gilbertson et al. (2011) [181]; Kang et al. (2017) [92]; Lavelle and Fahy (2016) [94]; Li et al. (2022) [91]; Segev (2015) [193]; Suarez Varela et al. (2016) [185]; Untaru et al. (2020) [99]; Wang et al. (2019) [211]; Willis et al. (2011) [38]; Wolters (2014) [62]; Zhuang et al. (2018) [140].
1.30. Perception regarding climate change	Perception of climate change	Deng et al. (2017) [61].
1.31. Perception regarding the right to water	Perception regarding the right to water	Lowe et al. (2015) [102].
1.32. Environmental values	Environmental values.	Bermejo et al. (2021) [228]; Bronfman et al. (2015) [111]; Sarpong and Amankwaa (2022) [82]; Sengupta (2020) [234]; Segev (2015) [193]; Wang et al. (2019) [211].
1.33. Trust and credibility	Confidence. Credibility (source of information, government). Credibility in the face of scarcity/problem	Addo et al. (2018) [84]; Caspers (2020) [75]; Maduku (2021) [64]; Miller and Buys (2008) [112]; Rodríguez Sánchez and Sarabia Sánchez (2020) [135]. Sarabia Sánchez et al. (2014) [149].
1.34. Personal involvement	Personal involvement	Gazquez Abad et al. (2011) [226]; Gregory and Di Leo (2003) [81]; Rodríguez Sánchez and Sarabia Sánchez (2020) [135]; Sarabia Sánchez et al. (2014) [149].
1.35. Connection and contact with nature.	Connection and contact with nature.	Ibañez Rueda et al. (2022) [221]; Warner and Diaz (2021) [219].
1.36. Life satisfaction	Life satisfaction	Dean et al. (2021) [105]; Syme et al. (2004) [134].
1.37. Self-transcendence	Self-transcendence (universalism vs. benevolence)	Delistavrou (2021) [146].

Note: Source: Own elaboration.

Table A11. External factors to the individual related to water-conservation behavior and/or consumption].

Variable/Factor	**Specific Example**	**Contributions**
2.1. Climatic/seasonal.	Drought, water stress (experience of drought), water scarcity, rainfall. Temperature.	Addo at al. (2019) [84]; Akpinar et al. (2018) [88]; Ananga et al. (2019) [110]; Araya et al. (2020) [72]; Arbues et al. (2016) [78]; Bermejo et al. (2021) [228]; Dascher et al. (2014) [150]; Dean et al. (2021) [105]; Deng et al. (2017) [62]; Dolnicar et al. (2012) [97]; Gilbertson et al. (2011) [181]; Gu et al. (2020) [199]; Holland et al. (2019) [127]; Kang et al. (2017) [92]; Khodadad et al. (2022) [124]; Martinez and Maia (2022) [224]; Njoku et al. (2022) [125]; Reddy et al. (2023) [98]; Shahangian et al. (2022) [68]; Wang and Chermak (2021) [139].
2.2. Household composition	Members, age of members, income, religion, culture, education, water-saving devices, smart meters	Addo et al. (2018) [84]; Aisa and Larramona (2012) [215]; Al-Maadid et al. (2022) [107]; Alvarado Espejo et al. (2021) [52]; Andrade et al. (2021) [70]; Aprile and Fiorillo (2017) [182]; Araya et al. (2020) [72]; Arbues et al. (2016) [78]; Barnett et al. (2020) [53]; Bermejo et al. (2021) [228]; Bhanot (2021) [197]; Buday et al. (2021) [71]; Chaudhary et al. (2019) [213]; Daniel et al. (2022) [218]; Fielding et al. (2010) [67]; Fielding et al. (2012) [40]; Gazquez Abad et al. (2011) [226]; Gomez Llanos et al. (2020) [54]; Grespan et al. (2022) [131]; Haeffner et al. (2023) [73]; Harlan et al. (2009) [178]; Hasan et al. (2021) [214]; Jorgensen et al. (2014) [76]; Kalifa et al. (2021) [100]; Kantola et al. (1982) [183]; Khodadad et al. (2022) [124]; Landon et al. (2017) [79]; Landon et al. (2016) [79]; Lavelle and Fahy (2016) [94]; Liu et al. (2020) [155]; Li et al. (2022) [91]; Long et al. (2022) [128]; Martinez Espiñeira and Garcia Valiñas (2013) [192]; Martinez and Maia (2021) [222]; Mass et al. (2017) [130]; Miller and Buys (2008) [112]; Njoku et al. (2022) [125]; Ramsey et al. (2017) [90]; Russell & Knoeri (2020) [56]; Sadalla et al. (2014) [210]; Sarpong and Amankwaa (2022) [82]; Schultz et al. (2019) [39]; Otaki and Maeda (2021) [55]; Pérez Uridales and Garcia Valiñas (2016) [145]; Untaru et al. (2020) [99]; Wang and Dong (2017) [207]; Wolters (2014) [62].

Table A11. *Cont.*

Variable/Factor	Specific Example	Contributions
2.3. Characteristics of the property	Age of the house, size, type of housing, garden, pool, owner/tenant.	Grespan et al. (2022) [131]. Wang and Chermak (2021) [139]. Dean et al. (2021) [105]. Martínez and Maia (2021) [222]. Buday et al. (2021) [71]. Bermejo et al. (2021) [228]. Russell & Knoeri (2020) [56]. Sengupta (2020) [234]. Barnett et al. (2020) [53]. Wang et al. (2019) [211]. Chaudhary et al. (2019) [213]. Landon et al. (2017) [79]. Aprile and Fiorillo (2017) [182]. Mass et al. (2017) [130]. Wang and Dong (2017) [207]. Arbues et al. (2016) [78]. Lavelle and Fahy (2016) [94]. Landon et al. (2016) [79]. Sadalla et al. (2014) [210]. Xavier Garcia et al. (2013) [195]. Fan et al. (2013) [133]. Fielding et al. (2010) [67]. Harlan et al. (2009) [178]. Domene and Sauri (2006) [132]. Syme et al. (2004) [134].
2.4. Incentives/policies to discourage consumption.	Economic incentives. Water tariff. Economic measures. Water consumption/cost information. Water restrictions.	Addo et al. (2018) [84]; Akpinar et al. (2018) [88]; Alvarado Espejo et al. (2021) [52]; Barnett et al. (2020) [53]; Cahn et al. (2020) [217]; Corral Verdugo and Frias Armenta (2006) [123]; Dascher et al. (2014) [150], Dean et al. (2021) [105]; Goette et al. (2019) [203]; Hasan et al. (2021) [214]; Lindsay and Supski (2017) [204]; Liu et al. (2020) [155]; Martinez and Maia (2021) [222]; Mass et al. (2017) [130]; Matikinca et al. (2020) [202]; Rajapaksa et al. (2019) [191]; Tijs et al. (2017) [209]; Wang et al. (2019) [211]; Wang and Chermak (2021) [139].
2.5. Social behavior of the home	Membership in social organizations and/or social activities. Share capital.	Aprile and Fiorillo (2017) [182]; Bermejo et al. (2021) [228]; Syme et al. (2004) [134].
2.6. Contextual factors	Water pollution.	Alvarado Espejo et al. (2021) [52]

Note: Source: Own elaborations.

References

1. United Nations (Ed.) *Water and Climate Change*; United Nations: New York, NY, USA, 2023. Available online: https://www.unwater.org/water-facts/water-and-climate-change (accessed on 11 August 2023).
2. IPCC Water. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate. In *Climate Change 2022: Impacts, Adaptation and Vulnerability*; Cambridge University Press: Cambridge, UK; New York, NY, USA, 2022; pp. 551–712. Available online: https://www.ipcc.ch/report/ar6/wg2/ (accessed on 10 July 2023).
3. Mckenzie-Mohr, D. New ways to promote proenvironmental behavior: Promoting sustainable behavior: An introduction to community-based social marketing. *J. Soc. Issues* **2000**, *56*, 543–554. [CrossRef]
4. Rodriguez-Sanchez, C.; Sancho Esper, F.M.; Campayo-Sánchez, F. A Systematic Review of Social Marketing Interventions to Promote Pro-Environmental Behavior Using CBSM Benchmark Criteria. *Res. Innov. Sustain. Mark.* **2023**, *1*, 32–34. [CrossRef]
5. Buyucek, N.; Kubacki, K.; Rundle-Thiele, S.; Pang, B. A systematic review of stakeholder involvement in social marketing interventions. *Australas. Mark. J.* **2016**, *24*, 8–19. [CrossRef]
6. Pang, B.; Kubacki, K.; Rundle-Thiele, S. Promoting active travel to school: A systematic review (2010–2016). *BMC Public Health* **2017**, *17*, 1–15. [CrossRef]
7. Rundle-Thiele, S.; David, P.; Willmott, T.; Pang, B.; Eagle, L.; Hay, R. Social marketing theory development goals: An agenda to drive change. *J. Mark. Manag.* **2019**, *35*, 160–181. [CrossRef]
8. Carins, J.E.; Rundle-Thiele, S.R.; Fidock, J.J. Seeing through a glass onion: Broadening and deepening formative research in social marketing through a mixed methods approach. *J. Mark. Manag.* **2016**, *32*, 1083–1102. [CrossRef]
9. Rundle-Thiele, S.; Pang, B.; Knox, K.; David, P.; Parkinson, J.; Hussenoeder, F. Generating new directions for reducing dog and koala interactions: A social marketing formative research study. *Australas. J. Environ. Manag.* **2019**, *26*, 173–187. [CrossRef]
10. Spotswood, F.; French, J.; Tapp, A.; Stead, M. Some reasonable but uncomfortable questions about social marketing. *J. Soc. Mark.* **2012**, *2*, 163–175. [CrossRef]
11. 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]
12. Koop, S.H.A.; Clevers, S.H.P.; Blokker, E.J.M.; Brouwer, S. Public attitudes towards digital water meters for households. *Sustainability* **2021**, *13*, 6440. [CrossRef]
13. Moglia, M.; Cook, S.; Tapsuwan, S. Promoting water conservation: Where to from here? *Water* **2018**, *10*, 1510. [CrossRef]
14. Zhang, L.; Wang, M.H.; Hu, J.; Ho, Y.S. A review of published wetland research, 1991–2008: Ecological engineering and ecosystem restoration. *Ecol. Eng.* **2010**, *36*, 973–980. [CrossRef]
15. Phulwani, P.R.; Kumar, D.; Goyal, P. A Systematic Literature Review and Bibliometric Analysis of Recycling Behavior. *J. Glob. Mark.* **2020**, *33*, 354–376. [CrossRef]
16. Si, H.; Shi, J.G.; Tang, D.; Wen, S.; Miao, W.; Duan, K. Application of the theory of planned behavior in environmental science: A comprehensive bibliometric analysis. *Int. J. Environ. Res. Public Health* **2019**, *16*, 2788. [CrossRef]
17. Fleith de Medeiros, J.; Bisognin Garlet, T.; Duarte Ribeiro, J.L.; Nogueira Cortimiglia, M. Success factors for environmentally sustainable product innovation: An updated review. *J. Clean. Prod.* **2022**, *345*, 131039. [CrossRef]

18. Esfandiar, K.; Pearce, J.; Dowling, R.; Goh, E. Pro-environmental behaviors in protected areas: A systematic literature review and future research directions. *Tour. Manag. Perspect.* **2022**, *41*, 100943. [CrossRef]
19. Page, M.J.; McKenzie, J.E.; Bossuyt, P.M.; Boutron, I.; Hoffmann, T.C.; Mulrow, C.D.; Moher, D. The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *Int. J. Surg.* **2021**, *88*, 105906. [CrossRef]
20. Vieira, L.C.; Amaral, F.G. Barriers and strategies applying Cleaner Production: A systematic review. *J. Clean. Prod.* **2016**, *113*, 5–16. [CrossRef]
21. Butler, G.; Ross, K.; Beaman, J.; Hoepner, C.; Baring, R.; Burke da Silva, K. Utilising tourist-generated citizen science data in response to environmental challenges: A systematic literature review. *J. Environ. Manag.* **2023**, *339*, 117889. [CrossRef]
22. Mishra, A.N.; Raj, A.; Pani, A.K. Construal Level Research in Decision Making: Analysis and Pushing Forward the Debate Using Bibliometric Review and Thematic Analysis. *Am. Bus. Rev.* **2020**, *23*, 106–135. [CrossRef]
23. Ricart, S.; Villar-Navascués, R.; Reyes, M.; Rico-Amorós, A.M.; Hernández-Hernández, M.; Toth, E.; Bragalli, C.; Neri, M.; Amelung, B. Water–tourism nexus research in the Mediterranean in the past two decades: A systematic literature review. *Int. J. Water Resour. Dev.* **2023**. *In press*. [CrossRef]
24. Andor, M.A.; Fels, K.M. Behavioral Economics and Energy Conservation—A Systematic Review of Non-price Interventions and Their Causal Effects. *Ecol. Econ.* **2018**, *148*, 178–210. [CrossRef]
25. Souza-Neto, V.; Marques, O.; Mayer, V.F.; Lohmann, G. Lowering the harm of tourist activities: A systematic literature review on nudges. *J. Sustain. Tour.* **2022**, *31*, 2173–2194. [CrossRef]
26. Díaz Tautiva, J.A.; Huaman, J.; Ponce Oliva, R.D. Trends in research on climate change and organizations: A bibliometric analysis (1999–2021). *Manag. Rev. Q.* **2022**. [CrossRef]
27. Wu, M.; Long, R.; Bai, Y.; Chen, H. Knowledge mapping analysis of international research on environmental communication using bibliometrics. *J. Environ. Manag.* **2021**, *298*, 113475. [CrossRef]
28. Fauzi, M.A.; Abidin, N.H.Z.; Suki, N.M.; Budiea, A.M.A. Residential rooftop solar panel adoption behavior: Bibliometric analysis of the past and future trends. *Renew. Energy Focus* **2023**, *45*, 1–9. [CrossRef]
29. Aria, M.; Cuccurullo, C. Bibliometrix: An R-tool for comprehensive science mapping analysis. *J. Informetr.* **2017**, *11*, 959–975. [CrossRef]
30. Kar, S.K.; Harichandan, S. Green marketing innovation and sustainable consumption: A bibliometric analysis. *J. Clean. Prod.* **2022**, *361*, 132290. [CrossRef]
31. Rita, P.; Ramos, R.F. Global research trends in consumer behavior and sustainability in E-Commerce: A bibliometric analysis of the knowledge structure. *Sustainability* **2022**, *14*, 9455. [CrossRef]
32. Zaidi, H.; Azmi, F.T. Workplace pro-environmental behavior: A review and bibliometric analysis. *Int. J. Product. Perform. Manag.* **2022**. *In press*. [CrossRef]
33. Madias, K.; Szymkowiak, A. Residential Sustainable Water Usage and Water Management: Systematic Review and Future Research. *Water* **2022**, *14*, 1027. [CrossRef]
34. Braun, V.; Clarke, V. Using thematic analysis in psychology. *Qual. Res. Psychol.* **2006**, *3*, 77–101. [CrossRef]
35. Byrne, D. A worked example of Braun and Clarke's approach to reflexive thematic analysis. *Qual. Quant.* **2022**, *56*, 1391–1412. [CrossRef]
36. Willig, C. Interpretation and Analysis. In *The Oxford Handbook of Qualitative Research*; Leavy, P., Ed.; Oxford University Press: Oxford, UK, 2013; pp. 259–277.
37. Yang, E.C.L.; Khoo-Lattimore, C.; Arcodia, C. A systematic literature review of risk and gender research in tourism. *Tour. Manag.* **2017**, *58*, 89–100. [CrossRef]
38. Willis, R.M.; Stewart, R.A.; Panuwatwanich, K.; Williams, P.R.; Hollingsworth, A.L. Quantifying the influence of environmental and water conservation attitudes on household end use water consumption. *J. Environ. Manag.* **2011**, *92*, 1996–2009. [CrossRef]
39. Schultz, P.W.; Messina, A.; Tronu, G.; Limas, E.F.; Gupta, R.; Estrada, M. Personalized Normative Feedback and the Moderating Role of Personal Norms: A Field Experiment to Reduce Residential Water Consumption. *Environ. Behav.* **2016**, *48*, 686–710. [CrossRef]
40. Fielding, K.S.; Spinks, A.; Russell, S.; McCrea, R.; Stewart, R.; Gardner, J. An experimental test of voluntary strategies to promote urban water demand management. *J. Environ. Manag.* **2013**, *114*, 343–351. [CrossRef]
41. Aparicio, G.; Iturralde, T.; Maseda, A. Conceptual structure and perspectives on entrepreneurship education research: A bibliometric review. *Eur. Res. Manag. Bus. Econ.* **2019**, *25*, 105–113. [CrossRef]
42. Rejeb, A.; Rejeb, K.; Abdollahi, A.; Treiblmaier, H. The big picture on Instagram research: Insights from a bibliometric analysis. *Telemat. Inform.* **2022**, *73*, 101876. [CrossRef]
43. Siccardi, S.; Villa, V. Trends in Adopting BIM, IoT and DT for Facility Management: A Scientometric Analysis and Keyword Co-Occurrence Network Review. *Buildings* **2023**, *13*, 15. [CrossRef]
44. Casado-Aranda, L.A.; Sánchez-Fernández, J.; Bigne, E.; Smidts, A. The application of neuromarketing tools in communication research: A comprehensive review of trends. *Psychol. Mark.* **2023**, *40*, 1737–1756. [CrossRef]
45. Wang, M.H.; Yu, T.C.; Ho, Y.S. A bibliometric analysis of the performance of Water Research. *Scientometrics* **2010**, *84*, 813–820. [CrossRef]
46. Kalia, P.; Mladenović, D.; Acevedo-Duque, Á. Decoding the Trends and the Emerging Research Directions of Digital Tourism in the Last Three Decades: A Bibliometric Analysis. *SAGE Open* **2022**, 1–23. [CrossRef]

47. Ajzen, I. The theory of planned behavior. *Organ. Behav. Hum. Decis. Process.* **1991**, *50*, 179–211. [CrossRef]
48. Bhatnagar, S.; Sharma, D. Evolution of green finance and its enablers: A bibliometric analysis. Renewable and Sustainable. *Energy Rev.* **2022**, *162*, 112405. [CrossRef]
49. Della Corte, V.; Del Gaudio, G.; Sepe, F.; Sciarelli, F. Sustainable tourism in the open innovation realm: A bibliometric analysis. *Sustainability* **2019**, *11*, 6114. [CrossRef]
50. Mariani, M.M.; Perez-Vega, R.; Wirtz, J. AI in marketing, consumer research and psychology: A systematic literature review and research agenda. *Psychol. Mark.* **2022**, *39*, 755–776. [CrossRef]
51. Sarabia Sánchez, F.J.; Rodríguez Sánchez, C. Attitudes towards saving water, household structural characteristics and water consumption. *Psyecology* **2013**, *4*, 115–137. [CrossRef]
52. Alvarado Espejo, J.M.A.; Ontaneda, W.I.T.; Padilla, N.I.A.; Ochoa-Moreno, W.S. Water saving practices conditioned by socioeconomic factors: A case study of Ecuadorian households. *J. Environ. Manag.* **2021**, *293*, 112818. [CrossRef]
53. Barnett, M.J.; Jackson-Smith, D.; Endter-Wada, J.; Haeffner, M. A multilevel analysis of the drivers of household water consumption in a semi-arid region. *Sci. Total Environ.* **2020**, *712*, 136489. [CrossRef]
54. Gómez-Llanos, E.; Durán-Barroso, P.; Robina-Ramírez, R. Analysis of consumer awareness of sustainable water consumption by the water footprint concept. *Sci. Total Environ.* **2020**, *721*, 137743. [CrossRef] [PubMed]
55. Otaki, Y.; Maeda, A. Water-Saving Tips with a Visualized Indicator Related to the Environment. *Front. Water* **2022**, *4*, 914665. [CrossRef]
56. Russell, S.V.; Knoeri, C. Exploring the psychosocial and behavioral determinants of household water conservation and intention. *Int. J. Water Resour. Dev.* **2020**, *36*, 940–955. [CrossRef]
57. Seyranian, V.; Sinatra, G.M.; Polikoff, M.S. Comparing communication strategies for reducing residential water consumption. *J. Environ. Psychol.* **2015**, *41*, 81–90. [CrossRef]
58. Ajzen, I.; Fishbein, M. *Theory of Reasoned Action-Theory of Planned Behavior 1988*; University of South Florida: Tampa, FL, USA, 2007; pp. 67–98.
59. Schwartz, S.H.; Howard, J.A. Internalized values as motivators of altruism. In *Development and Maintenance of Prosocial Behavior*; Springer: Boston, MA, USA, 1984; pp. 229–255. [CrossRef]
60. Dunlap, R. The new environmental paradigm scale: From marginality to worldwide use. *J. Environ. Educ.* **2008**, *40*, 3–18. [CrossRef]
61. Deng, Y.; Wang, M.; Yousefpour, R. How do people's perceptions and climatic disaster experiences influence their daily behaviors regarding adaptation to climate change?—A case study among young generations. *Sci. Total Environ.* **2017**, *581–582*, 840–847. [CrossRef]
62. Wolters, E.A. Attitude-behavior consistency in household water consumption. *Soc. Sci. J.* **2014**, *51*, 455–463. [CrossRef]
63. Shahangian, S.A.; Tabesh, M.; Yazdanpanah, M. How can socio-psychological factors be related to water-efficiency intention and behaviors among Iranian residential water consumers? *J. Environ. Manag.* **2021**, *288*, 112466. [CrossRef]
64. Maduku, D.K. Water conservation campaigns in an emerging economy: How effective are they? *Int. J. Advert.* **2021**, *40*, 452–472. [CrossRef]
65. Stern, P.C. Toward a coherent theory of environmentally significant behavior. *J. Soc. Issues* **2000**, *56*, 407–424. [CrossRef]
66. Savari, M.; Mombeni, A.S.; Izadi, H. Socio-psychological determinants of Iranian rural households' adoption of water consumption curtailment behaviors. *Sci. Rep.* **2022**, *12*, 13077. [CrossRef] [PubMed]
67. Fielding, K.S.; Thompson, A.; Louis, W.R.; Warren, C. Environmental sustainability: Understanding the attitudes and behavior of Australian households. *AHURI Final Rep.* **2010**, *152*, 1–132.
68. Shahangian, S.A.; Tabesh, M.; Yazdanpanah, M.; Zobeidi, T.; Raoof, M.A. Promoting the adoption of residential water conservation behaviors as a preventive policy to sustainable urban water management. *J. Environ. Manag.* **2022**, *313*, 115005. [CrossRef]
69. Díaz, J.; Odera, E.; Warner, L. Delving deeper: Exploring the influence of psycho-social wellness on water conservation behavior. *J. Environ. Manag.* **2020**, *264*, 110404. [CrossRef] [PubMed]
70. Andrade, E.; Seoane, G.; Vila-Tojo, S.; Gómez-Román, C.; Sabucedo, J.-M. Psychological and situational variables associated with objective knowledge on water-related issues in a northern Spanish city. *Int. J. Environ. Res. Public Health* **2021**, *18*, 3213. [CrossRef] [PubMed]
71. Buday, A.; Zollinger, B.; Hammersmith, A.; Heine, K. Thirsting for Sustainability: Water Conservation in a Great Plains City. *Great Plains Res.* **2021**, *31*, 1–16. [CrossRef]
72. Araya, F.; Osman, K.; Faust, K.M. Perceptions versus reality: Assessing residential water conservation efforts in the household. *Resour. Conserv. Recycl.* **2020**, *162*, 105020. [CrossRef]
73. Haeffner, M.; Jackson-Smith, D.; Barnett, M.J. Categorizing relative water use perception bias using household surveys and monthly water bills. *J. Environ. Manag.* **2023**, *334*, 117443. [CrossRef]
74. Russell, S.; Fielding, K. Water demand management research: A psychological perspective. *Water Resour. Res.* **2010**, *46*, W05302. [CrossRef]
75. Caspers, C.G.W. Role of Trust in Adopting Consumer Social Responsible Behavior in the Context of Water Use in Domestic Households. *South East Eur. J. Econ. Bus.* **2020**, *15*, 1–13. [CrossRef]
76. Jorgensen, B.S.; Martin, J.F.; Pearce, M.W.; Willis, E.M. Predicting Household Water Consumption with Individual-Level Variables. *Environ. Behav.* **2014**, *46*, 872–897. [CrossRef]

77. Dolnicar, S.; Hurlimann, A. Australians' water conservation behaviors and attitudes. *Aust. J. Water Resour.* **2010**, *14*, 43–53. [CrossRef]
78. Arbués, F.; Bolsa, M.Á.; Villanúa, I. Which factors determine water saving behavior? evidence from Spanish households. *Urban Water J.* **2016**, *13*, 511–520. [CrossRef]
79. Landon, A.C.; Kyle, G.T.; Kaiser, R.A. Predicting compliance with an information-based residential outdoor water conservation program. *J. Hydrol.* **2016**, *536*, 26–36. [CrossRef]
80. Timm, S.N.; Deal, B.M. Understanding the behavioral influences behind Singapore's water management strategies. *J. Environ. Plan. Manag.* **2018**, *61*, 1654–1673. [CrossRef]
81. Gregory, G.D.; Di Leo, M. Repeated Behavior and Environmental Psychology: The Role of Personal Involvement and Habit Formation in Explaining Water Consumption. *J. Appl. Soc. Psychol.* **2003**, *33*, 1261–1296. [CrossRef]
82. Sarpong, K.A.; Amankwaa, G. Household behavioral intention, environmental habit and attitude related to efficient water management: An empirical analysis on pro-environmental behavior among urban residents. *H2Open J.* **2022**, *5*, 438–455. [CrossRef]
83. Madias, K.; Borusiak, B.; Szymkowiak, A. The role of knowledge about water consumption in the context of intentions to use IoT water metrics. *Front. Environ. Sci.* **2022**, *10*, 934965. [CrossRef]
84. Addo, I.B.; Thoms, M.C.; Parsons, M. The influence of water-conservation messages on reducing household water use. *Appl. Water Sci.* **2019**, *9*, 126. [CrossRef]
85. Céspedes Restrepo, J.D.; Morales-Pinzón, T. Effects of feedback information on the household consumption of water and electricity: A case study in Colombia. *J. Environ. Manag.* **2020**, *262*, 110315. [CrossRef] [PubMed]
86. Otaki, Y.; Ueda, K.; Sakura, O. Effects of feedback about community water consumption on residential water conservation. *J. Clean. Prod.* **2017**, *143*, 719–730. [CrossRef]
87. Kollmuss, A.; Agyeman, J. Mind the Gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environ. Educ. Res.* **2002**, *8*, 239–260. [CrossRef]
88. Akpinar, M.G.; Gul, M.; Ceylan, R.F.; Gulcan, S. Evaluation of the factors affecting water-saving attitudes of urban life on the verge of the next century: A case study of the Mediterranean region of Turkey. *J. Water Sanit. Hyg. Dev.* **2018**, *8*, 340–348. [CrossRef]
89. Keramitsoglou, K.M.; Tsagarakis, K.P. Raising effective awareness for domestic water saving: Evidence from an environmental educational programme in Greece. *Water Policy* **2011**, *13*, 828–844. [CrossRef]
90. Ramsey, E.; Berglund, E.Z.; Goyal, R. The impact of demographic factors, beliefs, and social influences on residential water consumption and implications for non-price policies in urban India. *Water* **2017**, *9*, 844. [CrossRef]
91. Li, Y.; Wang, B.; Cui, M. Environmental Concern, Environmental Knowledge, and Residents' Water Conservation Behavior: Evidence from China. *Water* **2022**, *14*, 2087. [CrossRef]
92. Kang, J.; Grable, K.; Hustvedt, G.; Ahn, M. Sustainable water consumption: The perspective of Hispanic consumers. *J. Environ. Psychol.* **2017**, *50*, 94–103. [CrossRef]
93. Clark, W.A.; Finley, J.C. Determinants of water conservation intention in Blagoevgrad, Bulgaria. *Soc. Nat. Resour.* **2007**, *20*, 613–627. [CrossRef]
94. Lavelle, M.J.; Fahy, F. What's consuming Ireland? Exploring expressed attitudes and reported behaviors towards the environment and consumption across three case study locations on the island of Ireland. *Ir. Geogr.* **2016**, *49*, 29–54. [CrossRef]
95. Chenoweth, J.; López-Avilés, A.; Morse, S.; Druckman, A. Water consumption and subjective wellbeing: An analysis of British households. *Ecol. Econ.* **2016**, *130*, 186–194. [CrossRef]
96. Grafton, R.Q.; Ward, M.B.; To, H.; Kompas, T. Determinants of residential water consumption: Evidence and analysis from a 10-country household survey. *Water Resour. Res.* **2011**, *47*, W08537. [CrossRef]
97. Dolnicar, S.; Hurlimann, A.; Grun, B. Water conservation behavior in Australia. *J. Environ. Manag.* **2012**, *105*, 44–52. [CrossRef] [PubMed]
98. Reddy, R.A.; Sengupta, R.; Jackson, B.M.; Lewis, C. Development of a new measure to check attitude towards water conservation. *MethodsX* **2023**, *10*, 101992. [CrossRef]
99. Untaru, E.-N.; Ispas, A.; Han, H. Exploring the synergy between customer home-based and hotel-based water consumption and conservation behaviors: An empirical approach. *J. Consum. Behav.* **2020**, *19*, 542–555. [CrossRef]
100. Kalifa, A.; Al-Maadid, A.; Koutiva, I.; Makropoulos, C. Individual water consumption behavior in relation to urban residential dynamics: The Case of Qatar. *Urban Water J.* **2021**, *18*, 806–816. [CrossRef]
101. Marzouk, O.A.; Mahrous, A.A. Sustainable Consumption Behavior of Energy and Water-Efficient Products in a Resource-Constrained Environment. *J. Glob. Mark.* **2020**, *33*, 335–353. [CrossRef]
102. Lowe, B.; Lynch, D.; Lowe, J. Reducing household water consumption: A social marketing approach. *J. Mark. Manag.* **2015**, *31*, 378–408. [CrossRef]
103. Graf, C.; Suanet, B.; Wiepking, P.; Merz, E.M. Social norms offer explanation for inconsistent effects of incentives on prosocial behavior. *J. Econ. Behav. Organ.* **2023**, *211*, 429–441. [CrossRef]
104. Ramli, U. Social Norms Based Eco-Feedback for Household Water Consumption. *Sustainability* **2021**, *13*, 2796. [CrossRef]
105. Dean, A.J.; Kneebone, S.; Tull, F.; Lauren, N.; Smith, L.D.G. 'Stickiness' of water-saving behaviors: What factors influence whether behaviors are maintained or given up? *Resour. Conserv. Recycl.* **2021**, *169*, 105531. [CrossRef]

106. Warner, L.A. Who conserves and who approves? Predicting water conservation intentions in urban landscapes with referent groups beyond the traditional 'important others'. *Urban For. Urban Green.* **2021**, *60*, 127070. [CrossRef]
107. Al-Maadid, A.; Akesson, J.; Bernstein, D.H.; Chakravarti, J.; Khalifa, A. Understanding Water Consumption in Qatar: Evidence from a Nationally Representative Survey. *Urban Water J.* **2022**. *In press*. [CrossRef]
108. Lede, E.; Meleady, R.; Seger, C.R. Optimizing the influence of social norms interventions: Applying social identity insights to motivate residential water conservation. *J. Environ. Psychol.* **2019**, *62*, 105–114. [CrossRef]
109. De Groot, J.I.; Steg, L. Mean or green? Values, morality and environmental significant behavior. *Conserv. Lett.* **2009**, *2*, 61–66. [CrossRef]
110. Ananga, E.O.; Becerra, T.A.; Peaden, C.; Pappas, C. Examining water conservation behaviors and attitudes: Evidence from the city of Ada, Oklahoma, USA. *Sustain. Water Resour. Manag.* **2019**, *5*, 1651–1663. [CrossRef]
111. Bronfman, N.C.; Cisternas, P.C.; López-Vázquez, E.; la Maza, C.; Oyanedel, J.C. Understanding attitudes and pro-environmental behaviors in a Chilean community. *Sustainability* **2015**, *7*, 14133–14152. [CrossRef]
112. Miller, E.; Buys, L. The impact of social capital on residential water-affecting behaviors in a drought-prone Australian community. *Soc. Nat. Resour.* **2008**, *21*, 244–257. [CrossRef]
113. Wahid, N.A.; Fadzil, S.F.S.; Ariffin, S.K. Influences of Problem Awareness, Awareness of Consequences and Ascription of Responsibility on Consumer's Personal Norm to Prevent Water Wastage Behavior. *Environ. Ecol. Res.* **2022**, *10*, 275–283. [CrossRef]
114. Chen, L.; Dong, C.; Zhang, Y. An Online Experiment Evaluating the Effects of Social Endorsement Cues, Message Source, and Responsibility Attribution on Young Adults' COVID-19 Vaccination Intentions. *SAGE Open* **2022**, *12*, 1–12. [CrossRef]
115. Diener, E. Subjective Well-Being. *Psychol. Bull.* **1984**, *95*, 542–575. [CrossRef]
116. 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 behaviour. *Psyecology* **2016**, *7*, 178–200. [CrossRef]
117. MacInnes, S.; Grün, B.; Dolnicar, S. Habit drives sustainable tourist behavior. *Ann. Tour. Res.* **2022**, *92*, 103329. [CrossRef]
118. Straus, J.; Chang, H.; Hong, C.Y. An exploratory path analysis of attitudes, behaviors and summer water consumption in the Portland Metropolitan Area. *Sustain. Cities Soc.* **2016**, *23*, 68–77. [CrossRef]
119. Lauren, N.; Fielding, K.S.; Smith, L.; Louis, W.R. You did, so you can and you will: Self-efficacy as a mediator of spillover from easy to more difficult pro-environmental behavior. *J. Environ. Psychol.* **2016**, *48*, 191–199. [CrossRef]
120. Jorgensen, B.S.; Martin, J.F.; Pearce, M.W.; Willis, E.M. Aligning theory and measurement in behavioral models of water conservation. *Water Policy* **2015**, *17*, 762–776. [CrossRef]
121. Rondinel Oviedo, D.R.; Sarmiento Pastor, J.M. Water: Consumption, usage patterns, and residential infrastructure. A comparative analysis of three regions in the Lima metropolitan area. *Water Int.* **2020**, *45*, 824–846. [CrossRef]
122. Corral-Verdugo, V.; Bechtel, R.B.; Fraijo-Sing, B. Environmental beliefs and water conservation: An empirical study. *J. Environ. Psychol.* **2003**, *23*, 247–257. [CrossRef]
123. Corral-Verdugo, V.; Frías-Armenta, M.; Pérez-Urias, F.; Orduña-Cabrera, V.; Espinoza-Gallego, N. Residential water consumption, motivation for conserving water and the continuing tragedy of the commons. *Environ. Manag.* **2002**, *30*, 527–535. [CrossRef]
124. Khodadad, M.; Sanei, M.; Narvaez-Montoya, C.; Aguilar-Barajas, I. Climatic Hazards and the Associated Impacts on Households' Willingness to Adopt Water-Saving Measures: Evidence from Mexico. *Sustainability* **2022**, *14*, 5817. [CrossRef]
125. Njoku, P.O.; Durowoju, O.S.; Uhunamure, S.E.; Makungo, R. Investigating the Attitude of Domestic Water Use in Urban and Rural Households in South Africa. *Water* **2022**, *14*, 210. [CrossRef]
126. Bruvold, W.H.; Smith, B.R. Developing and assessing a model of residential water conservation. *Jawara J. Am. Water Resour. Assoc.* **1988**, *24*, 661–669. [CrossRef]
127. Holland, D.; Janet, K.; Landrum, A. Experience is Key: Examining the Relative Importance of Factors Influencing Individuals' Water Conservation. *Water* **2019**, *11*, 1870. [CrossRef]
128. Long, H.; Shi, S.; Tang, Z.; Zhang, S. Does living alone increase the consumption of social resources? *Environ. Sci. Pollut. Res.* **2022**, *29*, 71911–71922. [CrossRef] [PubMed]
129. Makki, A.A.; Stewart, R.A.; Panuwatwanich, K.; Beal, C. Revealing the determinants of shower water end use consumption: Enabling better targeted urban water conservation strategies. *J. Clean. Prod.* **2013**, *60*, 129–146. [CrossRef]
130. Maas, A.; Goemans, C.; Manning, D.; Kroll, S.; Arabi, M.; Rodriguez-McGoffina, M. Evaluating the effect of conservation motivations on residential water demand. *J. Environ. Manag.* **2017**, *196*, 394–401. [CrossRef] [PubMed]
131. Grespan, A.; Garcia, J.; Brikalski, M.P.; Henning, E.; Kalbusch, A. Assessment of water consumption in households using statistical analysis and regression trees. *Sustain. Cities Soc.* **2022**, *87*, 104186. [CrossRef]
132. Domene, E.; Saurí, D. Urbanisation and water consumption: Influencing factors in the metropolitan region of Barcelona. *Urban Stud.* **2006**, *43*, 1605–1623. [CrossRef]
133. Fan, L.; Liu, G.; Wang, F.; Geissen, V.; Ritsema, C.J.; Tong, Y. Water use patterns and conservation in households of Wei River Basin, China. *Resour. Conserv. Recycl.* **2013**, *74*, 45–53. [CrossRef]
134. Syme, G.J.; Shao, Q.; Po, M.; Campbell, E. Predicting and understanding home garden water use. *Landsc. Urban Plan.* **2004**, *68*, 121–128. [CrossRef]
135. Rodriguez-Sanchez, C.; Sarabia-Sanchez, F.J. Does water context matter in water conservation decision behaviour? *Sustainability* **2020**, *12*, 3026. [CrossRef]

136. McKenzie-Mohr, D.; Schultz, P.W. Choosing effective behavior change tools. *Soc. Mark. Q.* **2014**, *20*, 35–46. [CrossRef]
137. Anibaldi, R.; Rundle-Thiele, S.; David, P.; Roemer, C. Theoretical underpinnings in research investigating barriers for implementing environmentally sustainable farming practices: Insights from a systematic literature review. *Land* **2021**, *10*, 386. [CrossRef]
138. Liberman, N.; Trope, Y. The role of feasibility and desirability considerations in near and distant future decisions: A test of temporal construal theory. *J. Personal. Soc. Psychol.* **1998**, *75*, 5. [CrossRef]
139. Wang, J.; Chermak, J.M. Is less always more? Conservation, efficiency and water education programs. *Ecol. Econ.* **2021**, *184*, 106994. [CrossRef]
140. Zhuang, J.; Lapinski, M.K.; Peng, W. Crafting messages to promote water conservation: Using time-framed messages to boost conservation actions in the United States and China. *J. Appl. Psychol.* **2018**, *48*, 248–256. [CrossRef]
141. do Canto, N.R.; Grunert, K.G.; Dutra de Barcellos, M. Goal-framing theory in environmental behaviors: Review, future research agenda and possible applications in behavioral change. *J. Soc. Mark.* **2023**, *13*, 20–40. [CrossRef]
142. Vazquez-Casaubon, E.C.; Cauberghe, V.; Van de Sompel, D. I conserve more water than others, do I? An exploratory study examining self-assessment misperceptions of water conservation. *Environ. Dev. Sustain.* **2023**. [CrossRef]
143. Balnave, J.; Adeyeye, K. A comparative study of attitudes and preferences for water efficiency in homes. *J. Water Supply Res. Technol. AQUA* **2013**, *62*, 515–524. [CrossRef]
144. Casaló, L.V.; Escario, J.J.; Rodriguez-Sanchez, C. Analyzing differences between different types of pro-environmental behaviors: Do attitude intensity and type of knowledge matter? *Resour. Conserv. Recycl.* **2019**, *149*, 56–64. [CrossRef]
145. Pérez Urdiales, M.; García Valiñas, M.T. Efficient water-using technologies and habits: A disaggregated analysis in the water sector. *Ecol. Econ.* **2016**, *128*, 117–129. [CrossRef]
146. Delistavrou, A. Water and energy conservation in Greece: The impact of values and attitudes. *Int. J. Sustain. Energy* **2021**, *40*, 602–615. [CrossRef]
147. van Valkengoed, A.M.; Abrahamse, W.; Steg, L. To select effective interventions for pro-environmental behaviour change, we need to consider determinants of behaviour. *Nat. Hum. Behav.* **2022**, *6*, 1482–1492. [CrossRef]
148. Jaeger, C.M.; Schultz, P.W. Coupling social norms and commitments: Testing the underdetected nature of social influence. *J. Environ. Psychol.* **2017**, *51*, 199–208. [CrossRef]
149. Sarabia Sánchez, F.J.; Rodríguez Sánchez, C.; Hyder, A. The role of personal involvement, credibility and efficacy of conduct in reported water conservation behaviour. *J. Environ. Psychol.* **2014**, *38*, 206–216. [CrossRef]
150. Dascher, E.D.; Kang, J.; Hustvedt, G. Water sustainability: Environmental attitude, drought attitude and motivation. *Int. J. Consum. Stud.* **2014**, *38*, 467–474. [CrossRef]
151. Schneider, C.R.; Zaval, L.; Markowitz, E.M. Positive emotions and climate change. *Curr. Opin. Behav. Sci.* **2021**, *42*, 114–120. [CrossRef]
152. Gkargkavouzi, A.; Halkos, G.; Matsiori, S. Environmental behavior in a private-sphere context: Integrating theories of planned behavior and value belief norm, self-identity and habit. *Resour. Conserv. Recycl.* **2019**, *148*, 145–156. [CrossRef]
153. Shahangian, S.A.; Tabesh, M.; Yazdanpanah, M. Psychosocial determinants of household adoption of water-efficiency behaviors in Tehran capital, Iran: Application of the social cognitive theory. *Urban Clim.* **2021**, *39*, 100935. [CrossRef]
154. Walter, N.; Demetriades, S.Z.; Murphy, S.T. Involved, United, and Efficacious: Could Self-Affirmation Be the Solution to California's Drought? *Health Commun.* **2017**, *32*, 1161–1170. [CrossRef] [PubMed]
155. Liu, H.; Zhao, Y.; Li, H.; Wang, L.; Wang, Q. Individual water-saving response based on complex adaptive system theory: Case study of Beijing City, China. *Water* **2020**, *12*, 1478. [CrossRef]
156. Abu-Bakar, H.; Williams, L.; Hallett, S.H. A review of household water demand management and consumption measurement. *J. Clean. Prod.* **2021**, *292*, 125872. [CrossRef]
157. Asprilla Echeverría, J.M. Cross-country evidence for social dimensions of urban water consumption during droughts. *J. Clean. Prod.* **2020**, *260*, 120895. [CrossRef]
158. Benzoni, N.; Telenko, C. A review of intervention studies aimed at domestic water conservation. In *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*; Springer: Cham, Switzerland, 2016; Volume 9747, pp. 427–438. [CrossRef]
159. Carvalho, I.D.C.; Calijuri, M.L.; Assemany, P.P.; Silva, M.D.F.M.E.; Moreira Neto, R.F.; Santiago, A.D.F.; De Souza, M.H.B. Sustainable airport environments: A review of water conservation practices in airports. *Resour. Conserv. Recycl.* **2013**, *74*, 27–36. [CrossRef]
160. Grilli, G.; Curtis, J. Encouraging pro-environmental behaviours: A review of methods and approaches. *Renew. Sustain. Energy Rev.* **2021**, *135*, 110039. [CrossRef]
161. Hall, C.M.; Dayal, N.; Majstorović, D.; Mills, H.; Paul-Andrews, L.; Wallace, C.; Truong, V.D. Accommodation consumers and providers' attitudes, behaviours and practices for sustainability: A systematic review. *Sustainability* **2016**, *8*, 625. [CrossRef]
162. Hurlimann, A.; Dolnicar, S.; Meyer, P. Understanding behaviour to inform water supply management in developed nations—A review of literature. conceptual model and research agenda. *J. Environ. Manag.* **2009**, *91*, 47–56. [CrossRef] [PubMed]
163. Inman, D.; Jeffrey, P. A review of residential water conservation tool performance and influences on implementation effectiveness. *Urban Water J.* **2006**, *3*, 127–143. [CrossRef]

164. Jorgensen, B.; Graymore, M.; O'Toole, K. Household water use behavior: An integrated model. *J. Environ. Manag.* **2009**, *91*, 227–236. [CrossRef]
165. 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]
166. Liu, A.; Mukheibir, P. Digital metering feedback and changes in water consumption—A review. *Resour. Conserv. Recycl.* **2018**, *134*, 136–148. [CrossRef]
167. Moore, H.E.; Boldero, J. Designing interventions that last: A classification of environmental behaviors in relation to the activities, costs, and effort involved for adoption and maintenance. *Front. Psychol.* **2017**, *8*, 1874. [CrossRef] [PubMed]
168. Ricart, S.; Villar-Navascués, R.A.; Hernández-Hernández, M.; Rico-Amorós, A.M.; Olcina-Cantos, J.; Moltó-Mantero, E. Extending natural limits to address water scarcity? The role of non-conventional water fluxes in climate change adaptation capacity: A review. *Sustainability* **2021**, *13*, 2473. [CrossRef]
169. Sanguinetti, A.; Dombrovski, K.; Sikand, S. Information, timing, and display: A design-behavior framework for improving the effectiveness of eco-feedback. *Energy Res. Soc. Sci.* **2018**, *39*, 55–68. [CrossRef]
170. Stankuniene, G.; Streimikiene, D.; Kyriakopoulos, G.L. Systematic literature review on behavioral barriers of climate change mitigation in households. *Sustainability* **2020**, *12*, 7369. [CrossRef]
171. Syme, G.J.; Nancarrow, B.E.; Seligman, C. The evaluation of information campaigns to promote voluntary household water conservation. *Eval. Rev.* **2000**, *24*, 539–578. [CrossRef]
172. Warren, C.; Becken, S. Saving energy and water in tourist accommodation: A systematic literature review (1987–2015). *Int. J. Tour. Res.* **2017**, *19*, 289–303. [CrossRef]
173. Weis, D.S. Systematic Literature Review on Impacts and Indicators for Measuring Costs and Benefits of Water Sector Related Interventions. *SSRN Electron. J.* **2019**, 18–20. [CrossRef]
174. Voskamp, I.M.; Sutton, N.B.; Stremke, S.; Rijnaarts, H.H.M. A systematic review of factors influencing spatiotemporal variability in urban water and energy consumption. *J. Clean. Prod.* **2020**, *256*, 120310. [CrossRef]
175. Gilg, A.; Barr, S. Behavioural attitudes towards water saving? Evidence from a study of environmental actions. *Ecol. Econ.* **2006**, *57*, 400–414. [CrossRef]
176. Lam, S.P. Predicting intention to save water: Theory of planned behavior, response efficacy, vulnerability, and perceived efficiency of alternative solutions. *J. Appl. Soc. Psychol.* **2006**, *36*, 2803–2824. [CrossRef]
177. Randolph, B.; Troy, P. Attitudes to conservation and water consumption. *Environ. Sci. Policy* **2008**, *11*, 441–455. [CrossRef]
178. Harlan, S.L.; Yabiku, S.T.; Larsen, L.; Brazel, A.J. Household water consumption in an arid city: Affluence, affordance, and attitudes. *Soc. Nat. Resour.* **2009**, *22*, 691–709. [CrossRef]
179. Attari, S.Z. Perceptions of water use. *Proc. Natl. Acad. Sci. USA* **2014**, *111*, 5129–5134. [CrossRef] [PubMed]
180. Kurz, T.; Donaghue, N.; Walker, I. Utilizing a social-ecological framework to promote water and energy conservation: A field experiment. *J. Appl. Soc. Psychol.* **2005**, *35*, 1281–1300. [CrossRef]
181. Gilbertson, M.; Hurlimann, A.; Dolnicar, S. Does water context influence behaviour and attitudes to water conservation? *Australas. J. Environ. Manag.* **2011**, *18*, 47–60. [CrossRef]
182. Aprile, M.C.; Fiorillo, D. Water conservation behavior and environmental concerns: Evidence from a representative sample of Italian individuals. *J. Clean. Prod.* **2017**, *159*, 119–129. [CrossRef]
183. Kantola, S.J.; Syme, G.J.; Campbell, N.A. The Role of Individual Differences and External Variables in a Test of the Sufficiency of Fishbein's Model to Explain Behavioral Intentions to Conserve Water. *J. Appl. Soc. Psychol.* **1982**, *12*, 70–83. [CrossRef]
184. Stewart, R.A.; Willis, R.M.; Panuwatwanich, K.; Sahin, O. Showering behavioural response to alarming visual display monitors: Longitudinal mixed method study. *Behav. Inf. Technol.* **2013**, *32*, 695–711. [CrossRef]
185. Suárez Varela, M.; Guardiola, J.; González Gómez, F. Do Pro-environmental Behaviors and Awareness Contribute to Improve Subjective Well-being? *Appl. Res. Qual. Life* **2016**, *11*, 429–444. [CrossRef]
186. Mondéjar Jiménez, J.A.; Cordente Rodríguez, M.; Meseguer Santamaría, M.L.; Gázquez Abad, J.C. Environmental Behavior and Water Saving in Spanish Housing. *Int. J. Environ. Res.* **2011**, *5*, 1–10.
187. Hamilton, L.C. Saving water: A Causal Model of Household Conservation. *Sociol. Perspect.* **1983**, *26*, 355–374. [CrossRef]
188. Moore, S.; Murphy, M.; Watson, R. A longitudinal study of domestic water conservation behavior. *Popul. Environ.* **1994**, *16*, 175–189. [CrossRef]
189. Torres, M.M.J.; Carlsson, F. Direct and spillover effects of a social information campaign on residential water-savings. *J. Environ. Econ. Manag.* **2018**, *92*, 222–243. [CrossRef]
190. Richter, C.P. Usage of dishwashers: Observation of consumer habits in the domestic environment. *Int. J. Consum. Stud.* **2011**, *35*, 180–186. [CrossRef]
191. Rajapaksa, D.; Gifford, R.; Torgler, B.; Garcia-Valiñas, M.; Athukorala, W.; Managi, S.; Wilson, C. Do monetary and non-monetary incentives influence environmental attitudes and behavior? Evidence from an experimental analysis. *Resour. Conserv. Recycl.* **2019**, *149*, 168–176. [CrossRef]
192. Martínez Espiñeira, R.; García Valiñas, M.Á. Adopting versus adapting: Adoption of water-saving technology versus water conservation habits in Spain. *Int. J. Water Resour. Dev.* **2013**, *29*, 400–414. [CrossRef]
193. Segev, S. Modelling household conservation behaviour among ethnic consumers: The path from values to behaviours. *Int. J. Consum. Stud.* **2015**, *39*, 193–202. [CrossRef]

194. Richter, C.P.; Stamminger, R. Water Consumption in the Kitchen—A Case Study in Four European Countries. *Water Resour. Manag.* **2012**, *26*, 1639–1649. [CrossRef]
195. Garcia, X.; Ribas, A.; Llausàs, A.; Saurí, D. Socio-demographic profiles in suburban developments: Implications for water-related attitudes and behaviors along the Mediterranean coast. *Appl. Geogr.* **2013**, *41*, 46–54. [CrossRef]
196. Chang, G. Factors influencing water conservation behavior among urban residents in China's arid areas. *Water Policy* **2013**, *15*, 691–704. [CrossRef]
197. Bhanot, S.P. Isolating the effect of injunctive norms on conservation behavior: New evidence from a field experiment in California. *Organ. Behav. Hum. Decis. Process.* **2021**, *163*, 30–42. [CrossRef]
198. Liobikiene, G.; Minelgaite, A. Energy and resource-saving behaviours in European Union countries: The Campbell paradigm and goal framing theory approaches. *Sci. Total Environ.* **2021**, *750*, 141745. [CrossRef]
199. Gu, D.; Jiang, J.; Zhang, Y.; Sun, Y.; Jiang, W.; Du, X.P. Concern for the future and saving the earth: When does ecological resource scarcity promote pro-environmental behavior? *J. Environ. Psychol.* **2020**, *72*, 101501. [CrossRef]
200. Bhanot, S.P. Rank and response: A field experiment on peer information and water use behavior. *J. Econ. Psychol.* **2017**, *62*, 155–172. [CrossRef]
201. Schultz, W.; Javey, S.; Sorokina, A. Social Comparison as a Tool to Promote Residential Water Conservation. *Front. Water* **2019**, *1*. [CrossRef]
202. Matikinca, P.; Ziervogel, G.; Enqvist, J.P. Drought response impacts on household water use practices in Cape Town. South Africa. *Water Policy* **2020**, *22*, 483–500. [CrossRef]
203. Goette, L.; Leong, C.; Qian, N. Motivating household water conservation: A field experiment in Singapore. *PLoS ONE* **2019**, *14*, e0211891. [CrossRef]
204. Lindsay, J.; Supski, S. Changing household water consumption practices after drought in three Australian cities. *Geoforum* **2017**, *84*, 51–58. [CrossRef]
205. Rogers, Z.; Bragg, E. The power of connection: Sustainable lifestyles and sense of place. *Ecopsychology* **2012**, *4*, 307–318. [CrossRef]
206. Tom, G.; Tauchus, G.; Williams, J.; Tong, S. The role of communicative feedback in successful water conservation programs. *Appl. Environ. Educ. Commun.* **2011**, *10*, 80–90. [CrossRef]
207. Wang, C.H.; Dong, H. Responding to the drought: A spatial statistical approach to investigating residential water consumption in Fresno. California. *Sustainability* **2017**, *9*, 240. [CrossRef]
208. Garcia, X.; Muro, M.; Ribas, A.; Llausàs, A.; Jeffrey, P.; Saurí, D. Attitudes and behaviours towards water conservation on the Mediterranean coast: The role of socio-demographic and place-attachment factors. *Water Int.* **2013**, *38*, 283–296. [CrossRef]
209. Tijs, M.S.; Karremans, J.C.; Veling, H.; de Lange, M.A.; van Meegeren, P.; Lion, R. Saving water to save the environment: Contrasting the effectiveness of environmental and monetary appeals in a residential water saving intervention. *Soc. Influ.* **2017**, *12*, 69–79. [CrossRef]
210. Sadalla, E.; Berlin, A.; Neel, R.; Ledlow, S. Priorities in Residential Water Use: A Trade-Off Analysis. *Environ. Behav.* **2014**, *46*, 303–328. [CrossRef]
211. Wang, Y.H.; Chang, M.C.; Liou, J.R. Effects of water-saving education in Taiwan on public water knowledge, attitude, and behavior intention change. *Water Policy* **2019**, *21*, 964–979. [CrossRef]
212. Katz, D.; Kronrod, A.; Grinstein, A.; Nisan, U. Still Waters Run Deep: Comparing Assertive and Suggestive Language in Water Conservation Campaigns. *Water* **2018**, *10*, 275. [CrossRef]
213. Chaudhary, A.K.; Warner, L.A.; Ali, A.D. Using perceived benefits to segment residential landscape irrigation users. *Urban For. Urban Green.* **2019**, *38*, 318–329. [CrossRef]
214. Hasan, H.H.; Razali, S.F.M.; Razali, N.H.M. Does the household save water? Evidence from behavioral analysis. *Sustainability* **2021**, *13*, 641. [CrossRef]
215. Aisa, R.; Larramona, G. Household water saving: Evidence from Spain. *Water Resour. Res.* **2012**, *48*. [CrossRef]
216. Lamm, A.J.; Warner, L.A.; Lundy, L.K.; Bommidi, J.S.; Beattie, P.N. Informing water-saving communication in the United States using the situational theory of problem solving. *Landsc. Urban Plan.* **2018**, *180*, 217–222. [CrossRef]
217. Cahn, A.; Katz, D.; Ghermandi, A. Analyzing Water Customer Preferences for Online Feedback Technologies in Israel: A Prototype Study. *J. Water Resour. Plan. Manag.* **2020**, *146*, 06020002. [CrossRef]
218. Daniel, D.; Pande, S.; Rietveld, L. Endogeneity in water use behaviour across case studies of household water treatment adoption in developing countries. *World Dev. Perspect.* **2022**, *25*, 100385. [CrossRef]
219. Warner, L.A.; Diaz, J.M.; Díaz, J.M.; Diaz, J.M. Amplifying the Theory of Planned behavior with connectedness to water to inform impactful water conservation program planning and evaluation. *J. Agric. Educ. Ext.* **2021**, *27*, 229–253. [CrossRef]
220. Graymore, M.L.M.; Wallis, A.; O'Toole, K. Understanding drivers and barriers: The key to water use behaviour change. *Water Sci. Technol. Water Supply* **2010**, *10*, 679–688. [CrossRef]
221. Ibáñez-Rueda, N.; Guardiola, J.; González-Gómez, F.; Ibanez-Rueda, N.; Guardiola, J.; Gonzalez-Gomez, F.; Ibáñez-Rueda, N.; Guardiola, J.; González-Gómez, F. The role of nature contact and connectedness to nature as determinants of household water use: A case study from Spain. *Water Environ. J.* **2022**, *36*, 282–291. [CrossRef]
222. Martinez, D.M.; Maia, A.G.; Martínez, D.M.; Maia, A.G. The Effect of Social Behavior on Residential Water Consumption. *Water* **2021**, *13*, 1184. [CrossRef]

223. Hodges, H.; Kuehl, C.; Anderson, S.E.; Ehret, P.J.; Brick, C. How Managers Can Reduce Household Water Use Through Communication: A Field Experiment. *J. Policy Anal. Manag.* **2020**, *39*, 1076–1099. [CrossRef]
224. Barberán, R.; López-Laborda, J.; Rodrigo, F.; Barberan, R.; Lopez-Laborda, J.; Rodrigo, F. The Perception of Residential Water Tariff, Consumption, and Cost: Evidence of its Determinants Using Survey Data. *Water Resour. Manag.* **2022**, *36*, 2933–2952. [CrossRef]
225. Jessoe, K.; Lade, G.E.; Loge, F.; Spang, E. Residential water conservation during drought: Experimental evidence from three behavioral interventions. *J. Environ. Econ. Manag.* **2021**, *110*, 102519. [CrossRef]
226. Gázquez-Abad, J.C.; Mondéjar-Jiménez, J.-A.; Vargas-Vargas, M. Factors influencing water saving behaviour for Spanish households. *Environ. Eng. Manag. J.* **2011**, *10*, 1873–1881. [CrossRef]
227. Vivek, V.; Malghan, D.; Mukherjee, K. Toward achieving persistent behavior change in household water conservation. *Proc. Natl. Acad. Sci. USA* **2021**, *118*, e2023014118. [CrossRef] [PubMed]
228. Bermejo-Martín, G.; Rodríguez-Monroy, C.; Núñez-Guerrero, Y.M. Water consumption range prediction in Huelva's households using classification and regression trees. *Water* **2021**, *13*, 506. [CrossRef]
229. Warner, L.A.; Turner, S.; Lundy, L. Comparing Linkages Between Descriptive Norms and Current and Intended Outdoor Water Conservation. *J. Ext.* **2020**, *58*, 1–9. [CrossRef]
230. Lyach, R.; Remr, J. Motivations of Households towards Conserving Water and Using Purified Water in Czechia. *Sustainability* **2023**, *15*, 2202. [CrossRef]
231. Thakur, R.; Onwubu, S.C.; Harris, G.; Thakur, S. Examining the factors influencing water conservation intentions amongst peri-urban communities of ethekwini municipality. South Africa. *Water Conserv. Manag.* **2022**, *6*, 81–88. [CrossRef]
232. Oğur Aydın, D.; Doğan, Ç. Exploring water-consuming personal care and hygiene practices in the bathroom environment and user intentions for improving effective water consumption. *Des. J.* **2022**, *25*, 828–848. [CrossRef]
233. Lameck, E.; Sesabo, J.; Mkuna, E. Household behaviour towards water conservation activities in Mvomero District in Tanzania: A convergent parallel mixed approach. *Sustain. Water Resour. Manag.* **2021**, *7*, 45. [CrossRef]
234. Sengupta, J. The Effect of Non-pecuniary-based Incentive Mechanisms to Reduce Water Usage at the Household Level and to Achieve Positive Environmental Outcomes. *Glob. Bus. Rev.* **2020**, *21*, 1232–1248. [CrossRef]