

Article

Collective Responses to the 2018 Water Shortage in Cape Town: An Explorative Qualitative Study

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Received: 3 July 2020; Accepted: 11 August 2020; Published: 17 August 2020



Abstract: In 2018, the Western Cape region in South Africa experienced a significant drought. At a certain date termed “Day Zero”, it was projected that about 3.7 million people in the City of Cape Town would run out of water. In this qualitative study, we provide a context for the situation and explore how a group of individual residents interpreted and adapted to the situation by changing their norms in order to preserve water. A systematic text condensation identified three superordinate themes that captured essential aspects of how the informants interpreted the situation and mobilized to cope with the environmental crisis. Three core processes are exemplified with direct statements from the informants. Specifically, these were labeled “making sense of the situation”, “taking part in the action” and “looking to the future”. The interview data suggest that the water shortage emerged as a significant existential experience transcending personal norms, mobilizing action, and reminding the informants about an uncertain future. The findings from this study may inform future research on pro-environmental action and sustainability.

Keywords: climate change; pro-environmental action; water conservation; South Africa

1. Introduction

Environmental crises are distinguished by rapid and largely unexpected changes in environmental quality that are difficult, if not impossible, to reverse [1]. Since climate change increasingly affects rain and weather patterns, a growing body of research has addressed how discourses on water scarcity are constructed and developed into social norms to adapt to an environmental crisis [2]. The acute water crisis in Cape Town in 2018 prompted a water scarcity discourse focused on urban development, resilience and a fair distribution of resources [3–5]. Sustainable water consumption and proactive actions of water conservation have therefore received increased attention [6]. The present study provides an opportunity to explore empirical data from a distinct, but unforeseen environmental crisis. In order to provide more background for the empirical section, we will first provide an overview of the study area and context for the study, followed by an overview of how the present study contributes to our understanding of human adaptation to climate change. Finally, the empirical section will detail and exemplify how individual residents interpreted and adapted to the situation by changing their norms in order to conserve water.

1.1. The Study Area

The evolution of Cape Town’s strategies to deal with post-apartheid inequalities has emphasized the need to reconcile growth, equity and sustainability [4,7]. In 2018, this became evident when the Western Cape region in South Africa experienced a significant decline in dam water levels. The shortage of water became severe during mid-2017 to mid-2018. The critical stage was termed “Day Zero”, meaning that the major dams supplying the City of Cape Town with 3.7 million people would fall

below 13.5 percent [8]. In early 2018, the consequences of the drought were evident and the main reservoirs around Cape Town were running dry as can be seen from Figure 1.



Figure 1. A portion of Theewaterskloof dam, close to empty in 2018, showing tree stumps and sand usually submerged by the water of the dam (Photo by Zaian/CC BY-SA).

The drought had significant social and economic implications. Agricultural exports and expected revenues were projected to decline by 20% [9]. The central government declared the drought a national crisis in order to free up funds and resources to tackle the crisis [9]. Reducing demand for water was a key priority. The City of Cape Town worked to get residents and businesses on board with a host of water-saving initiatives. People attended water saving workshops (see Figure 2) and were instructed to shower for no longer than two minutes. The city launched a campaign with the slogan “If it’s yellow, let it mellow”, which promoted flushing the toilet only when necessary [10]. The use of so-called greywater was also encouraged [10].

To delay or prevent “Day Zero”, personal use of water was limited to 50 L per person per day. The restrictions lead to a significant reduction in water usage [8,10]. After a period with strong rains in the winter of 2018, the reservoirs again reached 70 percent capacity and the water restrictions were eased. By changing the city’s habits, along with the welcome return of some rain, Cape Town managed to avert the worst of the water scarcity crisis in 2018 [8]. One year later, in March 2019, the dam levels had reached 80%, but the risk of future shortages still remains since the demand for water is increasing and South Africa is one of the world’s driest countries [10]. Figure 3 presents a graph of the total reservoir water available to the residents of Western Cape from 2013 to early 2019.

During the 2018 water shortage, the government had to convince the population of Cape Town about the severity of the situation and the need to take collective action to lower their water consumption. From a behavioral perspective, the situation called for very specific pro-environmental changes in social norms and personal identity approaches in order to encourage water conservation [11]. From a macro-level perspective, the government initiatives to contain the crisis could also be seen as an effort to cope with shifting infrastructural priorities and the legacies from the apartheid inequities [7]. Thus, the introduction of financial incentives to curb water consumption could contribute to deepening existing inequalities and conflict [7]. This illustrates the close relations between water governance, inequality and infrastructure politics, and the present study presents an opportunity to understand how climate discourse transforms into policy and behavioral action [12,13].

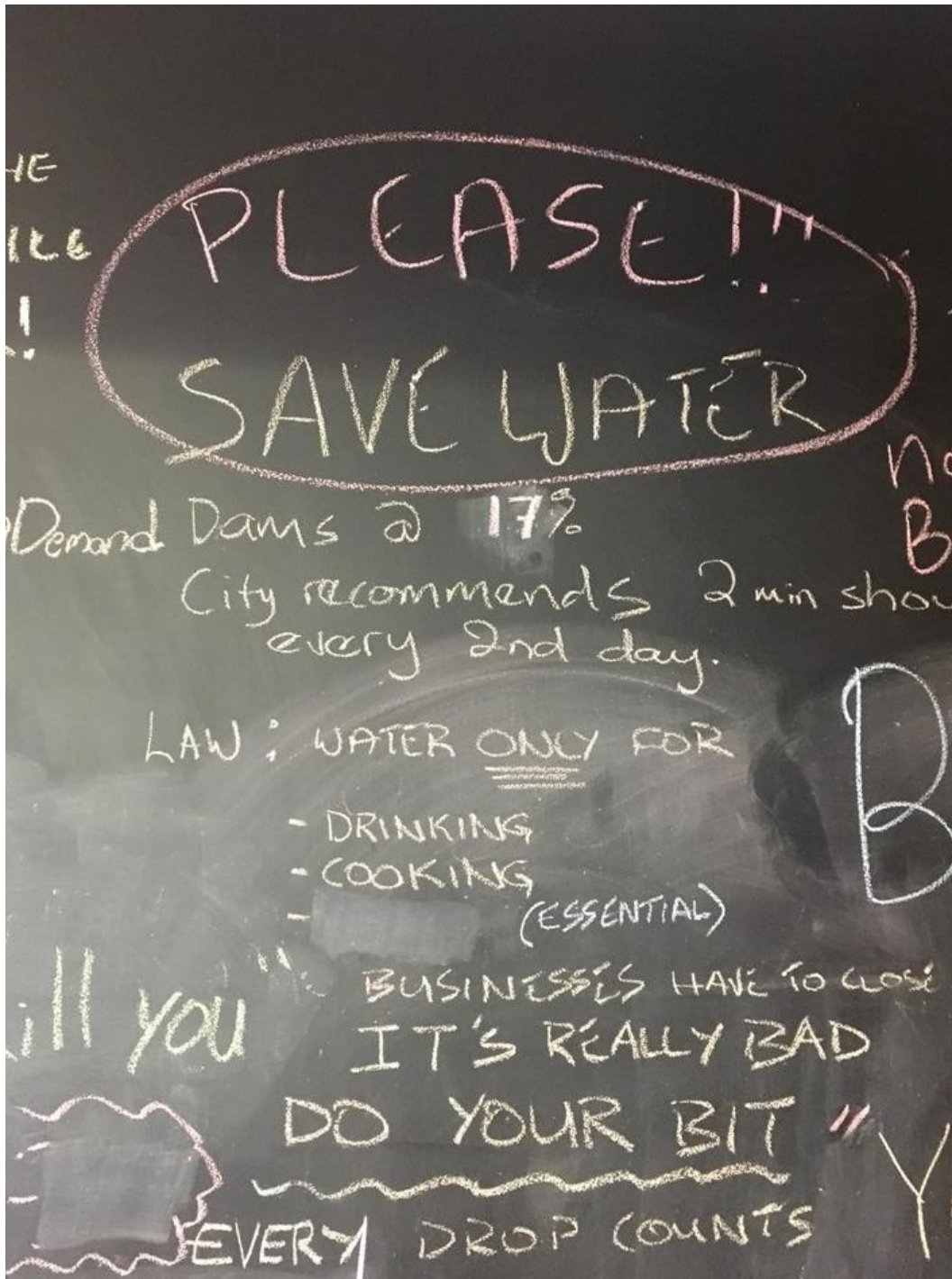


Figure 2. Picture from a local water awareness workshop in Cape Town in 2018 (Photo: Tuva E. Øyslebø).

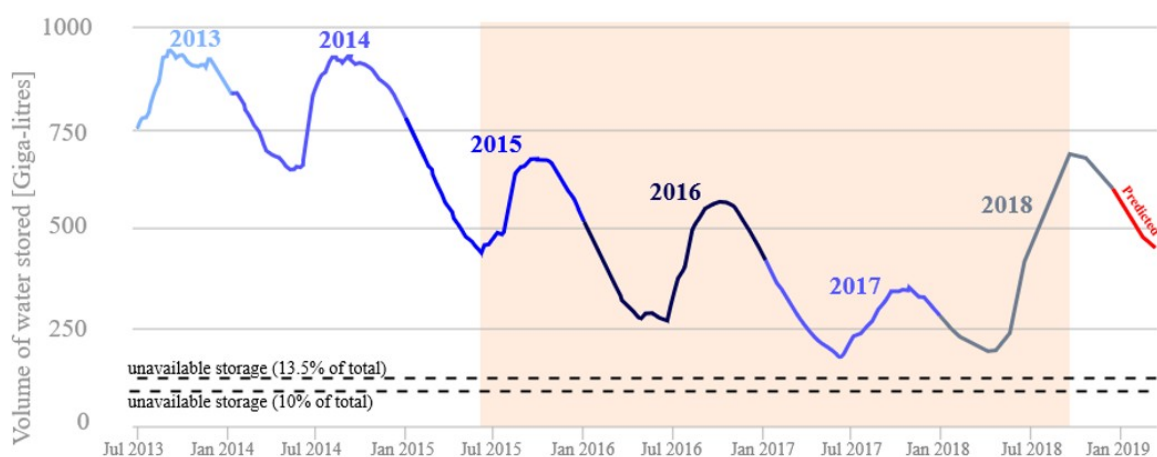


Figure 3. Graph of the total water stored in the Western Cape’s largest six dams from 30 June 2013 to 15 January 2018. The graph illustrates the declining water storage levels over the course of the Cape Town water crisis (Source: https://en.wikipedia.org/wiki/Cape_Town_water_crisis).

1.2. Transforming Discourse into Action

The water shortage in Cape Town also provides an opportunity to achieve a deeper understanding of how individual action may shape collective efforts to cope with an environmental crisis [14]. A meta-analysis by Bamberg and Möser [15] indicated that pro-environmental behavioral intentions and personal moral norms are strong predictors of pro-environmental behavioral intention. Direct experience from environmental stimuli such as water shortage exerts a major influence on risk perception, learning and action [16]. Previous exposure to an environmental crisis such as drought could therefore increase the emotional, cognitive and behavioral preparedness to engage in pro-environmental action in similar situations [17]. People who were exposed to the 2018 water shortage in Cape Town may therefore be expected to express a more pro-environmental self-identity after the crisis [11,18]. Still, if the personal contribution seems insignificant or if there is a lack of support from the larger community, pro-environmental action may appear to be morally relevant, but not justifiable on a personal level [19,20].

According to Kamara, Akombi, Agho, and Renzaho [13], there is a need to gain more information from true-to-life situations about how households, social groups and governance level capacities can mobilize collective responses to an environmental crisis. A significant aim of the present study is therefore to explore and report empirical data on how people engaged in collective action cope with the 2018 water shortage in Cape Town. A hermeneutical approach was seen as valuable to understand the nuances and individual differences in a small, but well-informed sample of residents. More specifically, we wanted to explore (i) how the drought was experienced, (ii) how it may have changed personal norms and (iii) if the experiences from the water shortage had resulted in a sustained pro-environmental awareness.

2. Method

The explorative nature of this inquiry into a specific environmental crisis called for a qualitative approach using a phenomenological hermeneutical design [21]. The phenomenological perspective represented an opportunity to emphasize an attitude of genuine curiousness and presence. Through the interview process, themes were identified in a nuanced way through dialogue and in the processing of the interviews. Shared subjective experiences were identified between the participants. The hermeneutic design is explicit in valuing the subjective aspects of each participant’s perception and understanding. The awareness of how the interaction with interviewer, life history, daily wellbeing and plans for the future contributed to the uniqueness of their contribution, and how the interviewers’ presence

affected the story [22]. The continuous iterative process between the informant's experience of the water shortage and the researcher's interpretations helped shape the understanding and interpretation of the data. A semi-structured interview format was chosen in order to confine the scope of the inquiry and keep the exploratory nature of the study [23]. By this, we accept that the interviews will represent subjective life experiences, cultural heritage and the inherent limitations in the interview format.

2.1. Participants

A sample of six students in their early to mid-twenties was recruited from one of the universities in Cape Town. Since the second author at the time was also a student at the university, this was in part a convenience sample, but we also expected the students to be a scholarly, well-informed and articulate group that would voice their opinions on pro-environmental issues [24]. All participants had personal experience from the water shortage. In order to include diverse opinions and experiences, both male and female students from different nationalities and socio-economic backgrounds were invited to take part in the study. Some of the students were living in student housing, while others were renting accommodation outside campus. None of the students had parenting roles, but most of them had part-time job assignments in the Cape Town area. After the first few interviews were completed, we learned that some of the student participants had a rather passive take on the situation. They said that if the situation got worse, they would rely on their parents to find a solution. This prompted us to expand our sample and include two older adults who had family and household responsibilities to get a more diverse group of informants. The question of race is an intricate and sensitive topic, especially in South Africa. In general, race is seen as a very important aspect of the personal and social identity of South Africans. The participants in this study reflect different racial groups in the South African context. Although the number of informants was limited, it represented a transparent and knowledgeable sample that emerged as sufficient to inform our understanding and provide saturation in data [24]. Our informants were knowledgeable and very open to expressing their behavior, emotions and reflections on the topic. The total duration of interviews represents more than 10 h of in-depth reflections on the water shortage. See Table 1 for an overview of sample characteristics.

Table 1. Overview of the study sample (N = 8).

No.	Anonymized Name	Gender	Age Span	Origin
1	Sarah	Female	20–25	South Africa
2	Gamu	Female	20–25	Zimbabwe
3	Philani	Male	20–25	Namibian
4	Enzokuhle	Female	20–25	South Africa
5	Megan	Female	20–25	South Africa
6	Amy	Female	20–25	South Africa
7	Migael	Male	45–50	South Africa
8	Debbie	Female	50–55	South Africa

2.2. Data Collection

The second author collected in-depth, face-to-face, semi-structured interviews in Cape Town in October and November 2018. At this time, the water crisis was less imminent, but residents were encouraged to continue to preserve water and remain conscious of a potentially volatile environmental situation. The extreme water shortage was still a very recent experience, and posters and information about water conservation were still visible in public places. The interviews lasted from 20 to 80 min. In order to facilitate an open and transparent dialogue, the interviews took place in privacy or at locations that were convenient for the participants. The first question asked was "What experience do you have with water shortage/drought?" Thereafter, the conversation followed from the participants' lead. Additional questions explored how the water shortage was perceived, how it affected social life and how participants related to the situation. Follow up questions aimed to provide examples of behavioral

action, cognitive and emotional reactions to the water shortage. During the interview, respondents were encouraged to share deeper reflections and thoughts from the experience. The interview guide was pilot tested and adjusted before it was applied to the informants. All interviews were audiotaped and transcribed within a few days.

2.3. Analysis

The transcribed data material was analyzed according to systematic text condensation (STC) described by Giorgi [25] and modified by Malterud [26]. STC is a qualitative approach, which aims to provide detailed examinations of lived experience while upholding methodological rigor, intersubjectivity and reflexivity [26]. This method contains four steps. The first step is to gain a holistic understanding of the text. The authors read the transcripts separately and then discussed the material to obtain an overall common understanding of the interviews. Three broad issues emerged from these initial readings as depicted in Table 2 [27]. The second step identified meaning units. Meaning units were identified, labeled and coded separately by the authors. In this process, each interview was analyzed line-by-line, with notes written on the left-hand side of the margin. Psychological terms were inserted on the right-hand side of the margin after reading the interview for the second time. The process was repeated with all the transcribed interviews with the aim of reaching a consensus about the codes between the authors. The meaning units, source and references are exemplified in Table 2. In the third step of the process, the keywords from each interview were condensed by merging concepts of similar meaning. The authors analyzed the insights contained in the meaning units in separate processes and subsequently discussed how the meaning units could be abstracted into common themes. Possible themes were submerged in accordance with the context and interpreted meaning. Finally, in the last step, the researchers synthesized all of the transformed meaning units into a consistent statement regarding the participants' experience. Through this process, the data were structured into meaningful units that provided a more coherent and deeper understanding of the underlying themes. The deconstructed text was then compared with the original transcripts to ensure that the true meaning of the informant's comments was not lost. Validation was done at each step in the process by comparing notes and digital records from and the two authors. Nvivo Pro12 was used to assist the comparison of meaning units and identification of themes. The data analysis process was dynamic in nature, requiring several iterations of reading, discussion of codes, and theme generation between the authors. Table 2 presents an overview of the data analysis in steps 1–3 as outlined above. The findings from step 4 are summarized and presented together with direct statements in the following results section.

Table 2. Overview of the analytical process in the study.

Step 1: Holistic Understanding	Step 2: Meaning Units			Step 3: Common Themes
	Code ¹	Source ²	References ³	
Informants needed time to process information and realize the full potential of the water shortage. Social media, family and friends were important sources of normative influence and inspired informants to conserve water. The informants interpreted and accommodated the personal experiences from the water shortage into political, social, environmental or religious conceptualizations.	Awareness	8	54	Overarching theme. Coping with an environmental crisis.
	Cognitions	8	23	
	Emotions	8	26	Outlined by three main sub-themes: 1. Making sense of the situation.. 2. Taking part in the action. 3. Looking to the future...
	Social and interpersonal	8	51	
	Behavior and habits	8	49	
	Contextual and political	8	46	

¹ Code: Meaning units identified in the second step of the data analysis; ² Source: Number of informants talking about the code (N = 8); ³ References: Number of quotes related to the code.

2.4. Ethics

The study was approved by the Data Protection Official for Research, Norwegian Centre for Research (NSD), project number 61436 and was conducted in compliance with the Declaration of Helsinki. The participants received written and oral information about the study and all gave written consent. All audio recordings were deleted after the interviews were transcribed.

3. Results

The eight people interviewed are referred to as “participants” or “informants”. Quotations are used to validate and more deeply illustrate the meaning of each informant’s comments. Situations in which the quotations were not coherent, because of dialogue with the interviewer or when the informant interrupted his/her train of thoughts, are marked with a dotted line. The overarching theme was how the informants coped with the environmental crisis of water shortage. Three main themes capture essential aspects of the informant’s experiences from the water shortage: “making sense of the situation”, “taking part in the action” and “looking to the future”. The following section unpacks these themes and elaborates on the corresponding subordinate themes using quotes from interviews to ensure that the voices of the informants are retained.

3.1. Theme 1: “Making Sense of the Situation”

Initially, all of the participants spoke of denial and said that they needed time to process information and to realize the full potential of the water shortage. The idea that Cape Town would run out of water seemed like a surreal scenario. The city had experienced droughts before, so this was not a new situation. Our participants criticized the initial passive attitude from the authorities and emphasized how the government could have provided more information at an earlier point in time and found better solutions to preserve water.

“I also had my doubts—you know Cape Town, you have the sea. I don’t know. I just felt like they got so many resources they can do something about it and the government it is not poor, so, you understand? If there is a shortage of water, they can do something about it, if they need to build more reserves”

(Gamu).

Throughout the interviews, participants emphasized a mental shift from dismissiveness and denial to awareness. Although this process was described as gradual, all of our participants pointed to “Day Zero” as a significant turning point. The information that the water supplies would be cut off entirely created a sense of urgency and a need to act. The idea of a fast-approaching “Day Zero” made our informants realize that the water crisis was a reality they needed to take seriously.

“It is only in March, when they were talking about [that] there was actually going to be a Day Zero and all of the water would run out, and we would actually not have water, then I was like ‘oh my gosh I need to get my act in order’”

(Philani).

The growing notion about a looming crisis was scary and the potentially adverse consequences of Day Zero stirred an emotional reaction in many of the informants. The need to have access to water is vital to survival and in modern society taken for granted. The water shortage and the risk of running out of water represented an existential crisis that triggered emotional responses of fear and anxiety.

“... the possibility of a Day Zero actually happening ... uhm, yeah that was a little scary. The thought of not having water ... it’s horrible. You need water ... you just need water. I just couldn’t imagine, if I was here and we didn’t have water, where would I get water from? You know, do I have to buy water, every day? That is just crazy, I couldn’t, you know”

(Gamu).

During the spring of 2018, the water shortage became more pronounced when government restrictions and sanctions were announced. Residents in public housing and student homes were directly affected. At this point, our informants seemed to realize that their everyday behavior, lifestyle and fulfillment of basic needs were at stake. The water shortage represented a new situation that came with many practical consequences. The collective efforts to conserve water came with an implicit change in social norms and a sense of urgency.

“And in res [student housing] they started handing out buckets, to use to flush your bathroom and collect greywater, and so, yeah... that is when I realized this is actually serious and I started taking precautions”

(Philani).

The informants describe this shift in personal norms as a gradual process that developed over time to become an issue that invaded their everyday life. A common observation from many of the informants was that despite an increasing flow of information about precipitation, dam levels and water consumption, it was not until the situation became personal, public and physical that they adopted a water-saving identity. In some cases, the gravity of the situation became evident when they would have to spend hours in line to get hold of water rations for themselves and their family. For others, it was not until they could taste the sand and material from the tap water that they realized the daunting effects of the water shortage. The water crisis had reached their home, and saving a little here and there was suddenly not enough.

“Now you had to stand in long queues to get water and come with your empty water bottles. Because the water that was coming to the taps weren’t as ... as clean, we could taste the sand in it and ehm, material in it because the (dam) levels were very low, it was very low...”

(Migael).

An interesting observation is how differently our informants assessed and coped with the situation. A notable finding in our sample was that those who had previous, repeated exposure to droughts in general expressed calmer emotional reactions and a more task-focused rather than emotional response to the drought.

“I’m from Eastern Cape, which is quite a rural area, I grew up without having access to water, so like when I came here and the water cuts happened, it didn’t really affect me much as compared to other people. I am used to the bucket system and stuff like that”

(Enzokuhle).

In many ways, the water shortage represented a collective learning experience. For some, the “bucket system” represented old knowledge that was familiar and applicable in this situation. For others, the water shortage was a very emotionally charged and existential experience calling for a more emotion-focused way of coping. Some of our informants expressed a strong belief that faith in God would help the inhabitants of Cape Town to cope with the drought.

“The faith that you have that God can do anything. We try everything in our power to change things. We tried using less water, implemented little machines, people started complaining and saying the government is making business of this little machines because they hiring and seeking attendants to build the machine and then implement the machine and to all of these type of things ... so ... no one was trusting anyone. It came to us using our own power. But, you know we all had to turn to God now and realize that we don’t have any strength of our own. This is when it started raining. This is when we started uniting together”

(Migael).

This informant went on to elaborate on how people would turn to the Church, which could give people a sense of safety, hope for the future and community with others who also believed that faith in God would make it rain. The behavioral changes, the normative development and faith in God illustrate how people mastered the water saving. They found a meaning in it and consequently found ways to try not to lose hope.

3.2. Theme 2: “Taking Part in the Action”

Although our subjects expressed quite different emotional reactions and appraisal of the situation, the initial ambivalence and uncertainty gave way to behavioral action. Personal exposure to new social norms and collective expectations about water conservation gradually led to an appraisal of the gravity of the situation and the need for behavioral action. The government regulations, social media and daily news contributed to this understanding. The social media and news agencies intensified their information coverage of the water shortage during early 2018, and our informants viewed this as an important route to raise people’s awareness.

“(The drought) was on the news every single night and uhm, the dam levels were being displayed everywhere, but as I said earlier, that was only in the last few months. There were years leading up to this where something could’ve been done . . . But, I guess it is human nature to . . . put a blanket over your eyes and avoid the issue instead of, sort of, face it”

(Amy).

The massive information and media campaign contributed to raising awareness, and our informants shared very detailed, vivid and graphic descriptions of how they acted to conserve and save as much water as possible. One group of individuals alone could not save Cape Town from Day Zero. They all had to pull together. The situation called for a radical change of habits and interpersonal relations. In order to contribute, people made significant personal efforts to adapt to new social norms and goals.

“It’s a lot of changes and changing (of) daily habits—Showering, you have to make sure the bucket is there when you turn the shower on, once it’s hot enough move the bucket away, stand in the shower, turn the water off, use the soap, turn the shower on again, rinse it off, and you would panic if the water is on for too long, feel guilty (laughs). Uhm, so there are things like that and having to pick the bucket up, go to the toilet to flush the toilet each time”

(Megan).

In a relatively short period, water-saving behavior became the new norm for our informants. In some public situations, this also required our respondents to ignore personal moral norms and to defy social norms and public behavior that previously would have been unacceptable. This new situation also brought people closer together. An illustrative example is the new social norms and behavioral actions associated with public toilets.

“(It was) very strange on campus, you get so used to walking into the toilets on campus, they are just yellow, and they don’t smell great . . . because you know obviously. But it’s also like a strange . . . sort of, communal . . . community building exercise I suppose because everyone’s like okay with it now. And you got to go use the toilet and not flush it and then you are going to leave and someone else is going to go in there and it’s just like . . . this is normal (laughs)”

(Megan).

The collective arenas seemed to consolidate new personal norms and to validate behavior change by reinforcing the notion that everyone was pulling in the same direction and that they all were in this situation together. Social media and social life became very visible arenas for public display of

commitment to a water-saving identity. For some of our informants, this took the form of an observed reversal and shift in status and symbolic value of how people presented themselves. A clean and shining car would normally represent a valued status symbol, but not anymore.

“Because it was like, the dirtier your car, the higher status you were of saving. It was giving you ‘oh no, no, no, they are really contributing to . . . ’, so that was all due to the crisis in Cape Town”

(Debbie).

The water shortage also became an opportunity to rethink old habits and to engage in community action and organized events that promoted eco-friendly solutions and creative approaches to cope with the situation. Social media was used to enhance efficacy and share information about water-saving options and solutions. Some of our informants emphasized how informal groups had been formed to educate people, discuss and disseminate new ideas and solutions about water conservation.

“There is an organization called Gorilla House, which runs courses. Two of the courses I went to, one of them was on reusing grey water, and reusing gray water. I think it is good there are organizations out there who go out and educate people on how to save and reuse water. It have definitely changed our lifestyle, seeing an opportunity in the drought”

(Sarah).

3.3. Theme 3: “Looking to the Future”

Even though many of the informants directed criticism at the government for not having done enough to prevent the water shortage, they also acknowledged the challenges associated with a fair distribution of resources. The informants frequently mentioned the troubled history of South Africa and the apartheid period when they reflected on the wider social and political aspects of the water shortage. Even in the basic infrastructure of Cape Town, the legacy from the apartheid period created an inherent inequality in water distribution.

“You know, even though it was 24 years ago, the way the city was built was in line with the vision of apartheid, so water resources are also structured in that way, where more affluent suburbs would have easier access to water than poorer suburbs. So, I think if you want to go to townships, this is a reality they live with—everyday. But I think if you were to talk to more affluent suburbs then they would have felt it more because the things that they used to enjoying, they cannot enjoy them anymore, so, things like swimming pools and stuff”.

(Philani)

The socio-economic differences and income gap between the residents of Cape Town became a public issue during the water shortage. When the government introduced sanctions to curb water usage, this was criticized by some. Imposing fines for non-compliance with the water restrictions was seen as unjust to the low-income households and an easy way out for the rich since affluent households then could avoid the hardships from water-saving and instead pay the fines for over-spending water. Several of our informants referred to the public debate over how socio-economic differences exposed a significant barrier and how some people could still avoid taking part in the collective efforts to conserve water.

“(. . .) it is probably mostly the wealthy, Constantia families who are overusing water (laughs). The really, really, wealthy areas, in Constantia and everything, you drive through you see their sprinklers are on and everything. So, definitely the people in poverty would be hit first . . . and probably the worst, because you know they are sharing one water tap amongst many, they don’t have their own in the houses or anything . . . ”.

(Amy)

For some of our informants, the water shortage seemed to consolidate the intergroup perception of social inequality. The water shortage made them realize how other people in their own country had been living for decades. Thus, for some, this environmental crisis had raised their awareness about societal challenges and resource allocation in general. Overall, throughout the interviews, the participants pointed to feeling more connected to other South Africans saving water. All of our participants emphasized that this experience had raised their awareness about individual vulnerability and collective responsibility to engage in environmental issues.

“(. . .) all these environmental changes that you start reading more about (. . .). It’s quite a scary thing, it probably changes a lot of peoples’ perspectives, so I think a lot of people use less (water), or they have used less since we pushed Day Zero. I kind of think everyone should be going through a water crisis like this with the water restrictions just because it teaches you so much about the resources you use every day as a single person. A lot of people probably need to see that and experience it somehow, so overall I think it has actually been a very . . . educational experience, to me and to a lot of people”.

(Megan)

Throughout the interviews, the impression was that the social attention regarding the water crisis was diminishing concurrently with the dam levels rising. After the rain had started and the dam levels were rising again, our informants experienced reduced pressure from the government and in social media, and the water situation became less relevant. Some of our participants said that they valued water more than before and that they also had more knowledge now compared to before the drought, but life was back to normal and water shortage was no longer a concern. In contrast, other participants still had strong opinions about the crisis and expressed the need to learn and improve from the crisis.

“So, if you’re wondering if I actually have faith that we actually learnt our lesson . . . [laughs], nooo . . . I don’t—actually [laughs] (. . .). Because now, you see, there is no more talk about water. There is no more . . . new designs coming out, because we are past the crisis. We are past the part . . . point of desperation. We are going downhill now [mimics downhill with hands], no more uphill [smiles]. So, because of that . . . we became relaxed, and we not completely mindful of what we can do to make things better—all the time. Because I don’t think we’ll ever get to a place where we say we don’t need to improve. We can always improve—all the time. All the time”.

(Migael)

4. Discussion

The present study explores how a small sample of residents in Cape Town interpreted and mobilized behavioral action to cope with a slowly evolving environmental crisis in 2018. A careful line-by-line reading of the interviews identified three core processes labeled “making sense of the situation”, “taking part in the action” and “looking to the future”.

4.1. Raising Awareness and Assessing the Situation

Periods of drought are common in the Western Cape region, but after a while, things are back to normal. A distant threat of climate change is not enough for people to sacrifice everyday routines [19]. Our informants describe how their initial ambivalence and dismissiveness were in concert with the initial indifference from the government. Limited involvement from political leaders is considered to constitute a significant barrier to mobilizing collective action and pro-environmental behavior [28]. The present study lends support to a discourse on water scarcity, which is composed of two narratives: water insufficiency and water mismanagement [2]. A notable finding from the present study is that several of our informants mentioned the important role the news media and social media played to raise their awareness about the drought and to provide information about the gravity of the situation. According to our informants, the news media and social media became important venues for expressing concern, raising awareness and mobilizing pro-environmental behavior [29]. Media representation

is commonly considered to be an important psychosocial mediator [30], and our informants seemed to suggest that media played an equally important role as the government in raising awareness and shaping their perception of the crisis.

A turning point seemed to be when the government and media introduced the concept of “Day Zero”—a highly charged emotional scenario when the water supply to Cape Town would shut down. The idea of an imminent “Day Zero” projected a high-risk scenario with significant adversities to several of our informants. The drought had suddenly morphed from a normal phenomenon into an environmental crisis. Whitmarsh [16] suggests that direct experience from a crisis will have a major influence on risk perception, learning and action. The findings from our study lend support to this assumption in that those of our informants who had previous experience from severe drought expressed a more cognitive and task-focused appraisal of the situation. Although the emotional reactions and cognitive appraisal of the situation could be quite different depending on their previous experience from environmental crises [31], our data suggest that a sense of urgency was needed to mobilize individual efforts to confront the crisis.

4.2. Mobilizing Action and Collective Resources

Although the idea of a looming “Day Zero” was anxiety-provoking, our informants indicated that this communication strategy was effective and served to establish a shared perception of urgency, knowledge and sensory images that served to mobilize collective action [12,32]. Confronted with a perceived crisis, people are more inclined to adopt and promote social rather than personal identities [14]. Over a relatively short period, our informants adapted to new social norms and personal identity approaches to take part in pro-environmental action to conserve water [11]. They felt empowered to make it their personal mission to reduce the water use in each household. Our participants described this process as a sense of mastery and ‘a community-building exercise’. The notion of water conservation as a form of “community-building exercise” exemplifies how interpersonal relations and changes in personal identity can strengthen collective efficacy during a crisis [19]. In this case, people seem to have adopted a water-saver self-identity, sharing creative ideas and looking for innovative ways of water conservation [33].

Several of our participants described how the water shortage was a formative learning experience. In line with previous research [15,34,35], some of our informants expressed an intention to continue to support pro-environmental behavior even after the dam levels were back to normal. For some of our informants, the experiences from the water shortage served to mobilize a social identity in support of pro-environmental behavior [36]. The root cause of the water shortage was attributed to a global, environmental crisis, rather than an isolated local problem [16]. For some of our informants, the drought was a clear indicator of extreme weather and climate change. According to one of our informants, “everyone should experience a drought first-hand to know what climate change really will be like (. . .) this is just the tip of the iceberg”. Other participants saw the drought as a coincidence and a sign of God’s blessing when it started raining again. This resonates with Kneebone et al. [19] who emphasize that emotional, cognitive and behavioral factors are closely intertwined when people are mobilized to engage in pro-environmental behavior. The present study suggests that the environmental crisis appraisal is highly dependent on psychological factors such as urgency, knowledge and sensory images [12], and for some of our participants, this experience seemed to have led to a sustained social identity of pro-environmental behavior.

4.3. After the Crisis—Looking to the Future

The retrospective nature of our query provided an opportunity to explore how our informants’ perceptions of the water shortage had changed over time. At first the participants experienced helplessness or hopelessness, which eventually shifted to mastery and even innovative behavior through personal initiative and collective efficacy [14]. The feeling of uncertainty and mistrust and a growing distance between the inhabitants and the government appeared to be the most salient barriers

to a successful mobilization of pro-environmental action at an early stage [30]. The inherent dual nature of the water insufficiency and the water mismanagement discourse came across as a significant factor [2]. It is therefore interesting to observe that a common notion among several of our participants was that they, rather than the government of Cape Town, had made the changes needed to prevent “Day Zero”.

The troubled history of apartheid emerged as a backdrop and reminder that the most vulnerable groups after an environmental crisis have a history of marginalized existence [35,37]. In line with other studies, our informants emphasized that the introduction of economic sanctions to curb the water usage had sparked intergroup comparison and highlighted the significant socio-economic differences in South Africa [7]. Some also emphasized that this had nurtured conspiracy theories about a greedy government that used the water shortage to increase their revenues. This highlights the importance of trust in government and information sources to mobilize collective processes to address an environmental crisis [28].

Many of the participants highlighted the special history of South Africa and noted that the water shortage was a powerful reminder of intergroup tensions [36]. The city was built with the vision of apartheid where resources are more accessible in the affluent suburbs and lacking elsewhere. Still, other participants noted how beautiful it was that everyone now was working together towards a mutual goal and that the water situation somehow was a unifying process in a country that desperately needed unification. For some, the collective aspects of the pro-environmental action had transcended the water shortage and raised awareness about the need for social inclusiveness [34]. As one of our informants summed up in her interview, “*Do I really need more water, or does someone else need an actual home?*” This quote illustrates how the collective efforts during the water shortage made people reflect upon the past, the present and the future of a nation with a history of segregation and alienation.

From the interviews, it was evident that some of the participants had a deeper understanding of climate change. Some mentioned they planned on being vegan or going plastic-free, without it being an explicit question. For them, the drought was a clear indicator of extreme weather and climate change. In line with Stokols et al. [38], they compared the similarities between the current drought and previous droughts to current environmental disasters in Southern Africa and global events to explain their support for pro-environmental action [39]. Other informants interpreted the drought from a religious and existential perspective. Our findings lend support to the notion that predicting a person’s likelihood of pro-environmental action is difficult, even for people who have experienced the same environmental challenge first hand [16].

4.4. Implications for Further Research

We allude to Kamara et al. [13] and the need to gain a better understanding from true-to-life situations about how collective responses to an environmental crisis can be mobilized and transformed into sustainable behavior. In future research, it would be preferable to use a mixed-methods approach to validate the findings within a larger sample from diverse contextual backgrounds and differing educational levels and age spans. It would be interesting to carry out studies that could investigate cultural and cross-country differences, for instance, if social capital and trust in government would make it easier to sustain personal identity approaches and collective efforts to uphold pro-environmental action.

4.5. Study Strengths and Limitations

The 2018 drought in Cape Town represented a unique setting to investigate a topic that does not have enough in-depth studies. It is important to get the subjective experience from the front line of an environmental crisis to access deeper knowledge and important elements for future environmental crises, which there is little doubt will happen at a more rapid and extreme pace than seen before. In addition, it is important to highlight the positive emotions the participants depict; until now, the scope of research has mostly been on the negative emotions related to environmental crises.

In addition, qualitative studies of true-to-life experiences are important to accompany experimental and quantitative research.

With that being said, a number of limitations should be observed when interpreting the findings from this exploratory study. Interpretation of data will represent subjective life-experiences, cultural heritage and the inherent limitations from the researchers' personal experiences. In this case, both researchers represent an outsider's perspective since we are not permanent residents of Cape Town. This could represent a strength, in that we likely hold fewer preconceptions; nevertheless, it may also be a disadvantage in interpreting deeper social and cultural aspects of the situation. While the sample of eight participants is small, our sample provided a substantial variation in perspectives and experiences. After reviewing many hours of transcripts from firsthand participants, we experienced that data saturation was achieved in the younger cohort of our sample. When two older informants with family commitments were added to the informants, these interviews provided additional information about motives, interpersonal relations and behavioral action during the water shortage. We acknowledge that it may have provided additional new perspectives if the sample could have been extended to include even more older informants. Due to limited resources and practical issues, this was unfortunately not possible. In the present study, we have therefore elaborated on the topics of family issues and religion to include two significant topics that the older informants emphasized. Our study indicates that age and generational differences are relevant, and this should be taken into consideration in future studies.

5. Conclusions

The findings from this exploratory study help to advance knowledge in environmental psychology by offering information about how households, social groups and governance level capacities can overcome barriers and mobilize collective action to an environmental crisis [31]. Our findings from the 2018 water shortage in Cape Town suggest that when awareness is raised, people are able to adapt to new social norms and engage in collective efforts to address an imminent environmental crisis. For some, their experiences from the 2018 drought seemed to stimulate further pro-environmental behavior, but for others, the behavior changes were relatively short-lived. Social capital and trust in government and continued support from in-group members emerged as important factors in upholding long-term efforts to establish a social identity that promotes pro-environmental action and awareness. More research on cultural and generational aspects is needed, and some limitations apply. Still, we believe this study is important since it contributes to shedding light on the changing of citizens' behavior on environmental and water issues. This knowledge is needed to encourage countries to shift towards more sustainable uses of natural resources, in line with Sustainable Development Goal (SDG) 6 (clean water and sanitation) and SDG 13 (climate action) [40,41].

Author Contributions: Conceptualization, J.E. and T.E.Ø.; methodology, J.E. and T.E.Ø.; formal analysis, J.E. and T.E.Ø.; investigation, T.E.Ø.; data curation, J.E. and T.E.Ø.; writing—original draft preparation, J.E. and T.E.Ø.; writing—review and editing, J.E.; supervision, J.E.; project administration, J.E. and T.E.Ø. All authors have read and agreed to the published version of the manuscript.

Funding: The research is in part funded by a student grant from the Center for Crisis Psychology.

Conflicts of Interest: There are no conflict of interest regarding this study.

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