REGULAR PAPER

Using participatory video to share people's experiences of neotropical urban green and blue spaces with decision-makers

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Abstract

Cities are complex, socio-ecological ecosystems providing both opportunity and detriment to human health and well-being. Specifically, urban green (e.g., parks) and blue spaces (e.g., coastline) can restore human psychological well-being. In the Global South, where rapid urbanisation is posing challenges for biodiversity conservation and the mental well-being of urban human populations, there has been little research on understanding the social and environmental benefits of urban green and blue spaces, which could inform decision-makers seeking sustainable land-use planning interventions. Here, we use participatory video (using film to co-produce research) to explore the relationships people have with urban green and blue spaces in Georgetown, Guyana, and communicate these findings to decision-makers. Short films created and discussed by city residents highlighted how specific characteristics of green and blue spaces contributed to restorative quality, a sense of place, and alleviated stress. At the same time, locally specific nuances were also revealed, such as folklore associated with urban wildlife and the importance of monuments framing Guyana's complex history. A composite film was screened to government ministries, park managers, and the Mayor and City Council, who articulated intentions to change the way these spaces were managed (e.g., maintaining specific features, encouraging visitation, raising awareness, and increasing the planned distribution of new spaces).

We demonstrate how participatory video can allow participants to reflect on and change their interactions with urban green/blue spaces, while facilitating a unique and engaging dialogue between multiple stakeholders, with important, applied implications for both public health and biodiversity conservation.

1 | INTRODUCTION

By 2050, nearly 70% of the global population will be urban, attracted by prospects of wealth, education, and socio-economic progress (United Nations, 2018). Urbanisation also has implications for the health and well-being of urban dwellers, who typically experience a higher prevalence of psychological health disorders (Abbot, 2012). Yet within cities, urban green (e.g., parks) and blue spaces (e.g., coastline) provide space for restoring psychological well-being, as documented by a wealth of empirical evidence, albeit predominately from the Global North (Gascón et al., 2017; Nawrath et al., 2021). Simultaneously, green and blue spaces provide resources for biodiversity, which then deliver critical provisioning (e.g., medicinal), regulating (e.g., air purification), and cultural (e.g., inspiration) ecosystem services to humanity (TEEB, 2011). These complex socio-ecological processes are rarely examined in the Global South, where cities commonly have faster rates of population growth, poorly regulated land-use change and planning, and lower levels of transparent and accountable governance (UN-Habitat, 2016).

The ways in which urban green and blue spaces influence well-being are heterogeneous among stakeholders. In Ghana, users valued green spaces for their beauty and income-generation potential, while decision-makers valued them for recreation, education, and legacy (Guenat et al., 2019). Capturing a diversity of viewpoints is best achieved through participatory methodologies that incorporate a variety of stakeholders into the research process (Larson et al., 2016). This results in better-informed decisions about environmental management that could benefit a wider sector of society (Larson et al., 2016). Participation can lead to altered visitation behaviour and attitudes, for instance leading to well-being improvements (Kruize et al., 2019), or a sense of agency that results in environmental stewardship actions (e.g., planting trees, community gardens) (Campbell et al., 2016).

Participatory methods that facilitate creativity can elicit a more in-depth understanding of how interactions with green and blue spaces relate to well-being (Bell et al., 2016; O'Brien & Varley, 2012). Visual methodologies like video or photography can be advantageous in circumstances where individuals find difficulty expressing themselves using typical written or spoken mediums. For example, Kaley et al. (2019) used ethnographic video to explore the therapeutic effects of "green care" interventions for people with intellectual disabilities. Furthermore, given that people's experiences of green and blue spaces are highly multisensory (Franco et al., 2017), lab-based methods have proven to be effective tools to interrogate the auditory and visual aspects of nature–well-being relationships (Hedblom et al., 2014; Yu et al., 2018). However, video-based methodologies that take place in situ better reflect the real world, capturing experiences in real time rather than losing information recounted on reflection (Dinnie et al., 2013; O'Brien & Varley, 2012). Such methodologies can be particularly beneficial when paired with explanations of the subjectivities behind the footage, revealing the complexities of people's experiences (Bell et al., 2016; Dinnie et al., 2013; O'Brien & Varley, 2012).

Participatory video combines the need to represent multiple viewpoints while capturing the complexities of the real world. The methodology is characterised by a group co-creating films on a topic, drawing together collective perspectives according to what they feel is important and how they want it to be represented (Mistry & Berardi, 2012). By engaging in an audio-visually enriched research process, which strengthens and amplifies the narrative, participants are faced with new issues and ideas that may challenge or enhance their own perceptions (High et al., 2012). For example, by taking part in a participatory video process on soil conservation practice, Malawian farmers were encouraged to adopt new methods after their perceptions were changed about the value of composting methods and their own ability to apply the practice (Cai et al., 2019). Tremblay and Harris (2018) illustrated this in urban Ghana and South Africa, where participants described how video enabled them to feel an embodied, empathetic understanding of the issues surrounding (in)access to water and sanitation. Participatory video can therefore facilitate social transformation both at the participant level,

building capacity for people to voice their opinions, and at the community level, through the actions or behaviours that are subsequently more inclusive and informed about impacts on wider society.

The sharing aspects of participatory video are beneficial for influencing policy and practice. The methodology often concludes with the production of a composite film that summarises the content collected, put together by participants, facilitators, or project team members (High et al., 2012). This film can be shared with the wider community, external agencies, or decision-makers, as an engaging research product that directly incorporates the voices of participants (Thompson et al., 2017). Film screenings with decision-makers can also prompt critical discussions that generate new perspectives, which could impact future policy. A participatory video on climate change mitigation produced by a community in the Philippines was screened to government officials, who subsequently helped push through a piece of supportive legislation (Haynes & Tanner, 2015). In the Turks and the Caicos Islands, participatory video was used to communicate the voices of stakeholders in a sea turtle fishery, which resulted in amendments to the fishery legislation (Christie et al., 2014). This dialogue between multiple stakeholders is particularly important where participants represent the wider community as the intended beneficiaries of top-down decisions. Sharing the perspectives of the public with decision-makers who manage tropical urban parks is needed to communicate the multiple social and environmental benefits that might otherwise be overlooked (Ibrahim et al., 2020).

Here, we used participatory video to explore how people relate to urban green and blue spaces in Guyana, South America. Guyana is forecast to become South America's fastest growing economy due to recent discoveries of extractable oil (Panelli, 2019), so the urban landscape is likely to transform markedly. Just under half of Guyana's population live within 5 km of the coastline (Mycoo, 2017), with ~120,000 resident in its capital city, Georgetown (Bureau of Statistics, 2012). Participants co-created participatory films that were then shared with the decision-makers tasked with managing the city's green and blue spaces. We uncover the ways in which people derive well-being benefits and show how participatory video influenced perspectives in both participants and decision-makers. We highlight the implications of our findings for both public health and biodiversity conservation in developing cities like Georgetown.

2 | PARTICIPATORY VIDEO APPROACH

We focused on three sites in Georgetown: the only two, large green spaces for recreation (National Park and Botanical Gardens), and the single coastal space (the Sea Wall) that runs along the north coast of the city (Figure S1). The green spaces are managed by the Guyana government's Protected Areas Commission (PAC), which collaborated with us throughout.

2.1 | Participants

The participatory video process, conducted between January 2018 and April 2019, followed on from a broad survey of people's attitudes toward Georgetown's urban green and blue spaces in 2017 (Fisher, Bicknell, et al., 2021). Survey participants were invited to take part in this second phase. Those who responded positively were then stratified by age, known to influence green/blue spaces use and perceptions in Georgetown, rather than gender, which had no effect (Fisher, Bicknell, et al., 2021; Fisher, Irvine, et al., 2021). Eleven participants were randomly selected across the age brackets, sorted into smaller mixed-gender groups (due to equipment constraints). The core groups from a range of socio-economic backgrounds consisted of two groups of under-35-year-olds, with three and four participants respectively, and one group of four participants over 35 years old (Table S1). Group membership was kept consistent throughout the process to encourage participants to feel comfortable through their shared experiences and build a collective response over time. Participants were incentivised with the covered cost of travel and subsistence, and a complimentary meal at each workshop.

While the core groups remained consistent throughout, six additional members of the public expressed interest in participating and were invited to take part in film screenings and discussions on an *ad hoc* basis (Table S1), but not the filming and editing (which was undertaken by the core groups only). While these additional participants may have had a specific agenda to participate and thus biased the content, the flexibility and inclusivity of a wider group during discussions was useful for broadening input (with Georgetown's general public being the intended beneficiaries) and for highlighting areas of consensus.

2.2 | Project structure

We designed a seven-stage process (Figure 1), guided by existing participatory video projects (e.g., Berardi et al., 2015; Haynes & Tanner, 2015; Ranger et al., 2016; Mistry & Berardi, 2012). It began with participants meeting the research team in January 2018 (stage 1). Groups were assigned and then given a full week to collect data in their own time before returning the following week (stage 2). This cycle was repeated across the three sites (stages 2–4), with the Botanical Gardens re-visited (stage 5) to allow participants to capture any experiences they felt were important but failed to realise in week 2 due to lack of knowledge, skills, or ideas. Following analysis, a composite film was produced representing the collective opinion of all participants (stage 6), before being screened to decision-makers (government ministries, Mayor and City Council, and park managers) in April 2019 (stage 7) (see Section 2.5).

Stage 1: Introductory Workshop
- Eleven participants allocated groups
- Presentation of process
- Equipment training and distribution

Stage 2-5: On-site filming
- Film in the green/blue spaces
- Editing to create one-minute film
- Film reviews and discussions

Botanical Gardens   **Sea Wall**   **National Park**

Stage 6: Composite film produced
- Analysis of footage/transcripts
- Poor-quality content reproduced
- Composite film discussed and produced

Stage 7: Screening
- Introduction to decision-makers
- Composite film screened
- Discussion following topic guide

FIGURE 1 Diagram of the project stages, highlighting the key steps in the participatory video process

2.3 | Filming, editing, and screening

Each core group received a tablet (Samsung Galaxy Tab A), stabiliser to improve image quality, and access to a video-editing application (PowerDirector for Android). Participants were asked to contemplate each site while considering: "What affects your emotions in a positive or negative way in Georgetown's outdoor public spaces?" A set of prompts were developed to invite participants to think more comprehensively about each location, based on the green and blue spaces experience literature (Bell et al., 2015, 2016; Hartig et al., 2014). These were discussed and further co-designed with Guyanese facilitators to ensure they would be interpreted correctly by participants. Prompts included: "What makes this place come alive?;" "What are the features that you notice and how do they make you feel?;" "What makes this place important or meaningful and why, and what adds or takes away from that?;" "What experiences might you want to capture?;" and "Are there any stories you heard about this area?" These were repeated throughout the storyboarding, filming, editing, screening, and discussion processes.

Participants were asked to collect footage from the allocated site during the week as a core group, when they had time or felt there was something important to capture. This ensured the data were more authentic, minimising the influence of social desirability and foreign-imposed perspectives, while giving agency and encouraging action on the issues that affect those involved in the process. At the workshop ending each week, the core groups edited their footage (rushes and stills) into a 1-minute film, supported by three experienced Guyanese facilitators (MAP, HY, AH) to ensure all group members contributed equally. The prompts were reiterated here to guide editing decisions. Films were kept this length to ensure the process was not arduous and to maintain attention in the screenings.

Films from each site were screened and discussed with all 17 participants (11 from the core groups and six additional group members). Discussions followed no strict format, but began with people offering their opinions about the quality of filming, and progressed until they came to a natural close. Focused discussions were then held within each core group to understand the intended meaning of the film content. This enabled a richer understanding through exposing opinions not captured in the films themselves. Finally, evaluation forms were issued to collect feedback on the process and capture attitudes toward the project (see Supporting Information: Section SI3).

2.4 | Transcription and coding analysis

We transcribed 389 rushes and stills from the editing process, 13 one-minute films, and 39 voice recordings from focus groups and wider discussions using NVivo (Version 11, QSR International Ply Ltd). Our coding approach was to explore perspectives in-depth, identify recurrent themes, highlight nuances, and capture sentiment. Similar codes were grouped into parent codes and domains, which we then interpreted with references from individual participants, balanced with theoretical literature on urban green/blue spaces experiences and human health and well-being (Hartig et al., 2014; Kaplan, 1995; Proshansky et al., 1983). Five transcripts (from stages 2 to 4) were independently coded by three authors (JCF, JM, MAP) to validate the approach taken to coding. As interpretations of the dialogue were consistent, the remaining content was subsequently coded by one author (JCF).

2.5 | Screening to decision-makers

A six-minute composite film, representing the views of all 17 participants (11 from the core groups and six additional wider group members) across the three sites, was produced by two authors (JCF, MAP). The composite film used participants' footage with some content reproduced to improve the visual/sound quality. The film reflected the quantity, sentiment, and diversity of domains and narratives that emerged from the analysis, but was kept short to maintain audience interest. The draft composite film was screened to all available participants prior to producing the final edit to gauge feedback and attain their agreement that the editorial decisions we made accurately portrayed their opinions.

Seven decision-making authorities with influence over Georgetown's public outdoor spaces were invited to assign relevant individuals to attend the composite film screening (see Supporting Information: Section SI4a). This screening was an integral part of a three-hour deliberative workshop entitled "The benefits of Georgetown's green and blue infrastructure." The workshop was co-led with a Guyanese facilitator (NH). We introduced the workshop by stating our intention to communicate opinions from the public, and to inspire decision-makers to take action on delivering Guyana's national development policies and biodiversity commitments. During the screening of the composite film, we asked attendees to

think about answers to six questions designed to stimulate engagement with the content (see Supporting Information: Section SI4b), which subsequently formed the basis of a 45-minute discussion.

2.6 | Ethical considerations

Participatory video raises a number of ethical dilemmas around data ownership, gaining consent from people filmed by participants, confidentiality, and the power dynamics between the researcher and "researched" (Milne, 2016; Mistry et al., 2015). Primarily, we sought to counter these issues by transparency in our consent form (Supporting Information: Section SI5). Our process received considerable review both internationally (University of Kent, UK) and in-country (PAC, Guyana). We endeavoured to be both adaptive and reflective to participants and decision-makers throughout the project, as well as inclusive and considerate with our editorial decisions. As the data were owned by participants, they were encouraged to keep copies of the footage with consent from fellow group members, but not to share them publicly.

3 | RESULTS

The content produced by participants ranged from close-up shots of bird behaviour in the Botanical Gardens to sped-up sequences of people exercising in the National Park, through to busy Friday night Sea Wall parties captured from a car window. The diversity of this audio-visual content resonated between participants, and led to a varied, rich, and lively discussion.

We identified 80 codes across the films, footage, and discussions (Table 1). Five domains emerged from this iterative deductive process, which we identified as factors (Features, Perceptions) and processes (Context) that influence how people experience Georgetown's public spaces (Well-being benefits/dis-benefits). The "Methodological" category referred to the learning experience associated with the participatory video process, management recommendations, and ways that participants felt the film should be used. Content sentiment was 62% positive, 20% negative, and the remainder either mixed or neutral.

Certain space characteristics affected people's well-being. For instance, participants filmed large trees, plants, and green grass, then remarked on the presence of vegetation relating to positive emotions. Manicured vegetation was frequently captured, including flowerbeds and the tree-lined promenade at the entrance to the Botanical Gardens. One participant mentioned these in the context of a social gathering:

> The grass, the palm trees, the flowers, and so forth. It feel kind of cosy whenever you're here. I don't know, it's away from home, it's just different … all the green, it's really nice, and as I say it's really cosy and you can be under the tree with your family and some little thing with your family and you have the privacy there. (Female, 18–35)

Vivid descriptions of the Sea Wall illustrated its positive influence on well-being, particularly its linearity as a space for exercise, and the repeated motion of the waves helping people "get away" from busy lifestyles. Others captured the sense of landscape change. Low tides, for example, exposed the sand and mud, which made one participant feel "dreary," while high tides elicited feelings of being relaxed and comfortable. For another, the aesthetic qualities of the water were associated with a sense of mystery and a restorative experience (being away from the city and fascination, defined as objects or scenes that hold ones attention, provide an opportunity for reflection and recovery of attentional fatigue; Kaplan, 1995):

> Mostly for me it's the water, that's the only thing I really go there to look at, the water. And the ships, how they passing. Sometimes I used to go there, and I used to think, I want to go to the ocean. [Laughing] … just to see what's beyond there … (Male, 35+)

Despite very little vegetation at the Sea Wall, participants described it as "nature-oriented," a space to take refuge from city stresses. Other biotic and abiotic features positively contributed to feelings of escape, physiological relaxation (stress-reduction; Hartig et al., 2014), and amazement, such as the breeze and the migratory behaviour of coastal sea birds (see Supporting Information: Figure S2 for film stills):

TABLE 1 Codes, parent codes, and domains emerging from films, footage, and transcript materials from five participatory video workshops across three sites (two green spaces, the Botanical Gardens and National Park, and one coastal blue space, the Sea Wall) in Georgetown, Guyana

Code	Parent code	Domain
Alive/brought to life; attention restoration or stress reduction; attraction; clear your mind; cosiness; excitement/mystery/adventure; fascination/amazement; freedom/escape; patriotism; peace/calm; relaxing/chill; scared; serenity; shade; value		Well-being benefits/dis-benefits
Blue space feature; breeze/wind; facilities; grey space; historic monument; lighting/light/dark; litter; outdoors; pathway; sky; vendors; waves; weather; zoo	Abiotic	Features
Abundance of wildlife; birds; caiman; fish; flowers; horses/ponies; manatees; nature; snakes; species richness; stray dogs; trees; vegetation; wildlife; wildlife movement	Biotic	
Atmosphere; beauty; cleanliness; colour; fresh air; manicured nature; safety/security; scenery; seclusion; smell; sounds; views		Perceptions
Children & family; drugs & homelessness; gender issues; holiday events; human–nature interactions; memories; physical activity/exercise; religious practice; romantic space; rumours or stories; socialising; socio-economic importance; visit frequency; weekends	Social	Context
Accessibility; back of the gardens; flooding; spacious/open space	Spatial	
Cooperation and agreement; film critique; learning experience; management recommendations; raise awareness; tourism		Methodological

Participants were asked "What affects your emotions in a positive or negative way in Georgetown's outdoor public spaces?" Similar codes were congregated, denoted by a slash "/".

> I like the breeze it's just, you know if you're travelling in a car you don't get that much breeze to inhale and exhale, and feel relieved of stresses and so, so I like that. I like seeing birds, flying ... they were moving in flocks. Like together, so, I like that. It's just an amazing scene it also adds to the Sea Wall ocean-y atmospheric ting ... It's like everything comes together to form this beautiful scenery. (Female, 18–35)

Participants discussed the sensory experience of green space, offering an escape from city life. The mechanical sounds of bush cutters (strimmers) and traffic were described as detracting from this peaceful experience. By contrast, birdsong was considered to be a stimulus for feeling calm and serene:

> That's the most beautiful thing about here [Botanical Gardens] and it's so unique, you come and enjoy the cool breeze and the plants, and the smell of the plants and the birds chirping ... Like this morning we went to the park again and we were sitting on those large tyres and it was so beautiful. The silence and the birds chirping. (Female, 35+)

Benches offer somewhere to relax, both in the green spaces and at the Sea Wall, helping one individual escape his daily life:

> You just go and you sit in the chair and you just stare into the ocean you know like you just lost in your own world. (Male, 35–44)

Similarly, features that encouraged visitors, including signage and structured pathways, contributed to a social atmosphere and feelings of safety and relaxation. This was important in quieter locations, such as at the back of the Botanical Gardens:

> Ever since, before they opened the back there, I never actually went past, down by the bridge, but since they opened the back there you can drive there, so it's peaceful and nice, and so, you kinda get to see it, so I feel like a lot more safer, or maybe because it's peaceful. I feel a lot safer, but, I feel a lot safer now that I've actually just, passed it. And I see people picnicking or whatever, it feels nice, calming vibe. (Female, 18–35)

This overgrown part of the Botanical Gardens is associated with criminal activity and insecurity, particularly at dusk. Participants drew comparisons with the National Park, which is relatively more manicured, consistently referring to light and dark in terms of safety:

I would feel more safer in the National Park than the Botanical Gardens because of it having, to me, the entrances are more accessible, and for some reason I feel like it's more transparent, you can see through, other than the Botanical Gardens having a lot of trees so, I feel more safe with it, and a lot of persons, they do. (Female, 18–35)

The importance of a "social atmosphere" in Georgetown's green spaces was a recurring narrative, facilitated by the presence of picnic tables and benabs (small wooden shelters), available for hosting social events at no monetary cost. Likewise, the Sea Wall, running parallel to an accessible main road, is a centre for social gatherings on weekend evenings, serviced by vendors playing music and selling food and drinks. Nearly all participants recalled positive memories from this space, and noted its accessibility:

It's easily accessible, I don't have to pay a fee to go to the Sea Wall, it's a quick reservation you know, if your friends link up somewhere, everybody can meet at the Sea Wall, we have the stands there selling stuff and you can sit there, eat, and have a good conversation. (Female, 18–35)

Many participants talked about historic monuments and biotic features contributing synergistically to a sense of place (feelings of place attachment, belonging, and identity; Proshansky et al., 1983) at all three sites:

I think the fact that you can find both nature and history in one spot, it makes you whole. Because for me nature is a part of us, because it brings about good feelings, such as feeling peaceful, happy, relaxed, stuff like that, and then the history brings in patriotism, feeling proud, feeling proud of your country and all that it will have accomplished back then until now. So both of them is kind of a wholesomeness in some place. (Female, 18–35)

Many felt that monuments were also important for helping younger generations learn about Guyanese history. As such, these locations were seen as social spaces that attracted families and, in turn, contributed to a sense of safety:

When my daughter was younger she would take her bicycle and ride around the monument area there, so to me it's a nice safe area on the Sea Wall that the children can socialise and then they have other children going to that same area so that can you know, meet new friends and play and it's away from the road. (Female, 35+)

Litter at the Sea Wall was disliked, associated with bad smells and being unsightly. Poor lighting and a lack of security brought about bad memories for some, reinforcing the persistent fear of being robbed. These were not only barriers to using the Sea Wall, but directly prevented participants from perceiving it as beautiful:

You still would tend to have a few robberies and such, because I was once robbed out there, and um, I think it was because I was near the part where he was talking about, with the darkness, and stuff like that. So I think they really need to um, just modernise it a bit in terms of lightening, so you can see properly what's going on. Also the garbage at certain parts it's really, really heavy. It's a lot, it's dirty. And the smells, it can really take away from the beauty of all that's going on. (Female, 18–35)

A population of semi-wild West Indian manatees (*Trichechus manatus*) reside in the ponds of both green spaces. Interactions with manatees were constantly referred to as "exciting" and "fascinating," associated with meaningful childhood memories. Multiple participants mentioned folklore, which says that the manatees rescue those that fall into the ponds. One participant recounted the manatee rescuing her daughter:

She was about seven. So the edges of the pond it was slippery, so she slipped into the pond, and then, well, we saw, and we were trying to help her but she said she came out on her own. She came up to the edge like. She said that the manatee literally pushed her up to the edge, and then we were able to just pull her. (Female, 35+)

While attitudes toward manatees were generally positive, one participant, responsible for a third of all negative content, remarked on his fear:

I was actually scared. I was actually very scared to imagine one of them touching me ... They're scary. (Male, 18–35)

This same individual also had a negative attitude toward "ocean life" on the Sea Wall, using references to light and dark to describe these fears, as well as fears toward snakes:

> They [the green spaces] still be too dark, to some points, it's not fully light it's not all around, it's like the snakes they gonna eat somebody else.

He suggested that many of his perceptions were based on stories originating from his family. Surprisingly, this participant also chose to film at the Sea Wall in the evening, with the intention of securing footage of barn owls, which to him symbolised wisdom and strength.

The one-minute screening discussions enabled a unique shared learning experience, where participants gained new knowledge from undertaking this independent research about spaces in Georgetown. One participant commented about noticing new features in the National Park:

> I never knew that there was the map of Guyana, the pond there, I never knew that. I never knew that the trench [canal] that was there, the manatees was actually in there. I never knew caimans were there. (Female, 18–35)

These transformative effects were apparent when one individual remarked on the historical importance of a flooding event at the Sea Wall, and how it was managed during Guyana's colonial history, creating a strong sense of place and feelings of fascination:

> I remember then they had the 2005 flood in Guyana, and all the waters were actually over the wall and it was really panicking especially for persons living on the east coast. So the government had to be working extremely hard with the kokers [sluice gates] and everything to get the waters out instead of in, and moving, so, when I remember the flood I try to picture myself back in that era when they had the flood and then the Dutch try to put the concretes and so on, so it has quite an amazing history as to how it established, and I really liked it. (Female, 18–35)

Participants mentioned how the participatory video process resulted in a positive change in attitude, accentuating their willingness to learn more about and conserve Georgetown's green and coastal blue spaces, as well as visit them more often:

> [The project] was informative and educational but mostly it brought me closer with nature and its beauty. (Male, 35+)

At the screening of the composite film, decision-makers revealed a newfound understanding and intent to respond to the issues presented in the composite film. Suggested changes could, therefore, improve the public experience:

> As Guyana is to become a green state, improving these green spaces should be a fundamental priority for government. And improvement not just in the awareness aspect, but improvements to the supporting infrastructure as in lighting, and security. (Ministry for Public Infrastructure)

Three decision-makers intended to raise awareness of the relationship between nature and well-being with colleagues to encourage changes from the authorities that manage Georgetown's green and blue spaces:

> For my ministry, we probably recommend to them that at their workshops and seminars, we probably dedicate a few minutes to sensitise persons on the benefits of the park and the Sea Wall and green spaces. (Ministry for Natural Resource Management)

Some of the decision-makers stated their intention to integrate new green and blue spaces to reduce inequalities associated with access and, subsequently, human well-being:

Being a part of land policy and planning division we deal with plans that are associated with land and we need to recognise the importance of when we open up land we can set aside land, to be a green space, so that would encourage these types of values or so, in the environment. (Guyana Lands and Surveys)

While there was some discussion about the inherent culture of Guyanese citizens and "the way that we think," several individuals suggested educational campaigns to raise public awareness of the benefits of green and blue spaces for well-being, mentioned as aligning with the Government's wider sustainable development plans:

This ties in very well with the Green State Development Strategy … in 2021 we're going to have the ban of single use plastics, so I think, for me personally, I have this idea of kind of having awareness sessions right on the Sea Walls, on weekends, when citizens are out most. (Representative of the Environmental Protection Agency)

4 | DISCUSSION

Using participatory video enabled participants to capture the audio-visual, experiential aspects of their visits to green and blue spaces in Georgetown. Green spaces were perceived as somewhere natural and calming to escape busy city life, aligning with findings in the Global North where green spaces are perceived to contribute to feelings of attention restoration and positive emotion (Bell et al., 2016; White et al., 2013), but also quantitative evidence about how perceptions of urban green spaces influence people's emotional well-being in Georgetown (Fisher, Irvine, et al., 2021). Likewise, the Sea Wall was described as restorative, despite it comprising mostly concrete and running parallel to a main road, suggesting that oceanic views disproportionately influenced people's experiences. Findings from Germany contend that people's thoughts and senses in urban blue spaces are primarily driven by the linearity of the waterways, alongside the motion and fluidity of the water itself (Völker & Kistemann, 2015).

Specific features contributed to the restorative quality of Georgetown's green and coastal blue spaces. Participants described how the Sea Wall evoked feelings of fascination and escape, referencing tides, calm "glistening" seas, and crashing waves. This sense of landscape change is often attributed to experiences in natural environments (Bell et al., 2016; Folmer et al., 2018), particularly coastal blue spaces (Bell et al., 2015). In Georgetown, the sight and sounds of birds were related to feelings of fascination, relaxation, and escape. This is supported by quantitative evidence from Georgetown showing how perceiving a high diversity of birds and natural sounds like birdsong can enhance the restorative quality and subsequent well-being benefits of urban green spaces (Fisher, Irvine, et al., 2021). As participants in Georgetown recounted, coastal birds in the UK also evoke fascination through unexpected encounters or flocking behaviours (Bell et al., 2017; White et al., 2017). Together, our findings show that specific features, like water and birdlife, stimulate a rich and multi-sensory experience that positively affects human well-being.

Aside from consistent positive sentiment toward birdlife, a diversity of attitudes was captured for other taxa. It was apparent that folklore was responsible for much of the negative attitudes expressed towards biodiversity, specifically manatees, snakes, and fish. Negative misconceptions of wildlife can lead to persecution, as seen with the Anaimalai gliding frog (*Rhacophorus pseudomalabaricus*) in India (Kanagavel et al., 2017) and the aye-aye lemur (*Daubentonia madagascariensis*) in Madagascar (Simons & Meyers, 2001), which are considered Critically Endangered and Endangered by the IUCN respectively. Elsewhere in Guyana, local communities alongside an NGO successfully prevented the continued population decline of *Arapaima* sp., a large freshwater fish surrounded by regional taboo and folklore, by changing the social norms regarding overfishing (Fernandes, 2006). This demonstrates how interventions to influence knowledge and attitudes could result in more positive human–wildlife interactions. Indeed, participants with negative attitudes toward wildlife reviewed their own perspectives after interacting with others during the project, likely as the majority of participants with positive attitudes influenced the group consensus. Through knowledge-sharing, participatory video provided an avenue through which participants could critically reflect on their own cultural values of wildlife.

Across sociodemographic groups, the features of the urban green and coastal blue spaces were closely linked to social cohesion (mutual caring and connectedness, which in turn shapes community interactions; Weinstein et al., 2015). For example, benabs, tree canopies, and the sea breeze were necessary in the tropical climate for people to stay and gather, leading to the creation of memories. Vendors also supplied refreshments, highlighting the informal economies that operate in these spaces. The role of urban green space for social cohesion has been widely documented (for a review, see Hartig et al., 2014), including in India (Gopal & Nagendra, 2014) and Colombia (Ordóñez-Barona & Duinker, 2014), where gatherings are concentrated in green spaces as they offer an escape from the urban heat.

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In Georgetown, feelings of place attachment and identity were fostered by the prominence of several historic monuments reflecting Guyanese political history. Coupled with biotic features, these monuments enabled participants to further their knowledge of, and identify with, both Guyana's history and natural heritage. Consequently, older participants, particularly those with children, felt that these experiences were important for future generations. International agreements, such as the World Heritage Convention, advocate the integration of cultural features into recreational spaces for human well-being, including in cities specifically (Trzyna et al., 2014).

Concern for personal safety was a dominant narrative, inhibiting positive well-being experiences in Georgetown's green and coastal blue spaces, as documented in quantitative work elsewhere (Fisher, Bicknell, et al., 2021). Feeling unsafe in urban green spaces is a recurrent theme in green space research and can prevent people using sites altogether (Cronin-de-Chavez et al., 2019). In Georgetown, overgrown vegetation was described as potentially harbouring criminals or dangerous animals. In particular, the densely vegetated back half of the Botanical Gardens was frequently mentioned. Echoing findings from the UK (Pitt, 2019), all our participants said that safety concerns would be eased by enhancing the lighting, safety, and security measures throughout the green and coastal blue spaces, and requested that decision-makers sought to make these improvements.

By using video to actively engage with outdoor spaces *in situ* and acquire new knowledge (e.g., visiting historic monuments, interacting with wildlife), participants appeared to experience positive well-being benefits where they had not done so previously. This message was then conveyed to other participants through the one-minute film screenings and discussions. Moreover, all participants developed their perspectives on Georgetown's green and blue spaces, regardless of their original motivation to take part in the participatory video process. By developing agency, participants discussed intentions to share new knowledge and perspectives with social circles outside the project, visit the green/blue spaces more often, and strive to keep them maintained. Indeed, Truong and Clayton (2020) argue that technology-mediated experiences of nature can be used to encourage engagement, nature connectedness, and pro-environmental behaviours in others. As the participatory video process progressed, the participants focused increasingly on what messages they wanted decision-makers to hear to inspire action that would improve Georgetown's outdoor spaces.

Participatory video is a dynamic and "messy" research process (Mistry et al., 2014). Involving Guyanese facilitators raises a number of ethical dilemmas, as facilitators are challenged with co-producing research outcomes that satisfy both their foreign academic collaborators and the participants (Mistry et al., 2015). On one hand, their contribution ensured that the project's delivery and outcomes better reflected Guyanese as opposed to Western-imposed perspectives. Indeed, the participants may have felt more comfortable communicating with Guyanese facilitators than foreigners, as shown elsewhere in the Guianas (Tschirhart et al., 2016). On the other hand, facilitators were recruited and trained by the foreign team to deliver the project objectives. If the power had been devolved entirely to a Guyanese research team, the emergent narratives may have differed completely (Tschirhart et al., 2016). Likewise, because a foreign member of the project team was always involved in the research, it is possible that participant responses may have been biased by perceived social desirability. To minimise this dynamic, the participants collected video material in their own time, thus creating authentic data and knowledge for themselves, on their own terms. The facilitators, who are interested in biodiversity and are users of Georgetown's outdoor spaces themselves, were ultimately interested in improvements to green and blue spaces for both people and conservation. This final point resonates with broader aims of participatory video, to give agency and encourage action on the issues that affect those involved in the process, including participants, facilitators, and the wider community (Milne, 2016). While the flexibility and freedom afforded by participatory video directly impacted the research outcomes, it was inclusive to participants' needs and willingness to engage in a rich and often complex subject matter, and was well-suited for confronting the traditional barrier between the researcher and the "researched."

After screening the composite film, decision-makers expressed their intent to deliver action through implementing changes to the upkeep and design of current and future green and blue spaces to improve the well-being of Georgetown's residents at large. Propositions included improving security and removing litter, raising awareness among the public (and among colleagues within decision-makers' institutions) about the well-being benefits these spaces offer, and planning for new green spaces to ensure equitable access across Georgetown. These suggestions were in line with the messages relayed by participants, reiterating how knowledge-sharing through creative visual methodologies can lead to successful environmental management (Ranger et al., 2016; Tschirhart et al., 2016). As green and blue spaces users themselves, many decision-makers related anecdotally to the film content, sharing the notion of well-being with the voices of participants. As such, the composite film acted as a vehicle for both participants and decision-makers to engage with the issues surrounding human well-being in urban green and blue spaces, learning through the exchange of ideas, both horizontally (participant to another, decision-maker to another) and vertically (from participant to decision-maker).

Despite some decision-makers stating their intention to deliver on the film's messages as their public duty, there was still ambiguity in exactly how actions would be taken. Although the decision-makers who attended the composite film screening were largely known to one another, there was little disagreement between opinions. Certainly, a foreign researcher co-leading the workshop may have led to response bias as a consequence of social desirability. Nonetheless, decision-makers agreed between themselves on the need to raise awareness, increase education, and encourage the public to interact in a deeper way with the city's outdoor spaces (e.g., through media advertisements, birding tours, public "wellness" programmes). Holding additional screenings and discussions while involving a wider sector of the public could have expanded the breadth of public opinion represented in the project, such as the vendors who harness these spaces for transactional purposes. Future work should focus on engaging individuals who have difficulty accessing green and coastal blue spaces (e.g., people with limited mobility) or socially excluded groups (Kaley et al., 2019). More research is needed to form a legitimate evidence-base to inform management and policy decisions. Ultimately, decision-makers will have to make trade-offs, but in the face of growing pressures on the psychological health of urban populations and the persistence of biodiversity, changing attitudes through participatory research could provide tangible benefits to both human well-being and conservation.

5 | CONCLUSION

Using participatory video, we illustrate how specific characteristics of green and coastal blue spaces benefit the well-being of residents, enhancing the multisensory experience, improving accessibility, a sense of place, and social cohesion. Our findings were in concert with evidence from the Global North, implying that positive nature–well-being relationships are cross-cultural. However, locally relevant nuances were also apparent, such as beliefs about manatee behaviour, and Guyana's complex colonial history enhancing the importance of its historical monuments. We found that participatory video was an experiential learning process for participants through its dynamic and iterative methodology, which led to a more authentic and communicable research product that was shared with decision-makers. Both participants and decision-makers were encouraged to think differently about the urban green and coastal blue spaces in the city and strive for improvements. Follow-up work will elucidate whether these intentions are translated into informed and sustainable urban planning initiatives that maximise human well-being. Guyana, set to undergo a period of rapid economic growth (Panelli, 2019), has the opportunity to develop policies to enhance and restore both new and urban green and blue spaces for the well-being of its urban population. By amplifying the public's voices, a participatory video process like the one presented here could be integrated to help design more effective policies that benefit a wider sector of society.

DATA AVAILABILITY STATEMENT
The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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