

## **Strengthening the parent–child relationship through urban nature**

### **i. Research context:**

According to the 2020 Poverty Situation Report by the government, 274,900 children under the age of 18 in Hong Kong were found to be living in poverty. The report also highlighted many of these families are working poor or single parents. While the living space of these families are generally confined, children have to spend most of their time staying at home since parents have long working hours as well as unable to afford additional money allowing them to join different after school activities. Chronic stress of both parents and children thus become a common issue among low-income families. The outbreak of Covid-19 has further exacerbated the situation with more frequent conflicts between children and parents. The worsened parent-child relationships would take a long time to recover. In partnership with the social enterprise Nature Bathing, we are launching a community health program focused on nature play and healing for vulnerable communities. We aim to harness the healing power of nature as a preventive support for community mental health and well-being, while also encouraging the effective use of urban natural resources.

### **ii. Aim and hypotheses to be tested:**

This study aims to examine the impact of nature-based activities on the parent–child relationship and children’s emotional regulation.

H1: Nature-based activities could enhance parents and children’s nature connectedness.

H2: Parent–child relationship and children’s emotional regulation are mediated by change in nature connectedness.

### **iii. Research Methods**

#### *Study site*

We selected communities in Yuen Long, Tin Shui Wai (part of Yuen Long), and Tuen Mun due to their low socio-economic status and high child poverty rates. These areas have constantly high number of reported child abuse cases in the past ten years where Tuen Mun was the top in 2016. Moreover, the three communities all have large public parks which are ideal locations to provide exposure to nature settings as well as accessible for

the families to join the activities. In this study, the families can develop a habit of spending regular time in their neighbourhood parks in the future.

### *Target population*

The target groups include low-income families with young children, families of SEN children, single-parent families, families with poor parenting skills or other families in need. We will partner with

local NGOs to recruit these families in need. Priority will be given to low-income families supported by the Kindergarten and Child Care Centre Fee Remission Scheme of The Student Finance Office, as well as families receiving CSSA. In the meantime, our public education resources will also benefit teachers and social workers from NGO service units or kindergartens as they utilize the tools to carry out Nature Healing activities with their users. Family members of stressed families will also directly benefit, as the improved well-being of one member leads to more harmonious family relationships. As families share their experiences, neighbours and friends can indirectly benefit and may potentially be recruited to become new participants in the programme.

### *Study procedures*

The study uses a RCT design to estimate the causal impact of nature-based activities on the parent–child relationship and children’s emotional regulation. The experimental procedure was explained to potential participants in a recruitment email, which required them to send their informed consent before participating. After consenting to participate, all parents will be asked to complete a questionnaire containing questions from four validated scales to measure baseline family relationship and emotional health conditions. i.e. Nature Connection Index (NCI), Short Warwick–Edinburgh Mental Well-being Scale (SWEMWBS), Child–parent relationship scale (CPRS), and Children's Emotion Management Scale (CEMS) (Appendix 1). For the intervention group, 50 low-income families (around 100 people in total) will be invited to experience touching the lawn barefoot and lying down to relax. Participants will also engage in nature-based games to enhance their well-being, increase creativity, and improve mood. Additionally, collective nature-inspired music and jamming activities will facilitate social bonding and encourage community interaction, while supporting participants in forming habits of connecting with nature in daily life for sustainable overall well-being. The families in the control group

were not asked any specific tasks during the period. After completing the nature-based activity, participants will be asked to complete the initial questionnaire again.

#### *Data analysis*

Quantitative data (i.e. questionnaire): A repeated measures analysis of covariance will assess the fidelity with which results in changes in family relationship and emotional health during the intervention. Paired samples t-tests will be used to further investigate differences within each group. An intention-to-treat (ITT) analysis will be performed on outcomes in which all participants are included with drop-outs assigned a follow-up value at baseline. All analyses will be performed using the IBM SPSS Statistics v. 27.0 software (IBM Corp., Armonk, NY, USA).

## Appendix 1.

### Questions for children

#### 1. Nature Connection Index (NCI)

The following questions are about you and nature. By nature, we mean all types of natural environment and all the plants and animals living in them.

	Completely Disagree					Completely Agree	
I always find beauty in nature.	1	2	3	4	5	6	7
I always treat nature with respect.	1	2	3	4	5	6	7
Being in nature makes me very happy.	1	2	3	4	5	6	7
Spending time in nature is very important to me.	1	2	3	4	5	6	7
I find being in nature really amazing.	1	2	3	4	5	6	7
I feel part of nature.	1	2	3	4	5	6	7

#### 2. Short Warwick–Edinburgh Mental Well-being Scale (SWEMWBS)

Please tick the box that describes how you have been feeling for the last few weeks.

	None of the time				All of the time
I have things to look forward to.	1	2	3	4	5
I've been helping other people.	1	2	3	4	5
I feel relaxed.	1	2	3	4	5
If I have problems, I know what to do about them.	1	2	3	4	5
I found it easy to pay attention.	1	2	3	4	5
I feel like I have friends	1	2	3	4	5
I've been able to make my own choices.	1	2	3	4	5

### Questions for parents (mother or father)

### 1. Nature Connection Index (NCI)

The following questions are about you and nature. By nature, we mean all types of natural environment and all the plants and animals living in them.

	Completely Disagree					Completely Agree	
I always find beauty in nature.	1	2	3	4	5	6	7
I always treat nature with respect.	1	2	3	4	5	6	7
Being in nature makes me very happy.	1	2	3	4	5	6	7
Spending time in nature is very important to me.	1	2	3	4	5	6	7
I find being in nature really amazing.	1	2	3	4	5	6	7
I feel part of nature.	1	2	3	4	5	6	7

### 2. Child-parent relationship scale (CPRS)

Please reflect on the degree to which each of the following statements currently applies to your relationship with your child. Please circle the answer you most agree with.

	Definitely does not apply				Definitely applies
I share an affectionate, warm relationship with my child.	1	2	3	4	5
My child and I always seem to be struggling with each other.	1	2	3	4	5
If upset, my child will seek comfort from me.	1	2	3	4	5
My child is uncomfortable with physical affection or touch from me.	1	2	3	4	5
My child values his/her relationship with me.	1	2	3	4	5
When I praise my child, he/she beams with pride.	1	2	3	4	5
My child spontaneously shares information about himself/herself.	1	2	3	4	5
My child easily becomes angry at me.	1	2	3	4	5
It is easy to be in tune with what my child is feeling.	1	2	3	4	5
My child remains angry or is resistant after being disciplined.	1	2	3	4	5
Dealing with my child drains my energy.	1	2	3	4	5

When my child is in a bad mood, I know we're in for a long and difficult day.	1	2	3	4	5
My child's feelings toward me can be unpredictable or can change suddenly.	1	2	3	4	5
My child is sneaky or manipulative with me.	1	2	3	4	5
My child openly shares his/her feelings and experiences with me.	1	2	3	4	5

### 3. Children's Emotion Management Scale (CEMS)

Please circle the response that best describes your child/adolescent's behaviour when he/she is feeling mad/sad/worried.

	Hardly	Sometimes	Often
<b>My child does things like slam doors when he/she is mad.</b>	1	2	3
<b>My child attacks whatever it is that makes him/her very angry.</b>	1	2	3
<b>My child says mean things to others when he/she is mad.</b>	1	2	3
<b>My child whines/fusses about what's making him/her sad.</b>	1	2	3
<b>My child cries and carries on when he/she is sad.</b>	1	2	3
<b>My child does things like mope around when he/she is sad.</b>	1	2	3
<b>My child does things like cry and carry on when he/she is worried.</b>	1	2	3
<b>My child keeps whining about how worried he/she is.</b>	1	2	3
<b>My child can't stop him/herself from acting really worried</b>	1	2	3

### 4. Personal information

- Children age / gender:

## **INFORMATION SHEET**

### **Strengthening the parent–child relationship through urban nature**

You are invited to participate in the above project conducted by Dr Eun Yeong CHOE, who is a Research Assistant Professor of the School of Design at The Hong Kong Polytechnic University. The project has been approved by the PolyU Institutional Review Board (PolyU IRB) (**Reference Number: HSEARS20241122002**).

This project aims to strengthen the parent–child relationship through nature-based activity. **You are invited to complete a questionnaire, which will take you 5-10 minutes.** The questions include validated scales for Nature Connection Index (NCI), Short Warwick–Edinburgh Mental Well-being Scale (SWEMWBS), Child–parent relationship scale (CPRS), Children's Emotion Management Scale (CEMS). **You will be asked to complete this questionnaire twice: once before and once after the nature-based activity.**

The information you provide as part of the project is the research data. Any research data from which you can be identified is known as personal data. Personal data does not include data where the identity has been removed (anonymous data). We will minimize our use of personal data in the study as much as possible. The researcher team will have access to personal data and research data for the purposes of the study. Responsible members of The Hong Kong Polytechnic University may be given access for monitoring and/or audit of the research.

**All information related to you will remain confidential and data extracted from your questionnaires will be protected by passwords and other relevant security procedures.** The information collected will be kept until one year after project completion/publication. The Hong Kong Polytechnic University takes reasonable precautions to prevent the loss, misappropriation, unauthorized access or destruction of the information you provide.

**You have every right to withdraw from the study before or during the measurement without penalty of any kind.**

If you have any enquiries, you may ask our helpers now or later, even after the study has started.

You may contact **Dr Eun Yeong CHOE (tel. no.: 27664705/ email: eunyeong.choe@polyu.edu.hk)** of PolyU under the following situations:

- a. if you have any further enquiries in relation to the study even after the study;
- b. if, under very rare conditions, you become injured as a result of your participation in the study; or
- c. if you want to get access to/or change your personal data before 31 December 2024.

In the event you have any complaints about the conduct of this research study, you may contact the Secretary of PolyU Institutional Review Board in writing

(institutional.review.board@polyu.edu.hk) stating clearly the responsible person and department of this study as well as the Reference Number.

In case of a serious adverse event<sup>1</sup>, please report to the Principal Investigator/Chief Investigator immediately and the Principal Investigator/Chief Investigator will be required to report it to the PolyU IRB within 48 hours upon the receipt of your report.

Thank you for your interest in participating in this study.

Dr Eun Yeong CHOE

Principal Investigator

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<sup>1</sup> SAE is any adverse event that:

- results in death
- is life threatening, or places the subject at immediate risk of death from the event as it occurred
- leads to hospitalization or prolonged hospitalization of a subject
- causes a subject persistent or significant disability or incapacity
- leads to congenital anomalies or birth defects
- is another condition which investigators judge to represent significant hazards

(Reference: NIA Adverse Event and Serious Adverse Event Guidelines.

<https://www.nia.nih.gov/sites/default/files/2018-09/nia-ae-and-sae-guidelines-2018.pdf>)



## CONSENT TO PARTICIPATE IN RESEARCH

### Strengthening the parent-child relationship through urban nature

I \_\_\_\_\_ hereby consent to participate in the captioned research conducted by Dr Eun-Yeong Choe.

I understand that information obtained from this research may be used in future research and published. However, my right to privacy will be retained, i.e. my personal details will not be revealed.

The procedure as set out in the attached information sheet has been fully explained. I understand the benefit and risks involved. My participation in the project is voluntary.

I acknowledge that I have the right to question any part of the procedure and can withdraw at any time without penalty of any kind.

Name of participant \_\_\_\_\_

Signature of  
participant \_\_\_\_\_

Name of researcher \_\_\_\_\_

Signature of  
researcher \_\_\_\_\_

Date \_\_\_\_\_

參與研究同意書

通过城市自然加强亲子关系

本人\_\_\_\_\_同意參與由 Dr Eun-Yeong Choe 開展的上述研究。

本人知悉此研究所得的資料可能被用作日後的研究及發表，但本人的私隱權利將得以保留，即本人的個人資料不會被公開。

研究人員已向本人清楚解釋列在所附資料卡上的研究程序，本人明瞭當中涉及的利益及風險；本人自願參與研究項目。

本人知悉本人有權就程序的任何部分提出疑問，並有權隨時退出而不受任何懲處。

參與者姓名 \_\_\_\_\_

參與者簽署 \_\_\_\_\_

研究人員姓名 \_\_\_\_\_

研究人員簽署 \_\_\_\_\_

日期 \_\_\_\_\_