

Restorative and Enriching Visual Features in Hamilton Neighbourhoods and Greenspaces for Children, Parents and Communities

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Introduction

- ▶ This study addresses parental perceptions of restorative and enriching neighbourhoods and greenspace features that influence early childhood development (ECD).
- ▶ This research builds on prior studies using photo-elicitation to understand parental perceptions of restorative and enriching neighbourhoods and greenspaces that influence ECD. It is difficult to generalize as most studies have been in the US and Australia and have had a lack of consistency in visual images.
- ▶ To my knowledge, no other study has used the following merged model to examine parental perceptions of neighbourhoods and greenspaces for ECD.



Neighbourhood Level Features

Neighbourhood Level Visual Features

Studies

Quantity of Greenspace

(Faber Taylor et al., 2001; Faber Taylor et al., 2002; Dadvand et al., 2014; Balseviciene et al., 2014; Christian et al., 2015; McCracken et al., 2016; Vanaken & Danckaerts, 2018; Mohnen et al., 2019; Engemann et al., 2019; de Prado Bert et al., 2019; Wang & Tassinary, 2019; Dalton et al., 2020; de Bont et al., 2020; Mueller & Flouri, 2020; Thygesen et al., 2020; Bijmens et al., 2020; Yu et al., 2023; Nathan et al., 2023)

Quality of Greenspace

(Lovasi et al., 2013; McEachan et al., 2018; Dadvand et al., 2019; Mohnen et al., 2019; Ogletree et al., 2020; Reuben et al., 2020; Islam et al., 2020; Gemmell et al., 2023; Yu et al., 2023; Bao et al., 2023)

Trails

(Donato et al., 2023)

Shade

(Cimino et al., 2022)

Nature, Playspace, and Playgrounds

(Christian et al., 2015; Martin et al., 2023)

Natural Playgrounds

(Ethier, 2017; Coghill, 2023)

Number of Activity Features and Sports Facilities

(Ogletree et al., 2020; Reuben et al., 2020; Lee et al., 2021; Gemmell et al., 2023; Yu et al., 2023)

Water Features

(Amoly et al., 2014; Reuben et al., 2020)

Greenspace Maintenance

(Reuben et al., 2020)

Access to Greenspace

(Flowers et al., 2019; Sommerfeld, 2023; Yu et al., 2023)

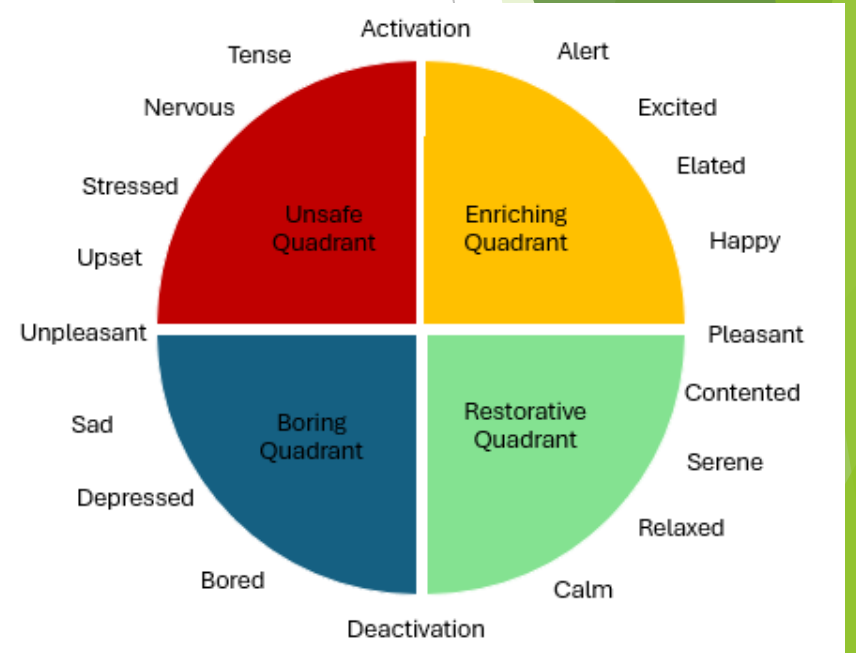
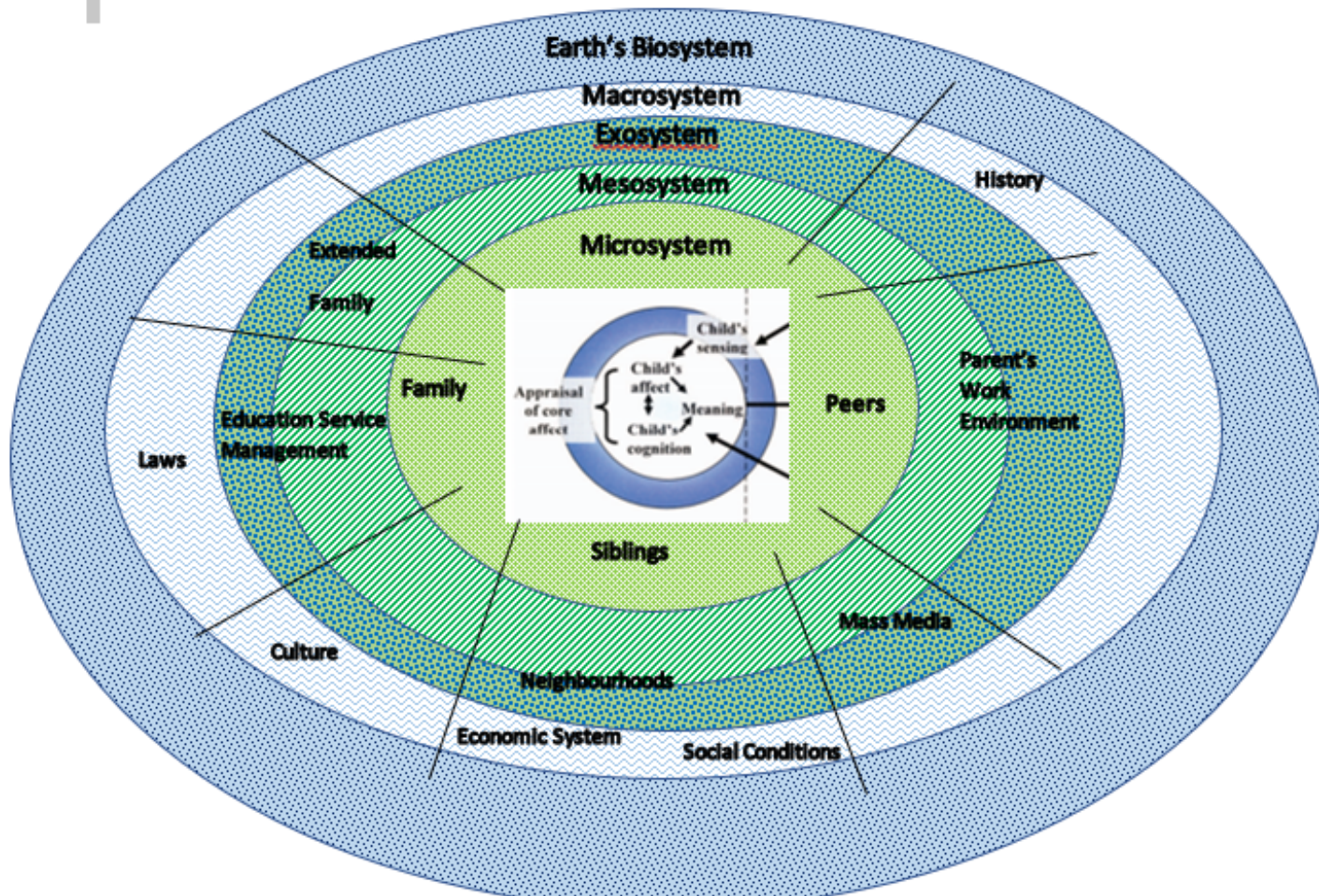
Neighbourhood Level Features

Opportunity for Social Connection	(Gemmell et al., 2023)
Public Transportation	(Mohnen et al., 2019)
Neighbourhood Design	(Mohnen et al., 2019)
Cleanliness	(Mohnen et al., 2019)
Outdoor Home Environment Including Yard Access	(Christian et al., 2015; Lambert et al., 2019; Lee et al., 2021; Osborne, 2023)
Neighbourhood Greenspace	(Lambert et al., 2019)
Housing Density	(Giles-Corti et al., 2009; Christian et al., 2015)
Population Density	(Donato et al., 2023)
Degree of Urbanization	(Mohnen et al., 2019; Van Truong et al., 2023)
Available Public Resources and Facilities	(Mohnen et al., 2019)
Low Traffic Exposure	(Christian et al., 2015; Lambert et al., 2019; Nathan et al., 2023)
Roundabouts	(Lee et al., 2021)
Walkability	(Mohnen et al., 2019; Souza et al., 2023; Kweon et al., 2023)
Sidewalks	(Lee et al., 2021)
Pedestrian Environment	(Gemmell et al., 2023)

Research Question

- ▶ What do parents of kindergarten children perceive as important enriching and restorative visual attributes of neighbourhoods for their children's development?





Elliott & Davis' (2018) adaptation of Bronfenbrenner & Morris' (2006) model and Linzmayer et al.'s (2013) adaptation of Russell's (1980) Circumplex Model of Affect.

Adaptation of Russell's (1980) Circumplex Model of Affect

Methods

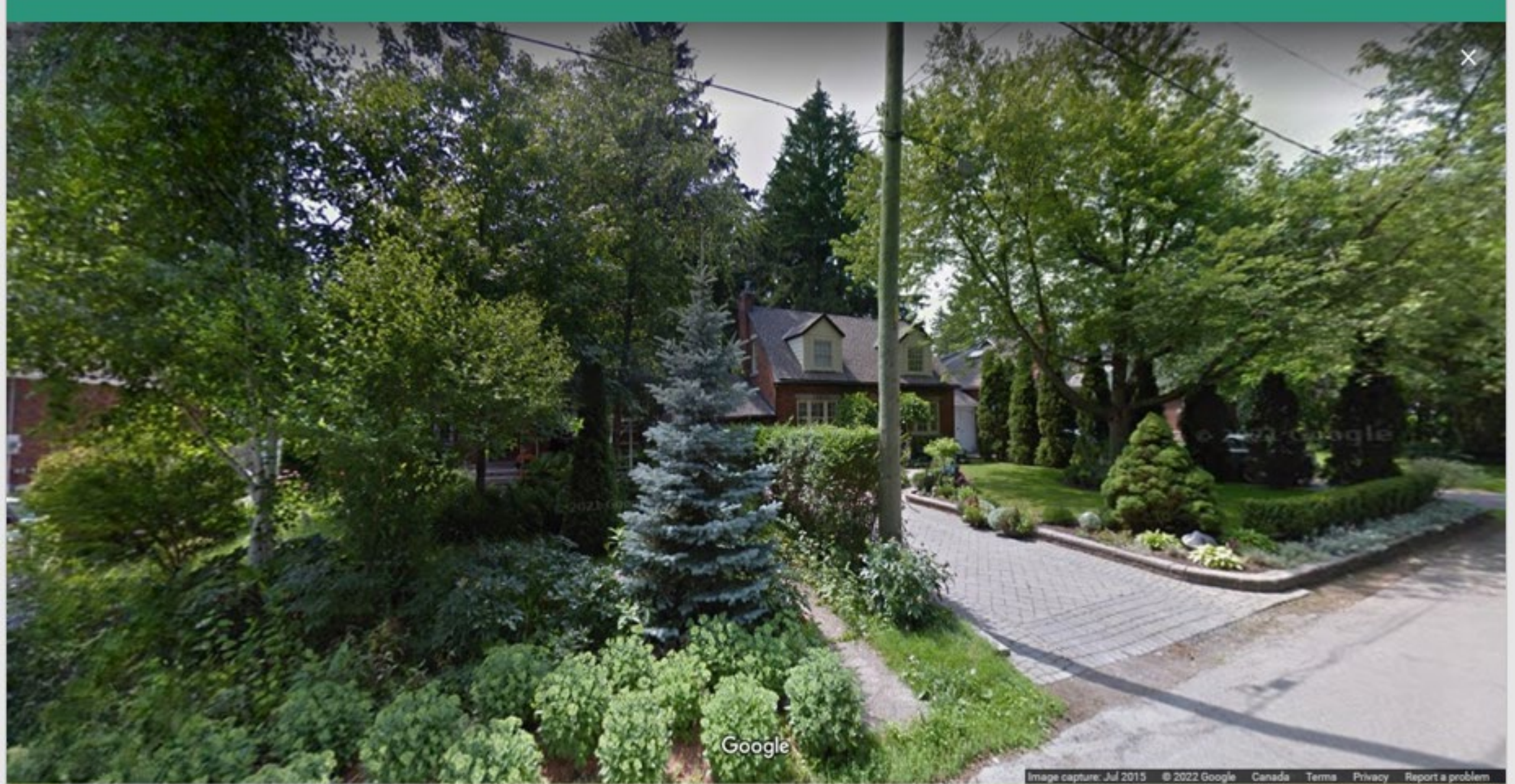
- ▶ To answer the research question, after auditing thousands of Google Street View images with Virtual Systematic Social Observation quantitative data collection of neighbourhoods and greenspaces for a population dataset in Google Street View over several months, I selected 7 images that had been reduced from roughly 200 Google Street View images of Hamilton neighbourhoods and routine greenspaces.
- ▶ Initially, a video montage was created.
- ▶ Various iterations of the video montage and then the photo montage were created that included ways to reduce the latency effect, colour differences, and other less common features in the photos.
- ▶ The paper has 3 photos focusing on restorative and enriching visual features in Hamilton neighbourhoods and greenspaces.



Methods

- ▶ A representative sample was selected with different features which I felt were common features. These included the following: location, type of dwelling, building materials, shapes and colours of buildings, income varying neighbourhood disorder features, width of street, traffic safety, cycling, pedestrians, commercial and residential areas, seasonality, light exposure, quality and quantity of greenspace, and concrete and natural playgrounds.





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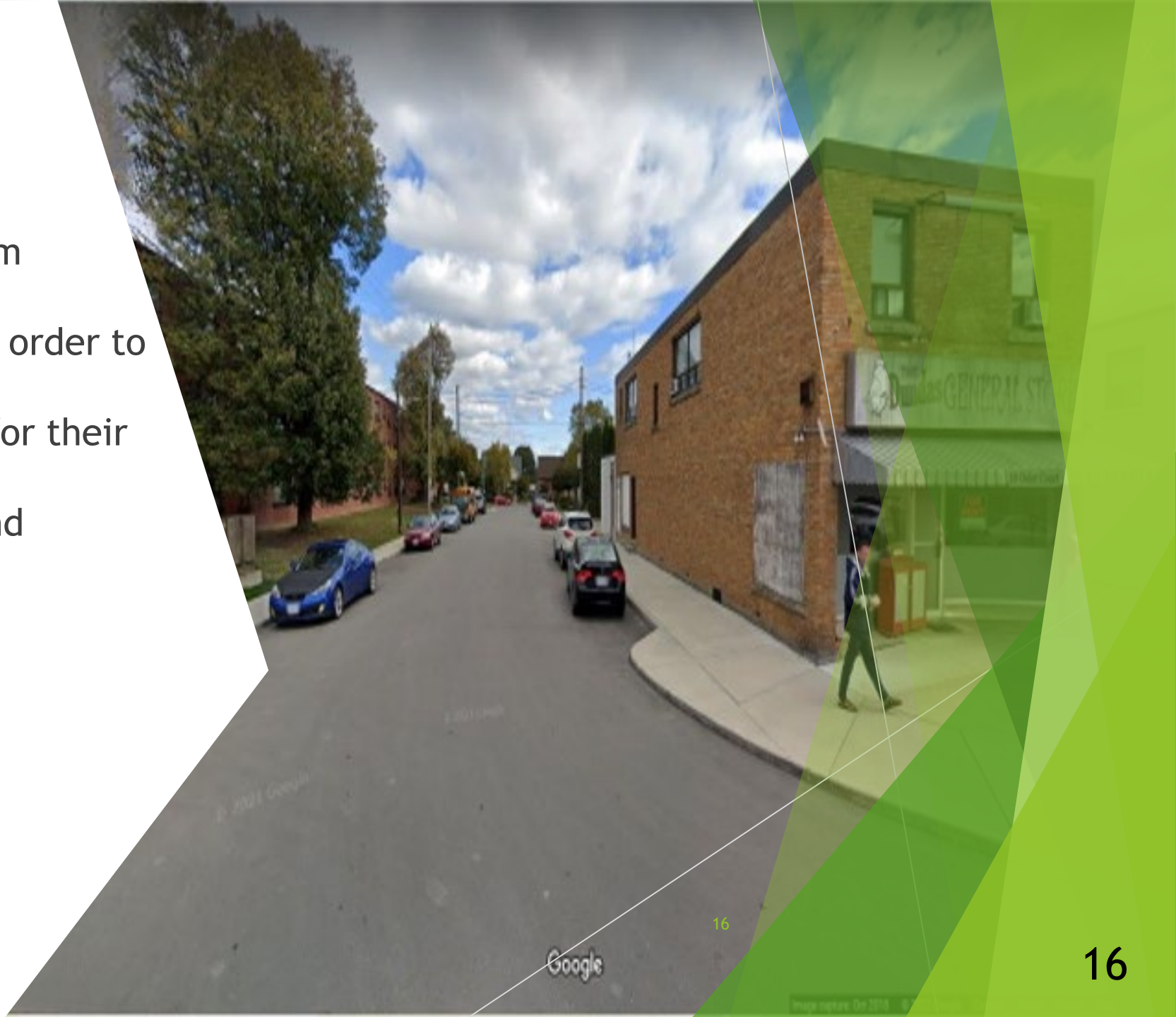


Google

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Recruitment

With regards to sampling, a maximum variation sampling was utilized in order to select parents of young children for their perceptions of neighbourhoods and greenspaces in Hamilton.



Codebook Thematic Analysis

- ▶ Mackieson et al.'s (2019) codebook was used with labels from Braun and Clarke's (2022) codebook thematic analysis to help identify and interpret the dataset.

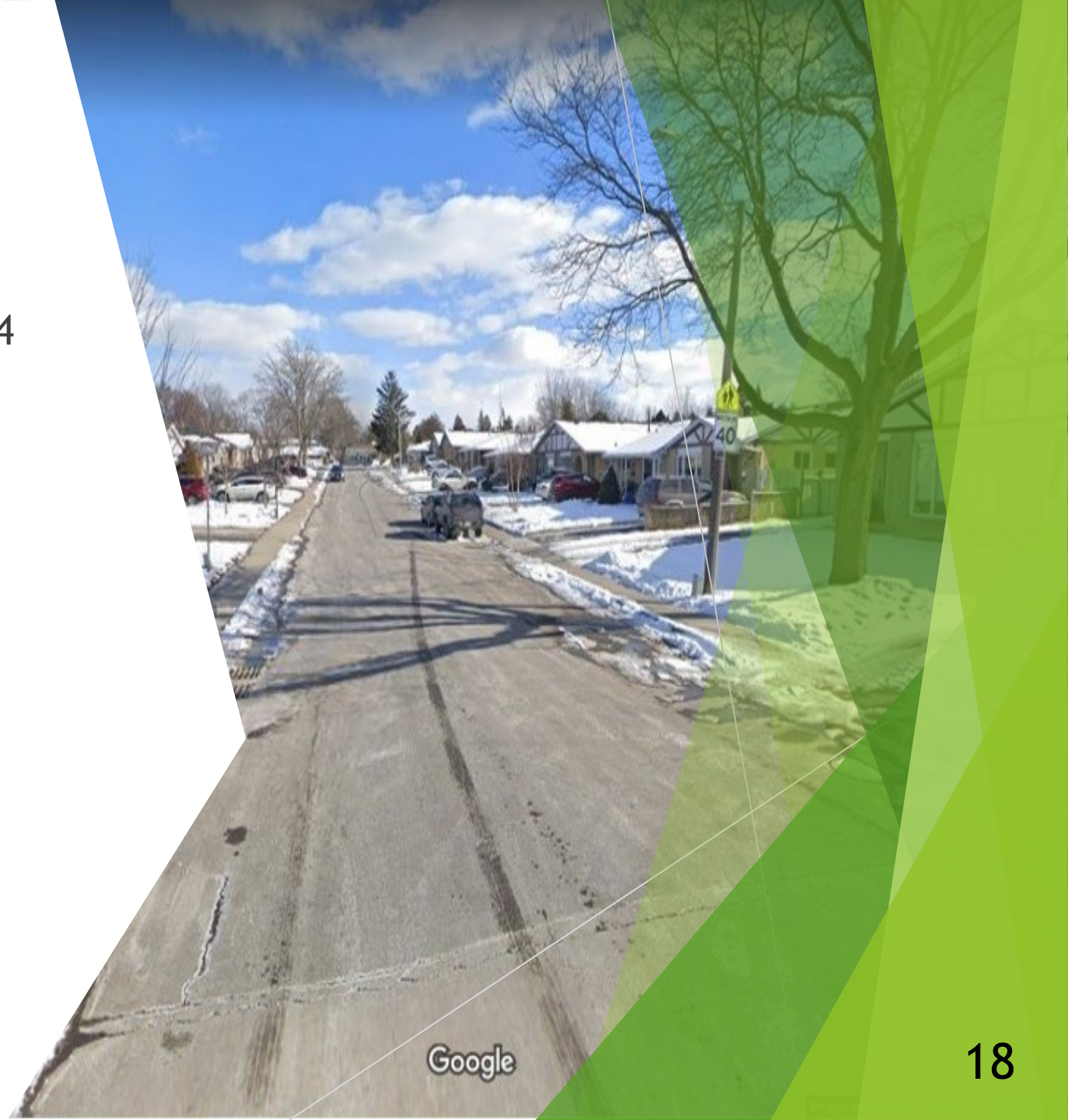


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Plan of Analyses

► After interviewing 30 parents, I reached a saturation point accounted for by having neighbourhoods across Hamilton. The NVIVO14 software was used for coding and analysis of the interview data for convergent and divergent themes.



Results



Google

Results

RQ II: What do parents of kindergarten children perceive as important enriching and restorative visual attributes of neighbourhoods for their children’s development?

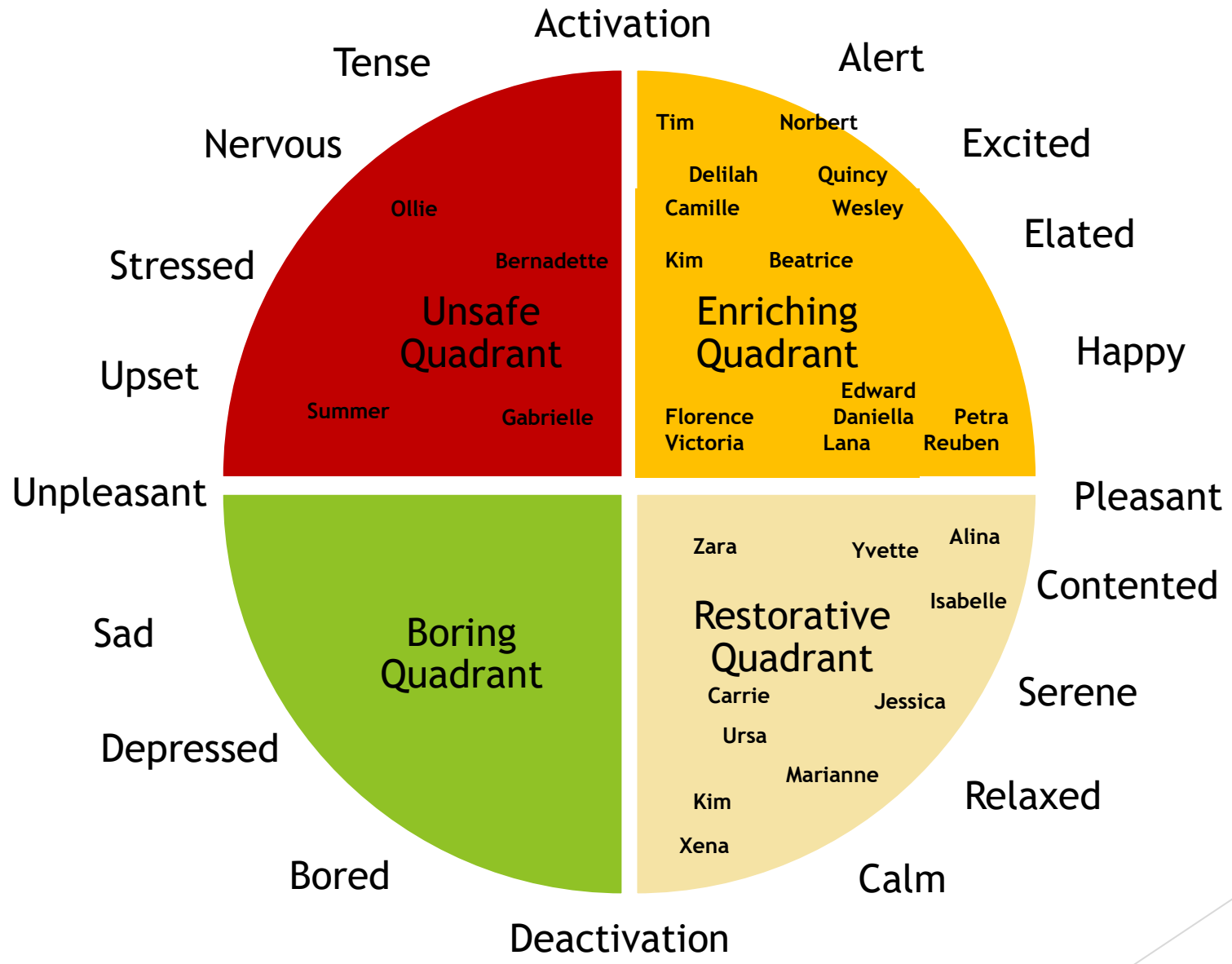
Theme 1: Microsystem: Individual Parental Characteristics in Neighbourhoods	Theme 2: Mesosystem: Neighbourhood level related influences and changes	Theme 3: Exosystem/Macosystem/Biosystem
<p>Subtheme: Affect experienced by features</p> <p>Sub-theme: Being an “ideal parent” and parenting norms</p> <p>Sub-theme: Projections and biases of what their child would like in a neighbourhood</p> <p>Sub-theme: Parental experiences and memories of children in that neighbourhood type</p> <p>Sub-theme: Demographics</p> <p>Subtheme: The possibility of the parent’s child growing up in the neighbourhood</p>	<p>Sub-theme: Exposure to Greenspace</p> <p>Sub-theme: Exposure to Neighbourhood Disorder - Differing Parental Views on Safety</p> <p>Sub-theme: Traffic, Pedestrian, and Road Safety</p> <p>Sub-theme: Surveillance, privacy and security cameras</p> <p>Sub-theme: Neighbourhood Planning (What is a Neighbourhood or Community?)</p>	<p>Sub-theme: Improvements to Neighbourhood in Photos and Views about Neighbourhood Management</p> <p>Sub-theme: Biases in Photos</p> <p>Sub-theme: Combination of Features that Parents Prefer</p> <p>Sub-theme: Neighbourhood and Government Policies, Programs, and Changes during the COVID-19 Pandemic (take from neighbourhood planning)</p> <p>Sub-theme: Biosystem Observations</p>

Results

RQ II: What do parents of kindergarten children perceive as important enriching and restorative visual attributes of neighbourhoods for their children's development?

Photo 1



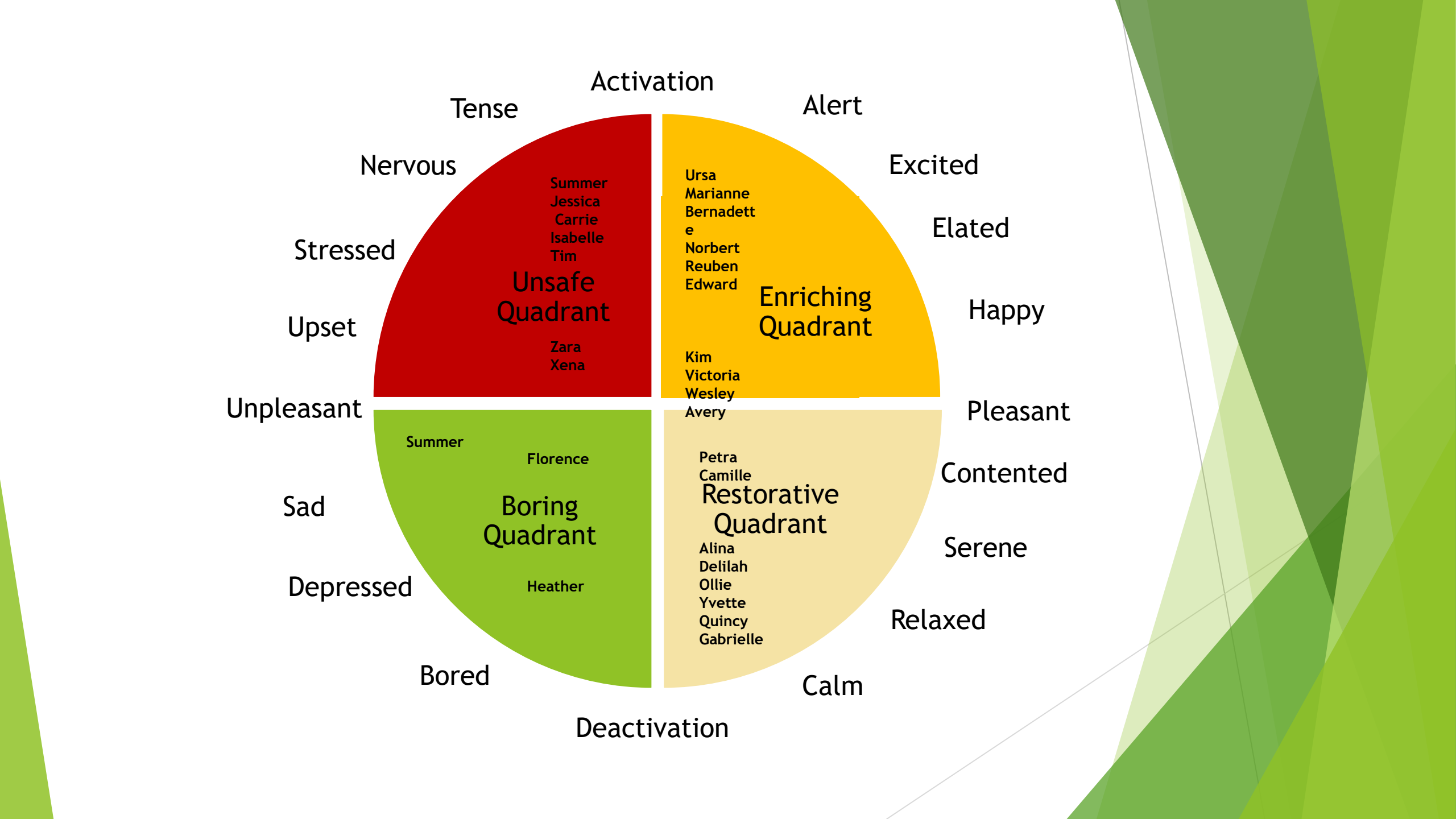
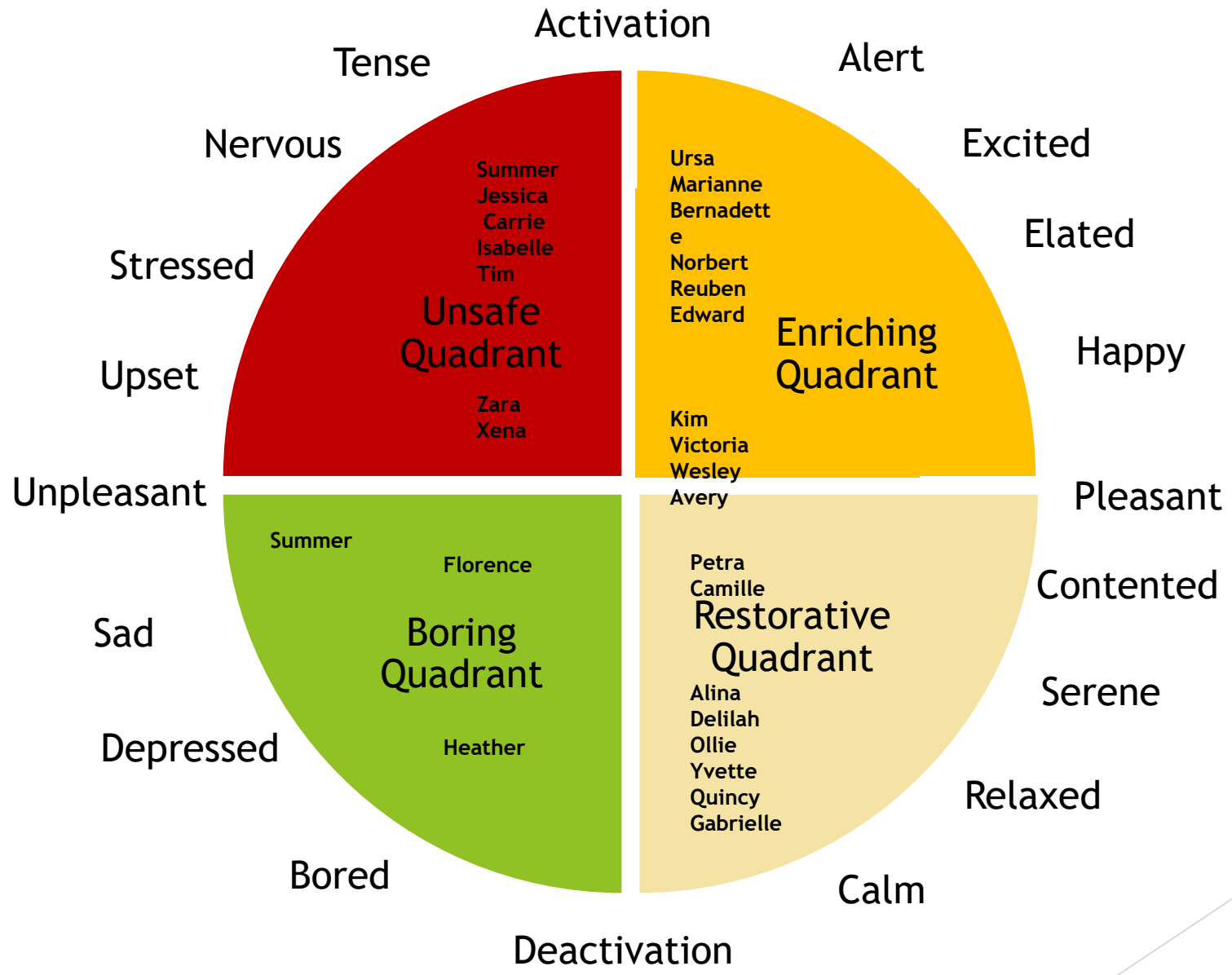


Results

RQ II: What do parents of kindergarten children perceive as important enriching and restorative visual attributes of neighbourhoods for their children's development?

Photo 5



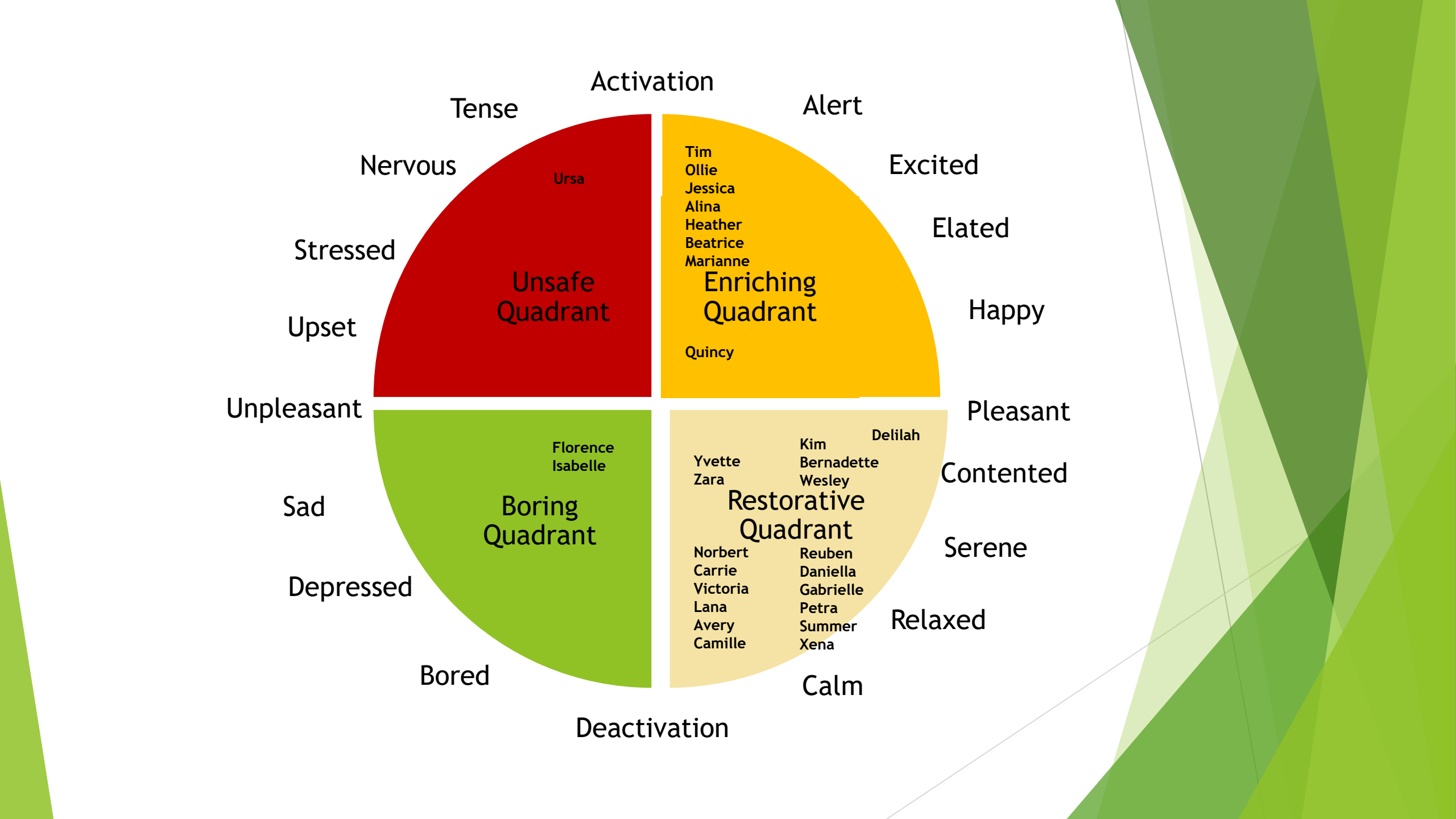
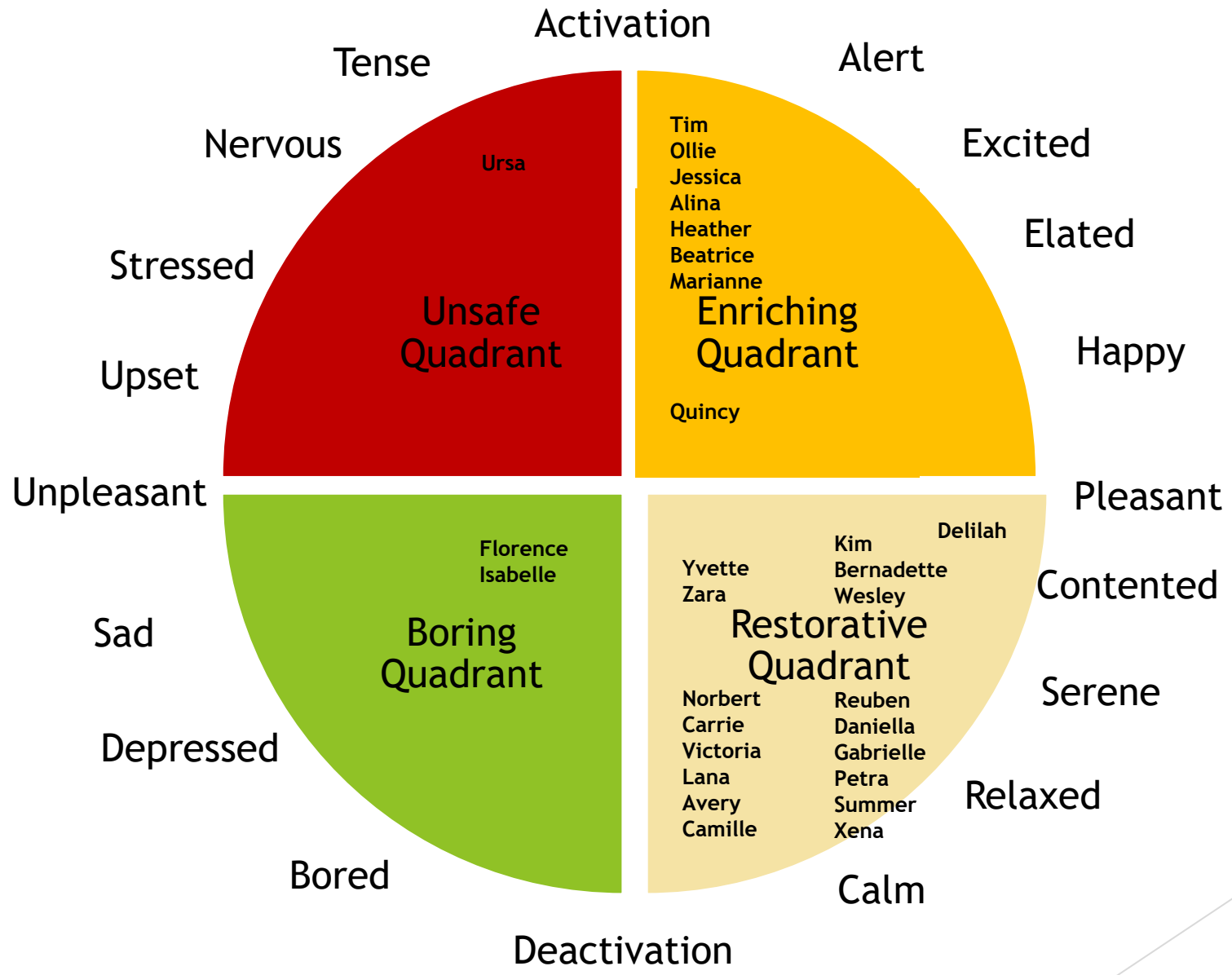


Results

RQ II: What do parents of kindergarten children perceive as important enriching and restorative visual attributes of neighbourhoods for their children's development?

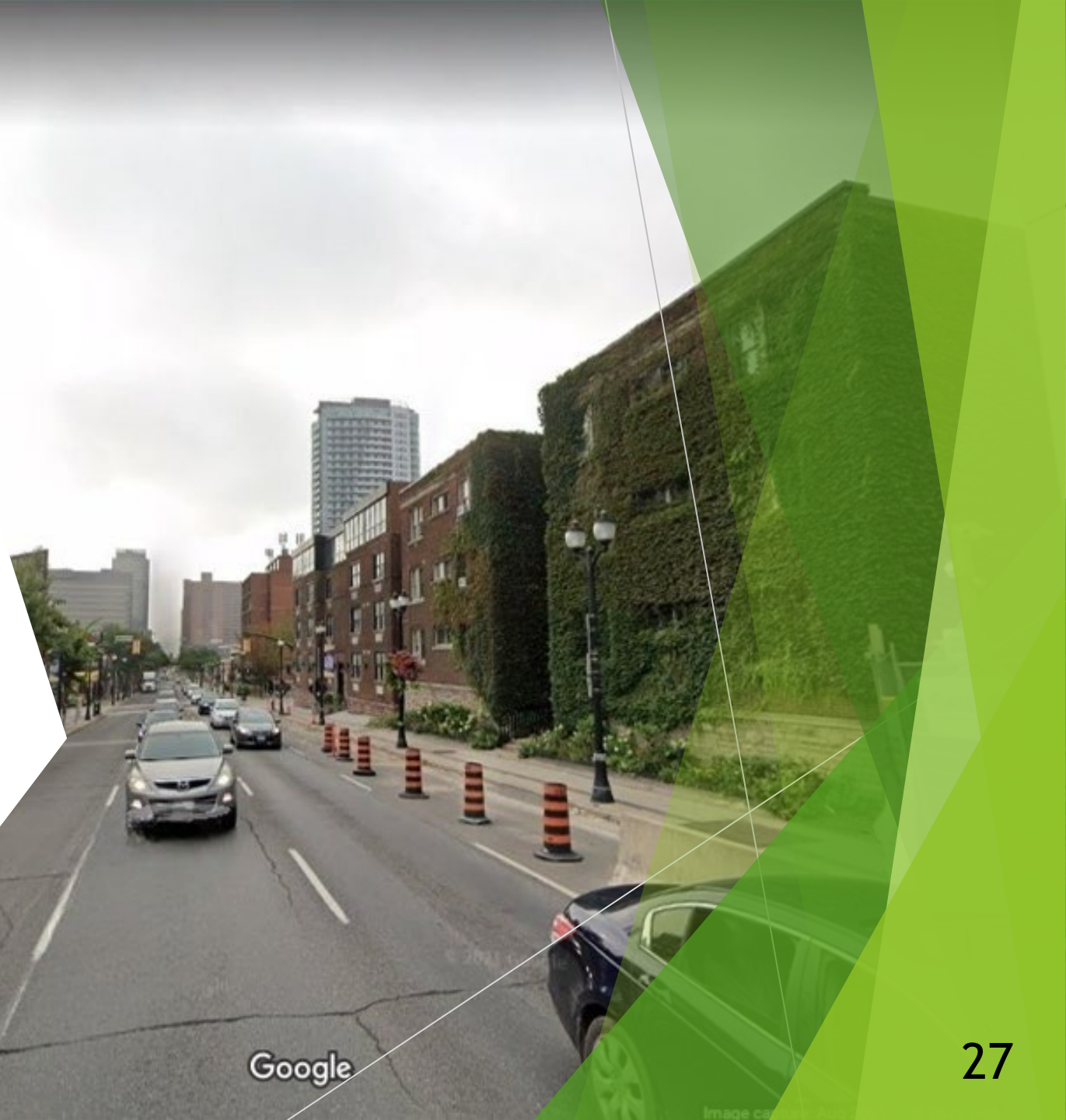
Photo 7





Summary of Results

- The parents perceived the features in Photos 1, 5 and 7 as positive factors that would enrich and enhance ECD. Specifically, for the microsystem theme, individual demographic characteristics influenced affect for Photos 1, 5, and 7. For the microsystem theme, most parents tended to idealize Photo 1 (House with Greenspace) as enriching.
- Overall, for the mesosystem theme, enriching and restorative parental perceptions of neighbourhoods involved exposure to greenspace, calm traffic, pedestrian and road safety, and neighbourhood planning (what is a neighbourhood or community?).
- Overall, white middle and high income women tended to voice preference for Photo 1, 5, and 7. For the exosystem/macosystem/biosystem theme, most parents discussed combinations of features that they preferred in Photo 5 (New Library and Older Architecture) and had few suggestions to improve it.



Discussion

- First, parental perceptions tended to be most optimal regarding enriching and restorative features with a large quantity and high quality public and/or private greenspace with a fence, little to no traffic, and access to public facilities and resources within walking distance or in or next to the greenspace itself. Parents indicated that the most ideal and suitable photos for their children's play and their children being in a neighbourhood outdoors were Photo 1 (House with Greenspace), Photo 7 (Natural Playground) and conditions placed upon Photo 5 (New Library and Older Architecture).

Discussion

Second, parents indicated mixed responses to whether lawns were important for children's development. Nature education in public and private greenspace was discussed and wild gardens, pollinators for gardens and farming on private greenspace were emphasized.

Norbert stated that lawns were important.

“I think they're important. It's just a really good place to kind of sit and explore just...a patch of grass in front of you. And it's a great creative tool for them. They can make all kinds of grass soups and...potions...If they find a certain toy they like, they like to bring it out there in a different... environment for that toy...It's a creative power for them, some grass and play... The snow that ends up on there, the leaves that end up on there. Then they will have...grass... in their home... They have...activities for them to do and even in playgrounds like this. It's just because there's more space... They can just run or tilt across a patch of grass or a field... they could fall and it won't hurt. Grass and lawns are important.”

Discussion

- ▶ Third, neighbourhood planning with social programs and facilities such as the library in Photo 5 (New Library and Older Architecture) was found to be restorative and enriching to parents. Some parents found uniformity in Photo 3 (Townhouses with Small Greenspace) to be restorative and calming.
- ▶ Fourth, combinations of features (composition of photos and greater city) preferred by parents for exosystem, macrosystem and biosystem were a significant finding. Photo 5 (New Library and Older Architecture) was discussed on how combinations of features were preferred and what could be added to the photo.

Conclusion

- ▶ This study is novel as a tool to understand the built and natural environment with its results and can be used further for future studies.
- ▶ This could have implications for Hamilton to promote better quantity or quality greenspace and neighbourhood revitalization policies. A more inclusive community-based approach to increase quantity and quality of greenspace while halting environmental gentrification is needed.



Future Directions

- ▶ Further research could be conducted on Hamilton's high-income neighbourhoods and increased safety, the availability of neighbourhood police officers to reduce crime and safety concerns, and landlord and owner perceptions of cleanup and revitalization of neighbourhood disorder on their properties and the community.
- ▶ Nightscapes are examined in this study and could be for future GSV photo montage studies.
- ▶ Further research could also be conducted on combinations of features and the associated affects experienced.
- ▶ Further research is needed on whether parents perceive greenspaces as homes to the marginalized and homeless or for all groups as well as whether children are safer when playing in greenspace from May to November.
- ▶ Community-based engagement solutions are needed to reduce perceptions of crime and actual crime (Nubani et al., 2023). Potentially, an app could be created to reduce neighbourhood disorder and improve greenspace in Hamilton which could include overlaid maps of Healthyplan.city, Hamilton Police Services Community Crime Map, Google Street View audit maps, Code Red, Tree Equity Score, and Municipal Net-Zero Action Research Partnership. The Crib map of Toronto and Mapping Cities for All (an accessibility map of buildings for Vancouver, Calgary and Ottawa) could be replicated for Hamilton and added to this app.
- ▶ Some smaller incremental changes include fences for parents' yards and apartment yards, more walkable neighbourhoods, revitalization of laneways, safer bike lanes, and natural playgrounds rather than concrete playgrounds.
- ▶ Whilst Sandseter and other scholars argue that parents are overprotective of their children and children are increasingly enticed by screen time indoors, this study states that safety issues are "real" to the parents in the built environment including traffic, air pollution, neighbourhood disorder, increasing urbanization, decreasing quantity of greenspace, and other features.

References

- ▶ Bao, Y., Gao, M., Luo, D., & Zhou, X. (2023). Urban Parks—A Catalyst for Activities! The Effect of the Perceived Characteristics of the Urban Park Environment on Children's Physical Activity Levels. *Forests*, 14(2), 423.
- ▶ Bronfenbrenner, U & Morris, P. (2006). The Bioecological Model of Human Development. In *Handbook of Child Psychology*.
- ▶ CEKAN. (2018 April 26). The John Rebecca park has been approved | CEKAN
- ▶ Chen et al. (2022) Predicting the effect of street environment on residents' mood states in large urban areas using machine learning and street view images. *Science of the Total Environment*. 816, 151605
- ▶ Cimino A, McWhirter JE, Papadopoulos A. (2022). An evaluation of the amount, type and use of shade at public playgrounds in Guelph, Ontario, Canada. *Health Promot Chronic Dis Prev Can*. 42(5):209-217. doi: 10.24095/hpcdp.42.5.04. PMID: 35544030; PMCID: PMC9306320.
- ▶ City of Hamilton. (2024 October). Weekly Encampment Wrap Up Report. [Weekly-Encampment-Report-10.21-10.27.2024.pdf](#)
- ▶ Coghill, M. (2023). Factors that impact risk-taking and the prevalence of risky play at playgrounds in Ontario (Doctoral dissertation, University of Guelph).
- ▶ Côte-Lussier, C., Jackson, J., Kestens, Y., Henderson, M., & Barnett, T. (2014). A Child's View: Social and Physical Environmental Features Differentially Predict Parent and Child. Perceived Neighborhood Safety. *Journal of Urban Health*, 92(1), 10-23. DOI: 10.1007/s11524-014-9917-0.
- ▶ Donato, C. C. S., Corry, R. C., Moore, S. A., Mitra, R., & Vanderloo, L. (2023). The Role of Toronto's Neighborhood Landscape Characteristics in Facilitating Outdoor Play During the COVID-19 Outbreak. *Children, Youth and Environments*, 33(1), 25-49.
- ▶ Hartig JH. (2023). Rewilding the Detroit, Michigan, USA-Windsor, Ontario, Canada Metropolitan Area. *Resources*. 12(10):117. <https://doi.org/10.3390/resources12100117>
- ▶ Kweon, B. S., Shin, W. H., & Ellis, C. D. (2023). School Walk Zone: Identifying Environments That Foster Walking and Biking to School. *Sustainability*, 15(4), 2912.
- ▶ Lambert A, Vlaar J, Herrington S, Brussoni M. (2019). What is the relationship between the neighbourhood built environment and time spent in outdoor play? A systematic review. *Int J Environ Res Public Health*. 16(20):3840. <https://doi.org/10.3390/ijerph16203840>.
- ▶ Lee EY, Bains A, Hunter S, et al. (2021). Systematic review of the correlates of outdoor play and time among children aged 3-12 years. *Int J Behav Nutr Phys Act*. 18(1). <https://doi.org/10.1186/s12966-021-01097-9>.
- ▶ Loose, F., Hudders, L., Vanwesenbeeck, I., & De Jans, S. (2023). Preschoolers and advertising: A systematic literature review and future research agenda on the effects of advertising on preschool children. *Journal of advertising*, 52(3), 439-455.
- ▶ MacQuarrie, M., Mclsaac, J. L. D., Cawley, J., Kirk, S. F., Kolen, A. M., Rehman, L., ... & Stone, M. R. (2022). Exploring parents' perceptions of preschoolers' risky outdoor play using a socio-ecological lens. *European Early Childhood Education Research Journal*, 30(3), 372-387.
- ▶ Martin, W., & Wood, L. (2014). 'We live here too'... what makes a child friendly neighbourhood? In R. Cooper, E. Burton & Cooper, C (Eds.), *Wellbeing: A Complete Reference Guide* (pp. 147-184). <https://doi.org/10.1002/9781118539415.wbwell061>
- ▶ Martin, A., Clarke, J., Johnstone, A., McCrorie, P., Langford, R., Simpson, S. A., & Kipping, R. (2023). A qualitative study of parental strategies to enable pre-school children's outdoor and nature experiences during COVID-19 restrictions. *Health & Place*, 79, 102967.
- ▶ Nathan, A., Schipperijn, J., Robinson, T., George, P., Boruff, B., Trost, S. G., & Christian, H. (2023). The moderating role of parent perceptions in relationships between objectively measured neighbourhood environment attributes and pre-schooler's physical activity: Findings from the PLAYCE study. *Health & Place*, 81(Complete). <https://doi.org/10.1016/j.healthplace.2023.103030>
- ▶ Osborne, L. P. (2023). Children's outdoor activities in the inner suburbs of Brisbane, Australia. *Children & Society*, 37(2), 502-523.
- ▶ Paddle, E., & Gilliland, J. (2016). Orange Is the New Green: Exploring the Restorative Capacity of Seasonal Foliage in Schoolyard Trees. *International journal of environmental research and public health*, 13(5), 497. <https://doi.org/10.3390/ijerph13050497>
- ▶ Rosas, H.J., Sussman, A., Sekely, A.C., & Lavdas, A.A. (2023). Using Eye Tracking to Reveal Responses to the Built Environment and Its Constituents. *Applied Sciences*.
- ▶ Rothman, L., Buliung, R., To, T., Macarthur, C., Macpherson, A., & Howard, A. (2015). Associations between parents' perception of traffic danger, the built environment and walking to school. *Journal of Transport & Health*, 2(3), 327-335.
- ▶ Schulte to Bühne, H., Pettorelli, N. & Hoffmann, M. (2022). The policy consequences of defining rewilding. *Ambio* 51, 93-102. <https://doi.org/10.1007/s13280-021-01560-8>
- ▶ Sommerfeld, J. (2023). Family Experiences in Nature: How Parents May Influence Their Children's Exposure to the Natural Environment (Doctoral dissertation, Trent University (Canada)).

Thank you!

