

A THEMATIC REVIEW ON RELATIONSHIP BETWEEN RECOVERY PERCEPTION TOWARDS PLACE ATTACHMENT IN URBAN ENVIRONMENT

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Abstract: Place attachment is often seen as a resource for coping with health recovery, especially in the post-pandemic period. The purpose of this review was to systematically review the variables, research frameworks, and interactions related to place attachment and recovery perceptions. This paper reviewed 53 papers from 2020 to 2023 on place attachment and recovery perception using ATLAS.ti. Existing research confirms that there are differences in the degree of attachment and recovery in different types of urban environments. This paper encourages the integration of information between different disciplines, such as urban planning specialists, environmental psychologists, and public health experts, to further improve the urban environment.

Key words: sense of place, restorative, psychological restoration, health, post-pandemic

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INTRODUCTION

The impact of the COVID-19 pandemic on mental health lasts long (Kathirvel, 2020). Urban living is a chance for individual and collective growth but may threaten mental health (Lecic-Tosevski, 2019). Environmental psychology uses the term ‘restoration’ to describe the process of recovering physiological and psychological adaptive capacities through the sense of nature (Van Cauwenberg et al., 2017). Some environments, such as green space exposure, may be associated with lower healthcare expenditure and provide health support (Becker et al., 2019). Studies have often focused on the nature or aspects of restorative surroundings to people's perceptions of those environments, ignoring the importance of personal and societal factors in such psychological healing. Recovery potential is influenced by objective characteristics and personal and social factors, human-territorial relationships, i.e., place attachments (Menatti et al., 2019).

The idea of place attachment, which began in social psychology and phenomenology and is more commonly used in tourism destination studies (Hwang et al., 2005), is now filtering down to built-up environments. Green buildings, green spaces, streets and place attachment have been the subject of research (Cole et al., 2021; Lomas et al., 2021). Planners and landscape designers might concentrate on conserving landscapes that provide community attachment to a location (Cheng and Kuo, 2015), such as historic sites, conventional structures, and local plants. A deeper understanding of the environment's restoration value and fresh insights into people's placement choices in urban settings can result from more research into place attachment in the context of broader personal, social, and cultural issues.

By reviewing relevant reviews within the last 5 years, we found several major concerns in explaining the role and impact of place attachment (see Table 1). Urbaniak (2019) states the relationship between place and social exclusion (Urbaniak and Walsh, 2019), However, Urbaniak (2019) only focused on the complexity of the interrelationship between place and social exclusion, yet viable policies and practices need to be in place to clarify the association and mechanisms of place attachment and recovery of perception. Cole (2021) states that place attachment and pro-environmental behaviour, inform green building design strategies (Cole et al., 2021). However, Cole only focused on place attachment promoting pro-environmental behaviours and quality of life. His design strategy lacks a focus on the restoration of perception. Li (2023) state the place attachment and the benefits derived from familiar natural landscapes (Li et al., 2023). However, there is no mention of the role beyond the natural landscape. Yashadhana (2023) stated the relationship between placemaking and health and well-being, such as activities that promote attachment (Yashadhana et al., 2023). The context of its concern, however, is the link between health and well-being as well as place-making among refugees in high-income settings. The relationship between place attachment and recovery in the broader context is not addressed.

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Table 1. Review articles according to themes

Author(s) and Year	Title	Main Focus
(Urbaniak and Walsh, 2019)	The interrelationship between place and critical life transitions in later life social exclusion: A scoping review	Linking place, old-age social exclusion and risk during critical life transitions.
(Dwyer et al., 2019)	The role of place attachment in tourism research	Place attachment to sustainable tourism, destination resilience, and destination competitiveness.
(Cole et al., 2021)	Place attachment in green buildings: Making the connections	Design Strategies to Support Place Attachment.
(Li et al., 2023)	Beyond “bluespace” and “greenspace”: A narrative review of possible health benefits from exposure to other natural landscapes	Possible mechanisms that might explain how exposure to these landscapes can promote human health and well-being.
(Yashadhana et al., 2023)	Place-making and its impact on health and wellbeing among recently resettled refugees in high income contexts: A scoping review	‘Activities’ that facilitate relational place attachment.

One of the main limitations is that many of the studies used systematic reviews to explore place attachment in tourism, natural environment risk management, or to assess the restorative value of urban environments (Dwyer et al., 2019; Weber and Trojan, 2018; Bonaiuto et al., 2016). In addition, many existing studies are case studies assessing the impact of place attachment in specific contexts, such as landscape change (Gobster et al., 2022).

At the same time, more of the aforementioned studies were conducted before the epidemic, and trends in the post-epidemic era have not been taken into account. The impact of place attachment on perceptions of recovery, which is important information for policymakers, and designers to make appropriate decisions, was not assessed. However, it needs to be clarified whether the relationship between attachment and recovery outcomes is consistent across settings, nor is it clear how much weight each determinant has in the association between place attachment and better recovery status. A study on the general impact of place attachment on recovery perception has yet to be explored. The purpose of this review was to systematically review the variables, research frameworks, and interactions related to place attachment and recovery perceptions. The findings may inform future stakeholder and urban planning research.

MATERIALS AND METHODS

The phrase ‘thematic review’ uses ATLAS.ti 23 as the instrument, as Zairul (2020) suggested (Zairul, 2020). Thematic analysis, according to Clarke and Braun (2006), identifies the pattern and creates themes through reading material related to the issue (Braun and Clarke, 2006). The next step is to spot the pattern and create a category to comprehend the publication trend better. Several selection criteria were used in the literature selection process. i) Publication between 2020 and 2023; ii) The keywords are placement and restorative. We sought to synthesise the most recent data starting on January 1, 2020, emphasising the most recent papers that appeared following the pandemic. It also follows Subiza-Pérez’s research direction recommendation to explore whether people’s restorative perceptions in outdoor and indoor environments change in the post-epidemic and whether international agencies and countries have corresponding recommendations (Subiza-Pérez et al., 2021). The articles under examination are written in English. They do not include works that fall under the rubric of literature reviews.

After modifying the search criteria, search each database using identical search terms (‘title + abstract + keywords’). We solely used peer-reviewed journal papers to ensure the quality of the data. Databases were collected from the ‘core database’ of Scopus and Web of Science, widely used to collect evidence on landscape architecture and urban planning (Kabisch et al., 2015). The rules for creating search items were ‘place attachment’ and ‘recovery’ (Table 2). The details are listed (Figure 1).

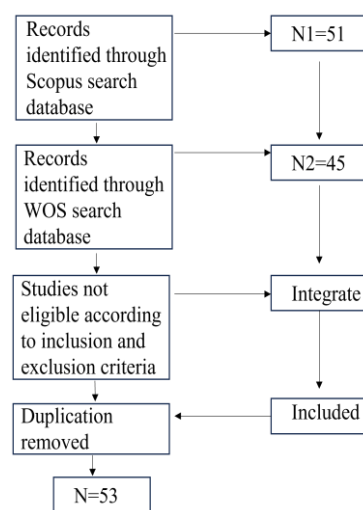


Figure 1. Inclusion and exclusion standards

Figure 2. Metadata generated in ATLAS. ti 23 (Source: authors)

Selecting articles by identification, screening, qualification, and inclusion (Table 3). For data processing, the articles were added to Mendeley. This process eliminated duplicate articles, updated author names, and verified accurate information in crunching data. Ninety-six articles were found in the initial search. The evaluation criteria led to the removal of 43 articles. Fifty-three articles remain in the paper. The articles were added to ATLAS. ti 23 as primary documents (Figure 2), and each was then organised into the following categories: author; periodical; countries; and year of publication (Figure 3).

Table 2. Search keywords from Scopus and Web of Science (Source: authors)

Scopus	Title-Abs-Key ('Place attachment') and Title-Abs-Key ('Restorative') Or Title-Abs-Key ('Restoration') and PUBYEAR > 2020	51 results
Wos	'Place attachment' (Topic) And Restorative (Topic) OR 'Restoration' (Topic) >2020	45 results
Total	Remove duplicates Exclusion of irrelevant literature	53 results

Table 3. Lists the inclusion criteria and review questions (Source: authors)

Reviewing questions	Possible information
1. What is the study design?	1. Research purpose, sample volume, location, method, and data type.
2. What is the context?	2. How does the environment influence place attachment and restoration?
Inclusion criteria	Exclusion criteria
1. Empirical study	1. Reviews, reports, books, or conference proceedings
2. Presented in English	2. Not in English
2. Relevant to key concepts	3. With a focus on clinical recovery (such as dental)
4. Articles accessible	4. Not accessible

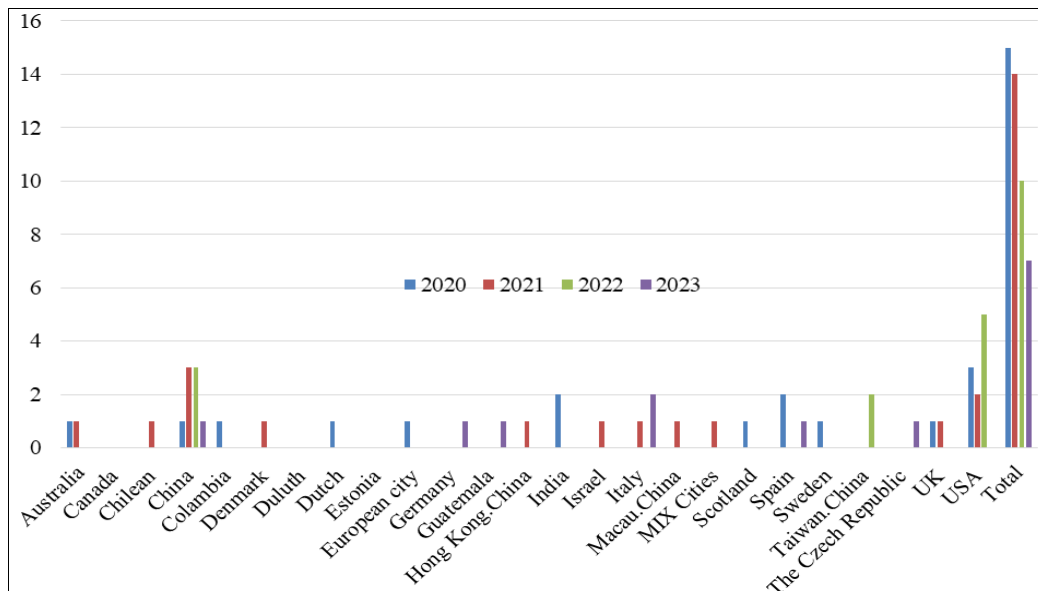


Figure 3. The No. of publications and countries (Source: authors)

RESULTS

If 'place attachment' were used as the keywords, the literature found would have been several thousand. However, when focusing the search on the string as place attachment plus recovery, the data demonstrate a considerable decrease and are more precise. According to the list, the top two popular choices are the Journal of Environmental Psychology and Landscape and Urban Planning. The two journals published nine of the 53 articles.

The paper analyses the trends and patterns of the selected publications. The initial coding was merged and renamed, resulting in a coding of only three themes. The study found three distinct themes following; i) place attachment-related variables, ii) recovery-related variables and iii) frameworks and models (Table 4). These themes are not independent but overlap between articles in this review. It is common for some articles to use several themes.

Table 4. Articles categorized by topic (Source: authors)

Author(s) and Year	1. Recovery perception (RP)	2. Place Attachment (PA)	3. Relationship (RP – PA)
(van Heel and van den Born, 2020)		√	
(Svobodova et al., 2023)			√
(Xue and Shen, 2022)			√
(Chang and Li, 2022)			√
(Losada-Otalora and Ribamar Siqueira, 2020)		√	
(Das and Basu, 2020)		√	
(Hawthorne et al., 2022)		√	
(Liu et al., 2020)			√
(Subiza-Pérez et al., 2020a)	√		√
(Sen and Nagendra, 2020)		√	

(Gobster et al., 2022)			√	
(Meagher and Cheadle, 2020)				√
(Subiza-Pérez et al., 2021)				√
(Faccioli et al., 2020)			√	
(Dai et al., 2021)			√	
(Rosenbaum et al., 2020)				√
(Clarke et al., 2021)				√
(Liu et al., 2021)				√
(Barros et al., 2021)	√			
(Usher et al., 2021)			√	
(Dazzo et al., 2023)	√			
(Gutierrez et al., 2023)				√
(Guo et al., 2022)				√
(de Bell et al., 2020)				√
(Wu et al., 2022)				√
(Husser et al., 2020)				√
(Shen et al., 2022)				√
(Nubani et al., 2022)			√	
(McCall and Greaves, 2022)			√	
(Madsen et al., 2021)			√	
(Lee et al., 2021)			√	
(Han et al., 2023)			√	
(Sedawi et al., 2021)			√	
(Biddau et al., 2023)			√	
(Palang, 2023)			√	√
(Fleming et al., 2022)				√
(Dasgupta et al., 2022)			√	
(Webb, 2022)			√	
(Liu et al., 2022)				√
(McCunn et al., 2023)				√
(Villagra et al., 2021)	√		√	
(Li et al., 2023)				√
(Jiang et al., 2021)	√			
(Lin et al., 2021)	√			
(Odzakovic, et al., 2020)	√		√	
(Mura et al., 2023)			√	
(Maricchiolo et al., 2021)			√	
(Sun et al., 2021)	√			
(Subiza-Pérez et al., 2020b)	√			
(Gatti et al., 2022)	√		√	
(Zhang et al., 2023)	√			
(Payne et al., 2020)	√			

1. Recovery Perception (RA)

During and after COVID-19, several approaches introduced new ways of thinking about restoration-related variables (Figure 4).

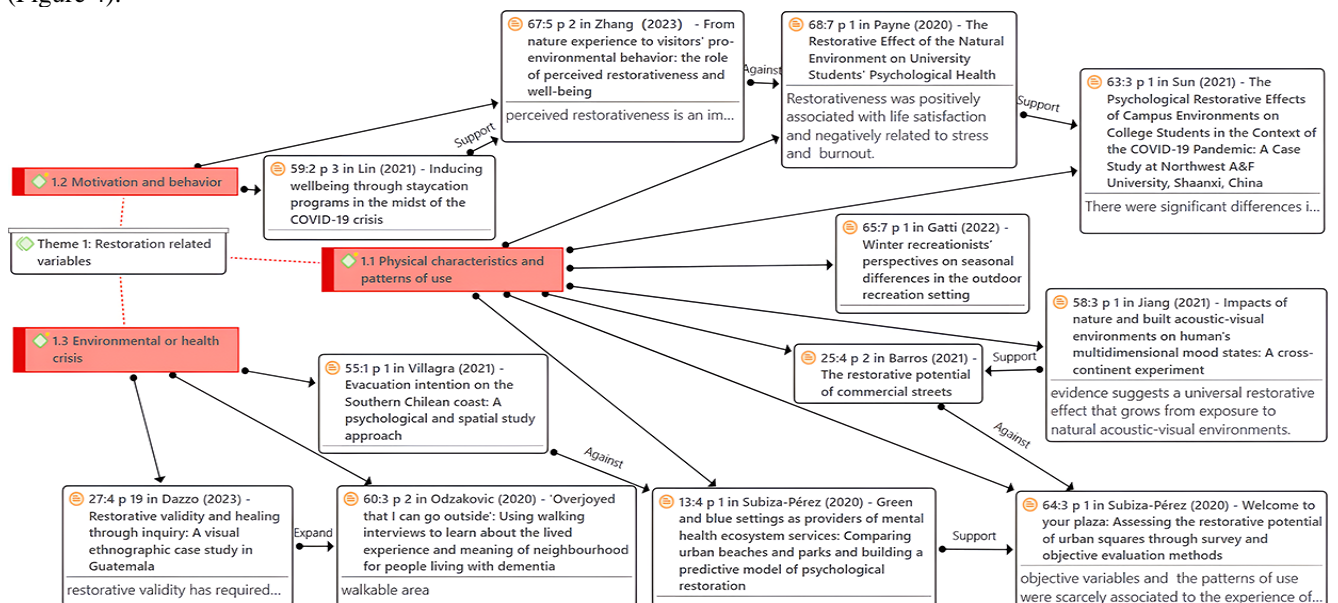


Figure 4. Network on the Restorative-related variables theme (Source: authors)

1.1. Physical Characteristics and Use Patterns

There are inconsistent findings from relevant studies regarding the relationship between physical characteristics and use and recovery. According to Subiza-Pérez (2020), neither the physical/design qualities of the place nor the habits of use significantly impact the restorative experience in green and blue environments (Subiza-Pérez et al., 2020a), including in the square space (Subiza-Pérez et al., 2020b). However, the opposite view is held in some studies of streets and natural spaces. Barros (2021) believes there is some potential for recovery in certain combinations on commercial streets (Barros et al., 2021). The visual and acoustic environment of nature also supports this view. Researchers suggest that exposure to natural acoustic-visual environments produces a generally restorative effect (Jiang et al., 2021). Sun (2021) compares the differences in recovery in different environments. It was noted that recovery effects were more significant in blue spaces than in green and athletic fields and greater in green and athletic fields than in grey spaces (Sun et al., 2021). This finding was made in a campus setting during the COVID-19 epidemic. This is partly supported by Payne's (2018) research on natural environment interventions for mental health for university students. Students in natural environments were significantly less stressed (Payne et al., 2018). Some findings point to similar restorative effects across spaces. Zhang (2023) claims that urban parks generate equivalent restorative effects, but national parks increase one's subjective vitality (Zhang et al., 2023). This may be a result of both being predominantly green spaces. Researchers have focused on the specific restorative nature of the winter environment (Gatti et al., 2022). However, only qualitative studies have been conducted on people who regularly engage in outdoor winter sports, and there is a lack of quantitative data.

1.2. Motivation and Behaviour

Motivated behaviour is an essential variable in exploring recovery. According to Zhang's study from 2023, perceived restorative triggers emotions of well-being and pro-environmental behaviours (Zhang et al., 2023). This is supported by Lin (2021), which explored the link between motivation and psychological outcomes in an adverse environment (Lin et al., 2021).

1.3. Environmental or health crises

Restoring relevant disparities in the face of environmental and health crises is worth exploring. Villagra (2021) states the differences in perceived safety, place attachment and restorative perception across spatial variables. Higher scores on psychological markers were given to natural evacuation sites with situational amenities, more elevation, distance from the shoreline, evacuation routes, and emergency infrastructure (Villagra et al., 2021). This result refutes Subiza-Pérez's (2020) assertion that the physical features of the environment and the practises employed have a minimal impact in this area (Subiza-Pérez et al., 2020b). According to Odzakovic (2020), there is a sense of attachment to the area among dementia patients who reside in the community. It provided a walkable area and social opportunities to move freely and feel rejuvenated (Odzakovic, et al., 2020). Dazzo (2023) emphasises that restorative validity requires researchers to explore ways to humanise their actions (Dazzo et al., 2023). It also inspires dementia research, where researchers examine their research behaviours.

2. Place Attachment (PA)

Several authors discuss attachment-related variables, some related to the attachment process, such as social relationships, and attitudes. Some related to the research background, such as indigenous, blue space, and ecology (Figure 5).

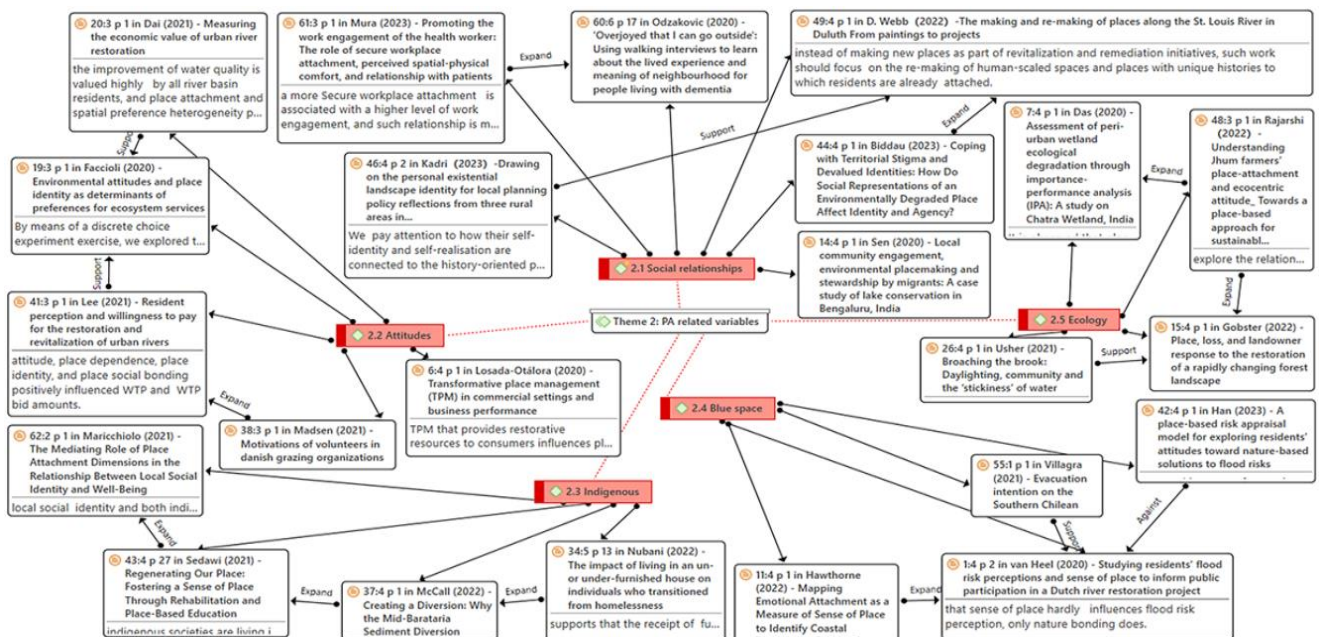


Figure 5. Network on the PA-related variables theme (Source: authors)

2.1. Social Relationships

Environmental placemaking has shifted fundamentally in modern cities' relationship between humans and nature conservation (Sen and Nagendra, 2020). Among the attachment-related studies, attention is paid to social relationships

and especially historical ties. According to Webb (2022), regional archivists, historians, and art or architectural historians should be contacted because they know local, place-based projects and architectural and visual landscapes (Webb, 2022). Kadri (2023) states that the local people's self-identity and self-actualisation are linked to the history of the territory in which they live (Palang, 2023). Biddau (2023) supports this claim, stating that in response to territorial stigmatisation and the devaluation of local and social identities, identity processes appear to act as self-protective mechanisms at the individual and societal levels (Biddau et al., 2023). Attachment positively contributes to health workers and patients (Mura et al., 2023; Odzakovic et al., 2020).

2.2. Attitudes

One of the most critical indicators of stakeholder attitudes - willingness to pay (WTP) is influenced by place attachment. Faccioli (2020) points out the influence of local identity on WTP for ecosystem services. WTP for peatland restoration was higher when people had positive attitudes towards the environment (Faccioli et al., 2020). Dai's (2021) study of watersheds supports this view. He pointed out that all watershed residents place a high value on improved water quality. Site attachment and spatial preference heterogeneity influence the public's WTP for river restoration (Dai et al., 2021). Lee (2021) investigated the connection between attitudes, place attachment, and WTP.

The findings demonstrated that WTP was positively impacted by attitudes, location attachment, place identity, and place social relations (Lee et al., 2021). In addition to environmental stakeholders, the behavioural motivations of consumers and volunteers have also received academic attention. Otalora (2020) points to ways of providing restorative resources for consumers to influence place attachment by improving consumer well-being (Losada-Otalora, 2020). Madsen (2021) states five motivational factors determine volunteer participation: sociability, nature values, instrumentality, sense of identity and personal interest. Attachment to place is an important driving factor (Madsen et al., 2021).

2.3. Indigenous

Place attachment has focused more on localisation-related research. According to Maricchiolo (2021), local identification and social interactions are the positive mediating factors exploring the connection between social identity and health (Maricchiolo et al., 2021). Some research has focused on student education, the living behaviour of locals, and homelessness. When focusing on place-based education initiatives, Sedawi (2021) emphasised the value of extending the local environment's borders to allow kids to spend time learning in a healthy setting when their local environment is polluted (Sedawi et al., 2021). According to McCall (2022), small-scale fishing is a critical component of social identity and a source of solid local attachment for local fishermen. Project planning should consider their potential social and psychological effects on coastal communities (McCall and Greaves, 2022). Nubani (2022) strongly supports that receiving furniture contributed to place attachment (Nubani et al., 2022). Studies above provide evidence for the positive impact of place attachment resources.

2.4. Blue space

Place attachment is frequently mentioned in coastal and river management because of the blue space's critical ecological regulating role. Han (2023) states that place identity negatively predicts supportive attitudes in the Place-Based Risk Assessment Model. In risk assessment, the plurality of an individual's place, context and relationships are vital in determining attitudes towards nature-based solutions (Han et al., 2023). Inconsistent with that conclusion is the fact that Van Heel (2020) concludes that a sense of place hardly influences flood risk perception. Only nature bonding does (van Heel and van den Born, 2020). A 'place bonding' factor combined assertions about place identification and location reliance. This view has been expanded in subsequent studies. Villagra (2021) examined how psychological and spatial indicators affect the intention to evacuate to a designated location. The results showed that perceived safety, attachment and recovery differed between scenarios (Villagra et al., 2021). Hawthorne (2022) further explored that place attachment can influence future priorities for coastal restoration. They used ArcGIS to map integrated measures of attachment (Hawthorne et al., 2022).

2.5. Ecology

Attachment is a vital variable in studies related to landscape change and ecological restoration. According to Gobster (2022), persons already sentimentally linked to former landscape elements may be severely impacted by landscape change. The degree of attachment can affect how people experience change and react to it (Gobster et al., 2022). Landscape features such as tree canopies can characterise a sense of place and mitigate the negative emotions of landscape change. Some artificial landscape changes, such as the restoration of many canalised watercourses, enhance the connection with wilderness, the attachment to place and the sense of community (Usher et al., 2021). These two studies illustrate the need to strengthen human connections to the countryside landscape, promoting attachment and mitigating negative emotions. In addition to the effects on individuals, pro-environmental behaviour is also linked to ecocentric attitudes. Rajarshi (2022) argues that ecocentric attitudes are linked to place attachment and that, despite being influenced by other factors, ecocentric attitudes usually contribute to environmentally responsible behaviour (Dasgupta et al., 2022). There is a need to continue to explore ways to strengthen ecosystem services, and resident satisfaction is one way to do this. Importance-performance analysis reveals residents' satisfaction with the performance of wetland ecosystem services. People's attachment to and proximity to wetlands are crucial in people's perceptions (Das and Basu, 2020). It is worth pointing out that the study used a four-dimensional place attachment scale rather than the more commonly used two dimensions, focusing on social and natural connectedness.

3. Thematic Relationship Between RP and PA

Several authors have proposed the attachment role in recovery (Figure 6).

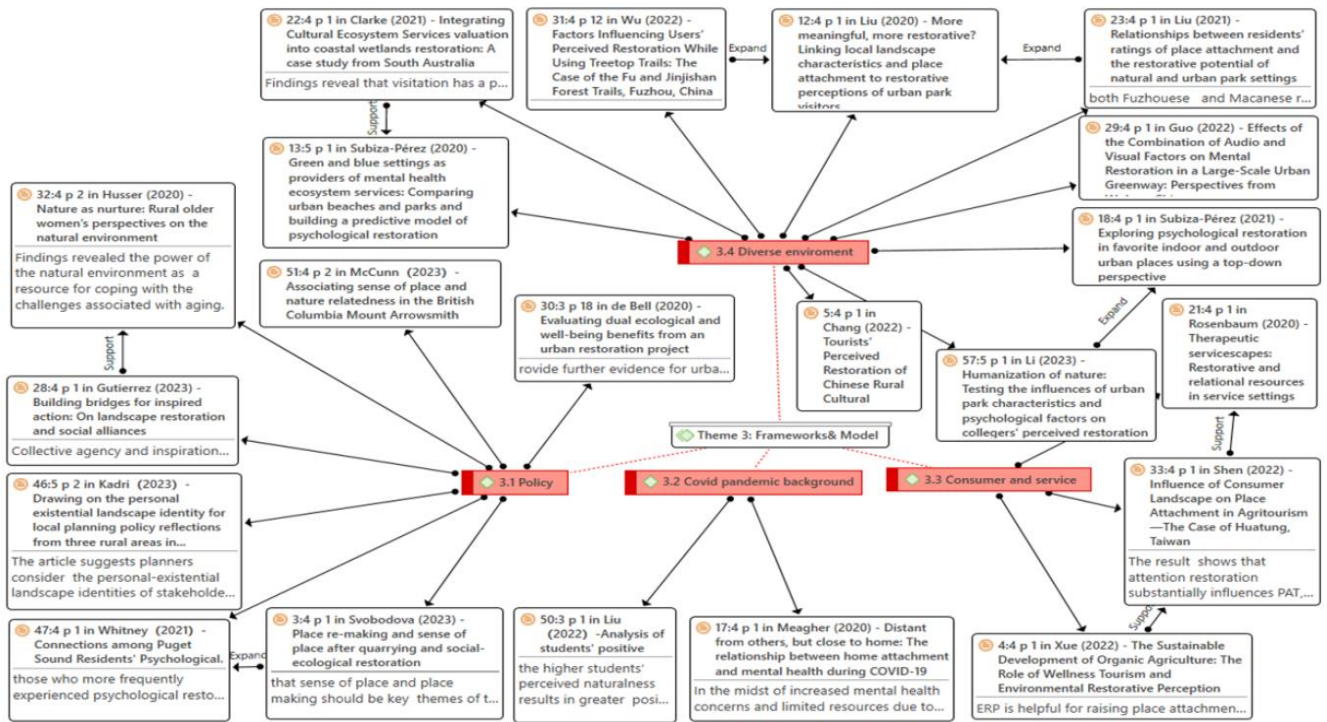


Figure 6. Network on the framework and model theme (Source: authors)

3.1. Policy

Academic research has made recommendations and policies on demographic issues, urban management, and restoration projects. Husser (2020) demonstrated that nature is a resource for overcoming ageing difficulties (Husser et al., 2020). According to Gutierrez (2023), strengthening the stakeholder's inspiration who are tied together by a shared love of the landscapes they are attached to can improve the connections between people and places (Gutierrez et al., 2023). This complements previous research and helps to alleviate intergenerational conflict. In the context of urban governance, while affirming the status of place as a critical factor, the process factors of governance cannot be ignored. Whitney (2021) states that place attachment fully mediates the effect of the frequency of psychological recovery on beliefs about governance (Fleming et al., 2022). Svobodova (2023) emphasises that a sense of place and place-making should be critical themes in the sustainable development debate, as they contribute to a better understanding of the human variables that constrain or enable socially just development (Svobodova et al., 2023). Individuals and places in restoration projects are also leading factors in planning policy. At the macro level, Kadri (2023) suggests that planners consider the personal-existential landscape identities of stakeholders as a significant factor in the local planning policy-making process (Palang, 2023).

According to Bell (2020), incorporating ecological and social factors can improve the long-term viability of restoration efforts, especially in metropolitan areas (de Bell et al., 2020). McCunn (2023) states that among the design proposals for specific operations, municipal planners should focus money or public involvement on trails, parks, and other natural elements to enhance the sense of place in coastal and mountain towns. Municipal planners can focus on the restorative effects of community member's relationships with the environment (McCunn et al., 2023).

3.2. COVID background

In the epidemic context, recovery and attachment-related research focus on green spaces and indoor environments. Attachment and health recovery have been shown to benefit from family and green space (Liu et al., 2022; Meagher and Cheadle, 2020).

3.3. Consumer and service

The relevant variables' findings in the traditional domain of place attachment research, namely tourism and consumption, are equally compatible with the model of recovery and attachment. According to Rosenbaum (2020), favourable social and physical surroundings boost customers' sentiments of attachment and well-being. Future behavioural intentions of consumers are determined by the impact of the store on their well-being and their desire to maintain place attachment (Rosenbaum et al., 2020). Shen (2022) states that the consumer landscape positively affects attention restoration and place attachment (Shen et al., 2022). Xue (2022) states that environmental restorative perception helps raise place attachment, healthy image, and loyalty to tourist destinations (Xue and Shen, 2022).

3.4. Diverse environment

The attachment-recovery model has been validated in beaches, urban parks, rural cultural spaces, and greenways. Subiza-Pérez (2020) states that beachgoers reported higher attachment, identity, and repair degrees than survey respondents in urban parks (Subiza-Pérez et al., 2020a). Clarke (2021) supports this finding, it showed that access to coastal wetlands had a positive impact, and on this basis, it was noted that people valued places they knew best (Clarke et al., 2021). Chang

(2022) reveals that visitors generate restorative cognitions in rural cultural spaces through situational engagement and placed attachment (Chang and Li, 2022). Guo (2022) highlights how sound a greenway setting might aid in psychological healing (Guo et al., 2022). According to Subiza-Pérez (2021), place attachment, place identity, and perceived restorative potential were the best indicators of subjective restoration (Subiza-Pérez et al., 2021). The landscape factors' moderating and mediating impacts on the preference restoration nexus were discovered (Li et al., 2023). Liu (2020) stated that when respondents rated photographs that contained local landscape features, they showed stronger place attachment and perceived restorative nature (Liu et al., 2020). He explored further in terms of familiarity. Liu (2021) further noted that respondents rated familiar urban park environments higher than unfamiliar ones in all categories. No distinction existed between the natural environment and the restorative potential of urban parks with which they were familiar. Place attachment predicted restorative potential in familiar urban parks (Liu et al., 2021). Wu (2022) broadens this perspective by stating that the treetop trail's quality encourages the user's attachment to the location and impression of recovery (Wu et al., 2022).

DISCUSSION

Previous research has focused on the relationship between quality of life, place attachment and restorative perception, with attachment, in turn, influencing perceptions of restoration (Ruiz and Bernardo Hernández, 2014). Place attachment has been highlighted in recent research as a mediating factor between environment and psychological recovery. It has also been validated in different settings, while research has focused on differences in familiarity (Liu et al., 2021), audiovisual factors and the naturalness of the environment (Guo et al., 2022). The thematic review has resulted in new research recommendations. Twelve research directions to guide research and practice in place attachment bonding recovery so that new research opportunities can be identified, and the strategic success of policymakers can be assisted (Figure 7).

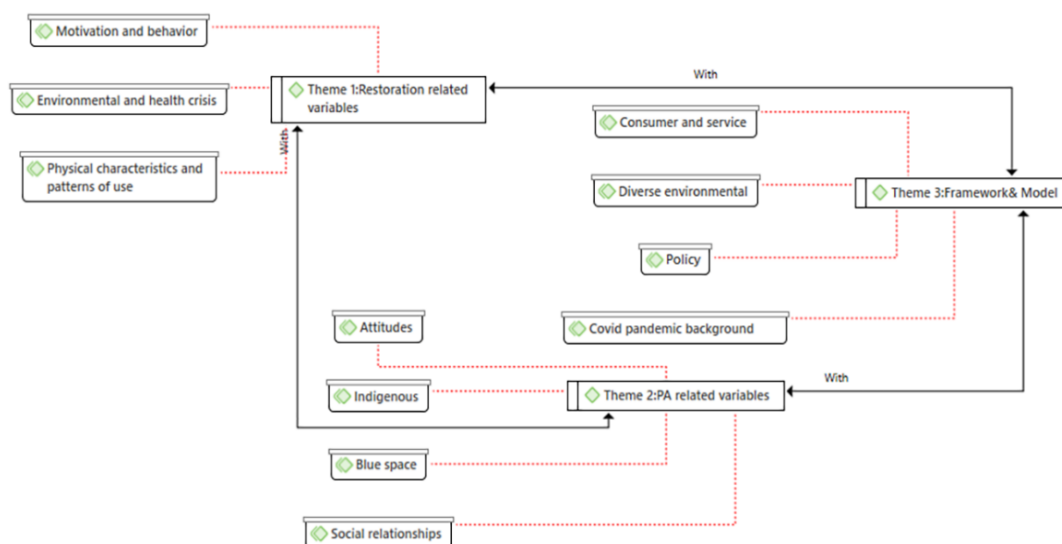


Figure 7. A framework for the existing discussion (Source: authors)

Recent research can be grouped into the following categories: Physical Characteristics and Use Patterns: Focusing on the variables associated with achieving enhanced recovery outcomes. Motivation and Behaviour: Recommendations on government policy and site management. Environment and Health Crises: A policy proposal for landscape change, ecological challenges, and personal health restoration. Social Relationships: Sorting out the effects of historical relationships and interpersonal interactions on attachment. Attitudes: More research on environmental WTP and volunteer motivation. Indigenous: More research into local culture and behavioural patterns, with place perception and well-being as part of the consideration. Blue spaces: Focus on essential ecosystem services beyond green spaces to create new values to support psychological recovery. Ecology: Existing projects such as ecological restoration focus on attachment situations to support psychological recovery and turn risk into opportunity. Policy: Assess policy recommendations where relevant frameworks have been adopted. COVID background: Assess differences in attachment recovery indoors and outdoors in the context of an epidemic. Diverse environment: Practical assessment of adopting attachment recovery models in different settings. Consumer and services: Assessment of frameworks in projects such as eco-agriculture or tourism destinations.

From the 53 articles reviewed in this paper, the relationship between RP and PA was obtained through thematic analysis using ATLAS.ti 23 software. Progress in research is still relatively slow, partly due to a lack of awareness among policymakers, and place attachment is only valued in response to environmental changes such as environmental renovation and renewal and natural crises. Theme 1 focuses on the context and relevant variables supporting restoration to clarify the processes influencing health restoration. As health restoration was not explicitly stated, some literature on ecological restoration and river restoration was still included in the paper as it focused on stakeholder perceptions of place and attachment. It is divided into three sections, physical characteristics and use patterns, motivation and behaviour, and environmental or health crisis. There needs to be more consistency of opinion in the first section, which may be related to sample size and variable selection and needs to be further explored. The literature corroborates the link between recovery and motivational behaviour. Related ideas also need to be explored in the context of environmental health crises.

Place attachment as a reliable resource for coping with health decline associated with urbanisation and ageing is divided into five sections regarding research on relevant variables: Social relationships, Attitudes, Indigenous, Blue space, and Ecology. Attachment is related to social relationships in the occupational environment of some groups as well as in the living environment. Attachment is influenced by historical factors related to the local context and culture. It also plays a role in the WTP and the motivation to behave to the environment, which is supported by the literature in the ecology and blue space sections. The study's framework emphasises the need to clarify the connection between place attachment and recovery perception literature. The findings are first presented regarding policy on several aspects of demography, urban management, and ecological restoration projects. This is followed by an empirical study of health issues in a post-epidemic context. Thirdly the relationship between the two concepts is investigated from the consumption domain. Finally, both models are validated from different environmental contexts, adding more considerations for further exploration.

The following conclusions can be reasonably drawn: i) There are differences in the degree of attachment and recovery in different types of urban environments. Such differences can be used as a basis for design guidance, i.e., highlighting their local historical characteristics, and degree of naturalness. ii) Place attachment predicts perceptions of restoration, and a sense of environmental restoration contributes to place attachment, which also holds for consumer environments and tourist destinations. iii) Environmental attitudes such as willingness to pay for the environment, pro-environmental behaviour and volunteer behaviour are influenced by place attachment. iv) In the study of river and coastal environments, the dimensions of 'natural bonding' and 'social bonding' are important.

CONCLUSION

The health benefits of urban environments are associated with place attachment and restorative perceptions. Healthy environments also contribute to improving the socioeconomic benefits of urban environments. This paper encourages the integration of information between different disciplines, such as urban planning specialists, environmental psychologists, and public health experts, to further improve the urban environment. The primary objective of this research is to analyse existing patterns of place attachment and recovery in different contexts and to provide guidelines for future research. It also explores additional liveable environment research variables to address mental health challenges in the post-popular era from the perspective of human-place integration. A new guiding concept of integrating place-making and place attachment in urban planning and design is proposed to integrate place attachment theory into the design of restorative environments.

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