Environmental-Community Psychology in the Disaster Research: The Importance of Social-Spatial Connections

Héctor Berroeta*, Laís Pinto de Carvalho

Universidad de Valparaíso, Hontaneda 2653, Valparaíso, Chile

* Corresponding Author: Héctor Berroeta; hector.berroeta@uv.cl

Abstract: The psychosocial literature in the context of socio-natural disasters mainly focuses on the psychological consequences of the affected people, while ignoring the psychosocial environmental factors. Here, we emphasize the relevance of community environmental psychology to analyze the subjective aspects of the relationship with the place and the community relations of the localities affected by disasters. Therefore, we propose a conceptual framework of the categories of community psychology and environmental psychology, which are related to the study of the social spatial connection in what we call socio-natural disasters. This view is illustrated by the results of a study using a hybrid approach that describes how people living in communities affected by earthquakes, tsunamis and volcanic eruptions in four locations in Chile. In a non-probabilistic convenience sample (n = 628), the responses to the scale of location attachment, location identity, residence satisfaction, community awareness and citizen participation were analyzed, as well as the narration of 17 focus groups (n = 117) on the meaning of public space construction. The conclusion is that the combination of environmental and community psychology expands the understanding of the elements of power and territorial disputes, and highlights the psychosocial defects in post disaster reconstruction solutions.

Keywords: Socio-natural disasters; Community environmental psychology; Place attachment; Residential satisfaction; Community public space

1. Introduction

The negative consequences of "natural" events are often referred to as "natural" disasters. This way of naming the phenomena naturalizes a deterministic narrative and minimizes people's role in the causes, consequences and restoration of disasters. In order to change this phenomenon, social sciences insist that disasters are not natural[1]. Due to the above, in this paper we will use the concept of socio-natural disasters as a discourse intention, because natural threats must interact with social vulnerability conditions in order to form disasters. In this regard, settlement decisions and social, political, cultural and economic conditions are key factors[1,2]. Therefore, together with natural science and physical science, the participation of other disciplines is very

important for understanding and intervening in socio-natural disasters.

This inseparable relationship between nature and society is in line with the transaction view of environmental psychology[3], that is, man and environment are dynamically defined and transformed with the passage of time. Therefore, from this perspective, there is a consistent understanding that natural threats, such as earthquakes, tsunamis and volcanoes, can only be transformed into disasters when interacting with exposed human groups, provided that the impact on events varies according to different aspects such as socio-economic status, gender, ethnicity, age, disability, immigration status, culture, power relations and political and economic systems[2].

In this context, it is of great significance to analyze the subjective aspects of the interruption of the relationship between human and environment in the process of disaster formation. The psychosocial literature on disasters focuses mainly on the psychological consequences of victims[4,5]. We know the psychological effects related to the extent of destruction, the demographic and social characteristics of the inhabitants of these territories[6], and the role of organizational, communication and social support capabilities[7], the relationship between the severity of psychological response and well-being[5] and the impact of material loss and its relationship with rooting[8]. However, although we understand that changes in housing or urban living environment directly affect people's connection with the place, leading to fracture and destruction[9-12], we know little about the psychological environmental factors involved in disaster change and reconstruction. The analysis of these linkages is essential for planning prevention and reconstruction operations that recognize tensions and conflict dynamics in the territory in order to respect the rights, meaning and lifestyle of communities[13-16]. In this sense, from the perspective of psychology, environmental psychology and community psychology are two main branches. We recently explored the link between these two areas in the Chilean disaster study, and we note that changes caused by disasters and subsequent reconstruction and/or displacement processes have changed people's physical environment and changed the structure of symbolic and spatial meaning, affecting the dynamics of coexistence and association of community[17,18].

In this article, we try to emphasize the relevance of community environmental psychology and analyze the subjective aspects of the relationship with the place and the community relations of the localities affected by disasters. To this end, we will propose a brief conceptual framework on how to use the categories of community psychology and environmental psychology to study what we call socio-spatial linkages, and introduce the comprehensive results of research projects FONDECYT N° 11121596 in 2013 and FONDECYT N°1181429 in 2018. These studies adopt a mixed approach, it describes how these connections are manifested in people who have experienced disasters in Chile. We describe the concepts of place attachment, place identity, residence satisfaction, community awareness, citizen participation and the meaning of public space.

2. Community Environmental Psychology, Social-Spatial Connection under the Background of Environmental Transformation

Community environmental psychology refers to a name in the field of analysis and intervention. As Montero[19] pointed out, this field is a transition between environmental psychology and community psychology, which is characterized by exploring the relationship between socio-physical dimensions and community dynamics. From the beginning, community psychology has focused on the analysis of psychosocial phenomena that produce environmental changes conducive to community development[19], while environmental psychology is interested in studying how the physical environment is related to the psychological processes associated with human

experience in the region. The connection between these two disciplines is handled through two main methods: the first method is to conduct comprehensive reflection from the intersection of communities, and the second method is to analyze the epistemological assumptions of space, environment and community spatial structure. in these two fields, exploring the overcoming of the subject-space dichotomy[20].

In this regard, we believe that environmental-community connection means that it is different from the traditional method of environmental psychology-of socio-cognitive predominance-, assuming a transactional-subjectivist concept[21], a distinction that dialogues with the founding approaches of Wiesenfeld[22] who views the connection between environmental psychology and community psychology from the following principles:

> We do not envision the existence of people without spatial references, and vice versa, these without people (...) we don't conceive the environment as an objective reality, independent of our way of accessing it, but rather the intersubjective reality that people construct in their social interaction (...). Different backgrounds and experiences have different meanings for the environment, which are historical and dynamic. (p.7)

Although there is little literature dealing with the relationship between the two fields conceptually[20,22,23], the applied experiences are numerous. In general, the process of connecting with places and communities is explained in a variety of conceptual suggestions that somehow revolve around people's ownership and active or negative participation in their environment[24-29].

In this regard, we know that spatial symbolism is formed by the meaning related to the physical characteristics, use or symbolic interaction between users of spatial structure[30]. In addition, the group connection with the site is the product of the experience gathered among the group members of collective activities in a specific space[31]. Therefore, the inclusion of intervention strategies conducive to the identification of residents' groups or communities with their living space can establish a social anchor and promote sustainable use, which is manifested in the attention to the physical structure, quality and value of space[32].

Based on these findings, we propose to analyze the interruption of post disaster links from the perspective of community psychological environment and explore the links with the place and between the people living there from a framework involving both spatial and subjective aspects[23,33].

The connection to the site is unfold in a complex and multifaceted manner, which requires reflection on the living conditions of people affected by disasters. The qualitative differences between the old and new living environments and the opportunities for interlinkages, meeting self-esteem needs, control systems and community change[12,34] are central aspects of the affected person assessment process; thus, for example, forced displacement caused by disasters is a negative emotional experience that helps to strengthen the assessment of linkages with abandoned sites[18], just as reconstruction policies that focus only on people's satisfaction with their housing do not ensure a higher quality of life[18]. In addition, from the perspective of constructivist discourse, Di Masso, Dixon and Hernández[35] believe that environmental assessment is also a political and ideological process in which the participation of displaced persons in decision-making about their resettlement is crucial to ownership and linkages with the new environment[17]. In short, we use the term "socio-spatial" as a category of environmental psychology, which allows us to explore the relationship with the socio-physical environments that people develop and which brings together different concepts that the literature, both environmental and community psychology, have used to study the neighborhood scale, residential satisfaction[28,36], citizen participation[37], place identity[25], place attachment[38] and community public space[39].

2.1. Community awareness, residential satisfaction and citizen participation

Community awareness refers to the social connection between people and place and its physical, symbolic, political and cultural meaning in the community[40]. It is an individual or collective assessment experience as a

resource for community life[41]. It is related to social capital[42], mental health and community participation[41]. Community awareness affects the psychological adaptation to environmental changes[43] and plays an important role in community rejuvenation[23]. Where people have no emotional connection with these places, they often do not have enough commitment to cooperate with neighbors and local institutions to improve their environment.

Similar to the above, residential satisfaction also includes assessing the experience, according to Aragonés et al.[36], it consists of three main components: house, community and neighbors. It is not a stable or permanent process, being affected by environmental and personal changes. It involves the process of adjustment and adaptation between the level of desire and the unmet needs of the living environment[44].

Citizen participation includes participation in community activities and is operationalized through membership in entities or participation in activities[37]. Participation in neighborhood affairs is associated with attachment to the neighborhood[45] and possession of the neighborhood[29], as well as community awareness and residential satisfaction[46].

2.2. Identity and place attachment

The central approach to place identity is that an individual's personal identity is based on his or her physical environment, just as an individual's social identity is based on his or her belonging to other social categories, such as gender, race or class[25,29]. Bernardo and Palma-Oliveira[47] pointed out that local identity refers not only to personal experience, but also to community experience. The connection between people and their physical environment, as well as the common driving force of local identity, is the basis for the formation of community ownership and neighborhood relations.

This concept of belonging originates from the concept of identity. We can associate it with attachment to place and regard it as people's emotional feelings about the place where they were born and live[48]. This definition is vague. In recent years, in the literature[49,50], people have chosen to use the word "umbrella" to refer to all the connections between people and places[51]. According to the empirical tradition, attachment to place is defined as "the emotional bond people establish with a place where they tend to stay, feeling comfortable and safe"[52]. This emotional connection can develop to places of different sizes, such as homes, communities or cities[53]. From the perspective of the overall method of the connection between man and the environment represented by Altman and Low[38], attachment to place is considered to be the affects, emotions, feelings, beliefs, thoughts, knowledge, actions and behaviors related to a place which can vary in scale and specificity; actors (individuals, groups or cultural collectives); social relationships (interpersonal, community or cultural, to which people are connected through websites); and time (such as the past, present and future, as well as cyclical, repetitive and active). Recent approaches to place identity and place attachment are discursive perspectives, which regards attachment as a culturally available resource deployed in some interactive environments[54,55]; and post-discursive perspectives, which considers important nonverbal practices in space production[56,57].

2.3. Community public space

Public space is a concept, which believes that space is composed of the construction process of citizenship and social contact, and its basis is political thinking on public and private, accessibility, transparency and freedom. Combined with the theory of urban design and social science, this paper studies the concept of public space from the two dimensions of city and society. It also deals with the promotion or control of sociability and the social contacts in urban construction[58,59]. Three main discourse perspectives or tendencies can be determined. They are the basis of public space representation policy. The relationship between three different views of the past and future of public space and the changes of contemporary public life. Their assumptions and arguments show

different analytical sensitivity and have obviously different political and ideological consequences. These three viewpoints are terminal theory or loss of public space theory, optimism theory or civilization construction theory, conflict theory or control and dispute theory[17,39,60].

The method of community public space aims to connote social space phenomena, which are produced by the special way in which the physical characteristics, uses and meanings of public space interact on the neighborhood scale[39]. This highlights the importance of the interrelationship between individuals and the environment, the interaction between neighbors, their networks and the daily life of their communities[18].

In order to illustrate the relevance and scope of community environmental psychology to community research in the context of changes caused by socio-natural disasters in Chile, we will briefly introduce the changes in the cities and towns of Chaitén, Constitución, Dichato and Tocopilla.

3. Transformation Caused by Socio-Natural Disasters

Chile is a country constantly suffering from various social and natural disasters[61], which have led to profound urban changes. In this study, we try to analyze the events with significant national impact in recent years. These events have produced different changes in the environment, resulting in different reconstruction solutions. The Chilean government's strategies for dealing with reconstruction are diverse and unstable[62]. As described by Salgado[63], the mode of implementation is mainly neoliberalism, which refuses citizens to build territory together.

Due to these disasters, there are two main types of changes in community habitat: overall changes (involving changes in housing location inside and outside the city of origin) and partial changes (retaining the original housing location).

3.1. Total transformation: Chaitén, 2008

On 2 May 2008, 4,700 people in the area were evacuated due to the eruption of Chaitén volcano. After the volcanic eruption, most houses were purchased by the State and individual subsistence subsidy was given for 18 months, with which each family had to find a solution in the normal real estate market. This strategy hinders the organization of the community and spreads the population among the cities in the lake area. One of the towns that receive a large number of Chaiteninos (about 200 families) is the Puerto Montt commune, especially the town of Alerce, where about 60,000 people live[64].

3.2. Total Transformation: Dichato, 2010

In the face of the great earthquake and tsunami on February 27, 2010, more than 80% of Dichato was destroyed. The destruction of the town led to the temporary elimination of all populations living in coastal areas in emergency villages in highly safe areas. In this case, El Molino village in Dichato, is considered to be the largest post-earthquake emergency village in Chile, with about 450 families for more than three years. The slow reconstruction process led to the establishment of committees and confrontation with the authorities. Of the two houses completed three years after the disaster were Villa Horizonte and Bahía Azul[65].

3.3. Partial Transformation: Constitución, 2010

In 2010, Constitución was also severely hit by the earthquake and tsunami of February 27. As a result of the earthquake, one of the communities affected was Santa Aurora housing area, located on top of the O'Higgins hill. The house was demolished and rebuilt at the same location. Despite material and human losses, most residents decided to return to the area. Today, it consists of 48 families living in the original residential area[65].

3.4. Partial transformation: Tocopila, 2007

The Tocopilla earthquake of November 2007 caused major damage to 58% of the city's buildings and infrastructure, leaving about 15,000 people homeless. During the waiting period, the final solution did not maintain the development of the original community or transition community. One solution is the South Pacific Neighborhood, with a total of 324 houses, of which 58 shelter families from the Huellita sector, 30 from El Teniente and 236 houses were allocated to historical and post-earthquake relatives[64].

4. Method

The study was conducted from the perspective of transaction[3]. People and environment are considered to be inseparable factors. They are dynamically defined and transformed with time. It also understands the environment as a socio-physical structure[3], in which physical and social attributes are interrelated. Following Stokols and Shumaker (1981), from the perspective of transaction, the investigation should be carried out from a variety of technologies, which should emphasize the research of overall analysis as an integral aspect. This view allows qualitative interpretation to address the meaning, experience, practice and action of space (e.g., how does it feel? How does experience determine the location?), without giving up the evaluation dimension of emotion and identity (do I feel attached to this community? Do I feel connected to this community?). Within this framework, we designed a hybrid study, in which we reported two methods of social spatial connection phenomenon in the context of socio-natural disaster change. We will describe as follows: the first is the quantitative method of personal measurement, and the second is the qualitative method of group production.

Although both methods have independent data generation and analysis time, we combine them with the theory-based selective analysis strategy[66], that is, perform data reduction and correlation processes, construct new categories, and seek organizational information to answer emerging questions in all cases. As a synthesis of this process, based on Morrow and Smith[67], we constructed a graph to show the context, causal conditions, phenomena, intervention conditions, strategies and consequences.

4.1. Method 1: Individual measurement

Participant. According to the quantitative method, a survey was designed and applied to the non-probabilistic sampling of 628 residents in 2013. Participants included residents affected by reconstruction: 144 displaced persons are from Chaitén city, 193 from Tocopilla, 80 from the Constitución and 211 from Dichato. In terms of sample characteristics, 66.6% of the respondents were women, and the average age of the population was 41 years old (SD = 14.95). In terms of housing, 88.7% of people live in their own houses, 4% rent houses and 7.3% live in relatives' homes. An average of 3.7 people live in each family.

Instruments. The tool is based on the adaptation of five scales. The purpose is to measure the dimensions of attachment to social and spatial places, place identity, community awareness, residence satisfaction and citizen participation. The attachment scale for social, spatial and location identity is developed on the basis of self-report. It assesses the experience of the original community and the current community in order to obtain the pre-disaster experience assessment and its current assessment.

4.1.1. Social and spatial place attachment scale[26]

The scale used by Scannell and Gifford[26] assessed attachment to social and spatial places. It consists of eight Likert-type response format items (1 = 0 to 6 = much), which must respond to the source community and the current community (for example, the community's public space is important to me). The reliability of the

adaptation scale measured by Cronbach Alpha coefficient is 0.914 for past social attachment; for past spatial attachment 0884; for current social attachment 0898; for the current spatial attachment 0885. The scale of the original version shows that Cronbach Alpha is 0.78.

4.1.2. Global place identity scale[53]

Scale adapted from Vidal *et al*.[53] and taken from Hernandez, Hidalgo, Salazar and Hess (2007), assessing place identity. It consists of five items with a Likert-type response format (1 = 0 to 6 = much). These items must be connected with the source community, the current community and the city (for example, this community is part of my identity). The reliability of the scale measured by Cronbach's Alpha coefficient is 0.920 in the past and 0.892 in the present. The scale of the original version shows that Cronbach Alpha is 0.94.

4.1.3. Concise scale of community awareness[68]

The scale was adapted from Long and Perkins[68] to assess community awareness. It consists of eight Likert-type response format items (1 = 0 to 6 = much), which must respond according to the current community (for example, many of my neighbors know me). The reliability of the adaptation scale measured by Cronbach Alpha coefficient was 0.838. The scale of the original version shows that Cronbach Alpha is 0.74.

4.1.4. Residence satisfaction scale[68]

According to the scale for assessing residential satisfaction compiled by Amérigo[69]. It consists of four items in Likert-type answer format (from 1 = 0 to 6 = many). These items must be answered for the community, housing, neighbors and the current global (for example, how satisfied you are with your house). The reliability of the adaptation scale measured by Cronbach Alpha coefficient was 0.858. The scale in the original version does not report Cronbach's Alpha.

4.1.5. Citizen participation scale[70]

The scale adapted by Perkins *et al*.[70], assessing citizen participation. It consists of 10 Likert-type response format items (1 = 0 to 6 = much), which must respond to the current community (for example, participate in your neighborhood committee in some way). The reliability of the adaptation scale measured by Cronbach Alpha coefficient was 0.909. The scale of the original version shows that Cronbach Alpha is 0.78.

Procedure. The instrument has been applied in Alerce, Dichato, Constitución and Tocopilla. The informed consent document approved by the ethics committee of Valparaiso university is used to protect the respect, autonomy and confidentiality of participation. The informed consent procedure involves each participant reading and signing these documents before starting data production.

Data analysis. The dimensions of social, spatial and location identity are analyzed, and the student's *t*-test is used to determine whether there are differences between locations and between past and present neighborhood evaluations. For the dimensions of community awareness, residential satisfaction and citizen participation, the average value of each Likert response level is calculated by region.

4.2. Method 2: Group production

As a supplement to the above, and from a qualitative point of view, focus groups have been established in all four locations as a data production technology.

Participant. As described by Berroeta *et al*.[17] the criterion for choosing a community is that there is a certain degree of prior knowledge between residents of the new community and residents of the old community. In Tocopilla, the South Pacific region was chosen, which has a neighborhood sector that was relocated as a whole.

In Constitución, the residential area of San Aurora was selected because it is a completely demolished and rebuilt community that retains its own residents. In Dichato, the Villa Horizonte and Bahía Azul neighborhoods were selected, which were inhabited by people who lived in very close sectors. Finally, in the case of Chaitén, the town of Alerce in Puerto Montt was chosen, where some 150 displaced Chaitén families lived.

117 residents attended the meeting, including four groups of displaced persons from Chaitén (founded in Puerto Montt, Los Alerces), three groups in Tocopillaa, six groups in Dichato (four in Villa Horizonte and two in Bahía Azul) and four in the Constitución. The sample is intentional. The selection criteria are: men and women over the age of 18, having their own houses, have lived in the community of origin for more than 5 years, and have not suffered personal injury or lost family or friends due to disasters.

Participants were selected from those who expressed their willingness to use the questionnaire in the early stages of investigating and mediating key informants in each community.

Instruments. In 2014, there were 17 focus groups. In these groups, you investigated the history of the community (how did you build the community? What was he like before? Housing, environment and relationship with neighbors?), reconstruction process and decision to live in the current community (why do they leave or not leave where they live? How about the participation process? How about the house, environment and relationship with neighbors? How do they manage the space?). Each group was recorded and transcribed.

Procedure. All groups were conducted at the community headquarters and led by the first author of this article. The ethical investigation procedure is carried out by reading and signing the informed consent form.

Information analysis. This information is organized using atlas software ATLAS.ti 7. The analysis method is inspired by open analysis and axial analysis of grounded theory[66]. The analysis follows a separate logic, analyzing each location separately, followed by horizontal logic from the thematic analysis axes that appear in all cases[71]. For triangular analysis, a research team composed of psychologists, environmental psychologists and community psychologists encodes and internalizes the data.

Theoretically, the whole classification process is guided by the discourse framework of public space narration. Conceptually, these speeches include different explanatory tracks that define the meaning associated with public space.

Finally, we integrate the approximation according to the selective logic of the grounded theory[66], organizing the main relationships identified.

5. Result

5.1. Personal measurement: Past and present neighborhood evaluation

Social attachment. In measuring social attachment between past and present communities, we identified differences across all sectors. The change direction of social attachment between the past community and the present community is different in all four sectors. The Constitución is the only sector with higher social attachment than the past community (see **Table 1** and **Figure** 1).

Spatial attachment. Except for Dichato, there are differences in spatial attachment between past and present communities in all departments. The difference between the average spatial attachment of past and present communities is different in all sectors, and only one sector shows an upward direction (see **Table 1** and **Figure 1**).

Place identity. By analyzing the average location identity of past and current communities, we find that there is no difference between the four departments (see **Table 1** and **Figure 1**).

Table 1. Differences in social spatial attachment and place identity between past and present neighbors

| Attachment and sectors	Past neighborhood		Current neighborhood		t	gl	P
	Mean	SD	Mean	SD			
Attachment to social places							
Chaitén	4.86	1.35	2.94	1.44	11.970	143	<0.001
Constitución	3.99	1.65	4.43	1.43	-2.756	79	0.007
Dichato	3.96	1.36	3.17	1.22	6.563	210	<0.001
Tocopilla	3.79	1.61	3.15	1.52	3.745	192	<0.001
Spatial place attachment							
Chaitén	4.59	1.27	2.60	1.26	12.974	143	<0.001
Constitución	2.48	1.56	4.97	1.18	-14.057	79	<0.001
Dichato	3.45	1.40	3.36	1.30	0.318	210	0.484
Tocopilla	3.24	1.62	2.89	1.47	2.279	192	0.024
Place identity							
Chaitén	4.93	1.20	2.92	1.32	12.437	143	0.008
Constitución	4.30	1.49	4.68	1.47	-2.184	79	0.032
Dichato	4.14	1.42	3.56	1.35	4.044	210	<0.001
Tocopilla	3.91	1.71	3.41	1.49	2.661	192	0.008

Source: Self-compiled, 2019.
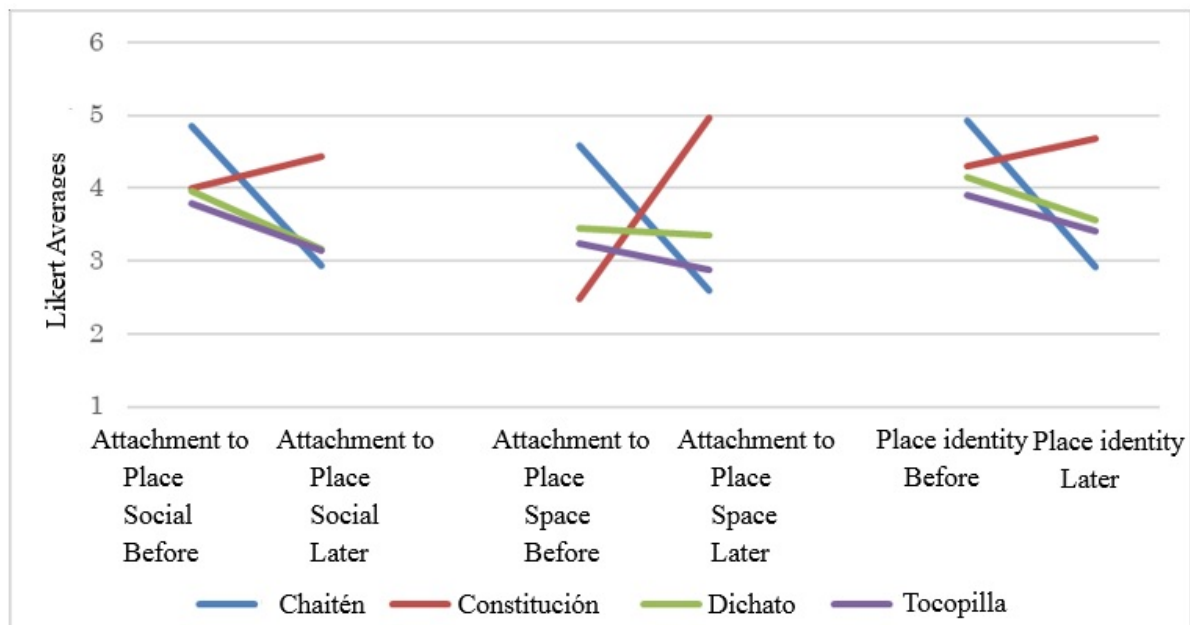
Figure 1. Differences in social and spatial place attachment and place identity between the past and present community in each sector, expressed as the Likert scale average.

The four sectors studied showed differences between the mean values related to place of origin and current location in all variables, and only Dichato did not show differences in spatial attachment. This means that in all cases, the social spatial connections between the original community and the current community are different.

Among these results, the case of Chaitén and Constitución is particularly prominent. On the other hand, Chaitén shows the lowest value in all dimensions calculated in the current neighborhood, while Constitución shows the highest value. The difference in this result shows that the impact experienced by people who migrate from their cities to Los Alerces, has experienced a complete change in the environment. On the other hand, in the housing area of San Aurora in Constitución, reconstruction was carried out in the same place where the houses were located before the earthquake, maintaining or even improving the level of assessed.

5.2. Community awareness and citizen participation

Considering that 1 corresponds to a zero answer and 6 corresponds to a very large answer, the results obtained from the community awareness of the current community enable us to determine that the average score of Constitución participants in community awareness is high, while the average scores of Dichato, Tocopilla and Chaitén are low. Chaitén again shows the lowest average compared to the current community (see **Figure 2**).

However, citizen participation maintains a similar pattern and the average level is low. The Constitución stipulates the highest average level of citizen participation; However, a score between *small* (2) and *something* (3) indicates the answer. The average citizen participation rate in other cities is lower than the low level, and Chaitén is the city with the lowest average level (see **Figure 2**).
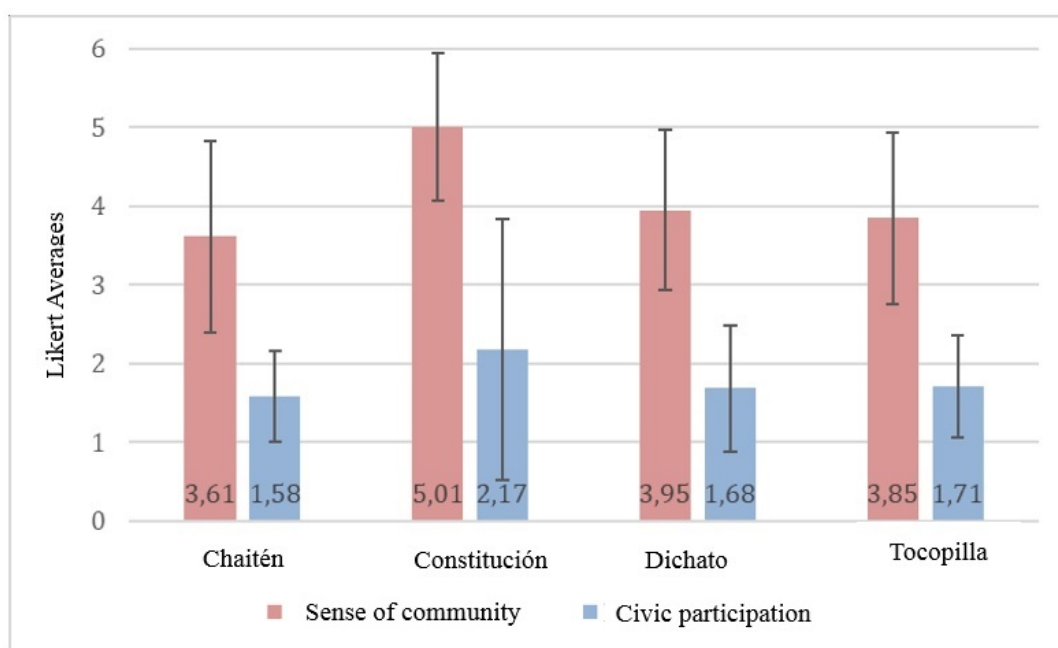

Figure 2. Community awareness and citizen participation in the current community (in Likert average) in each sector.

5.3. Residential satisfaction

Are you satisfied with your house? We found that the Constitución has the highest satisfaction with current housing, with an average score equivalent to *many* (5). Tocopilla and Dichato's average score is equivalent to 4 and 5 points, and Chaitén's average score is the lowest, which is equivalent to the answer between 3 and 4 points (see **Figure 3**).

5.4. Group production: Meaning related to public space

Catastrophic changes have triggered a series of stories that express various discourse tracks about public space. The analysis of these stories shows how the three main discourse frameworks of public space unfold loss, citizenship and controversy, which determine the practice of occupying space (see Berroeta *et al.*[17]).

In this article, we show the relevance and scope of community research in the context of reading community environmental psychology on the changes caused by socio-natural disasters in Chile. We will describe the three main discourse frameworks that we identified transversally at the research site. For an in-depth study of these results, see Berroeta *et al.*[17].
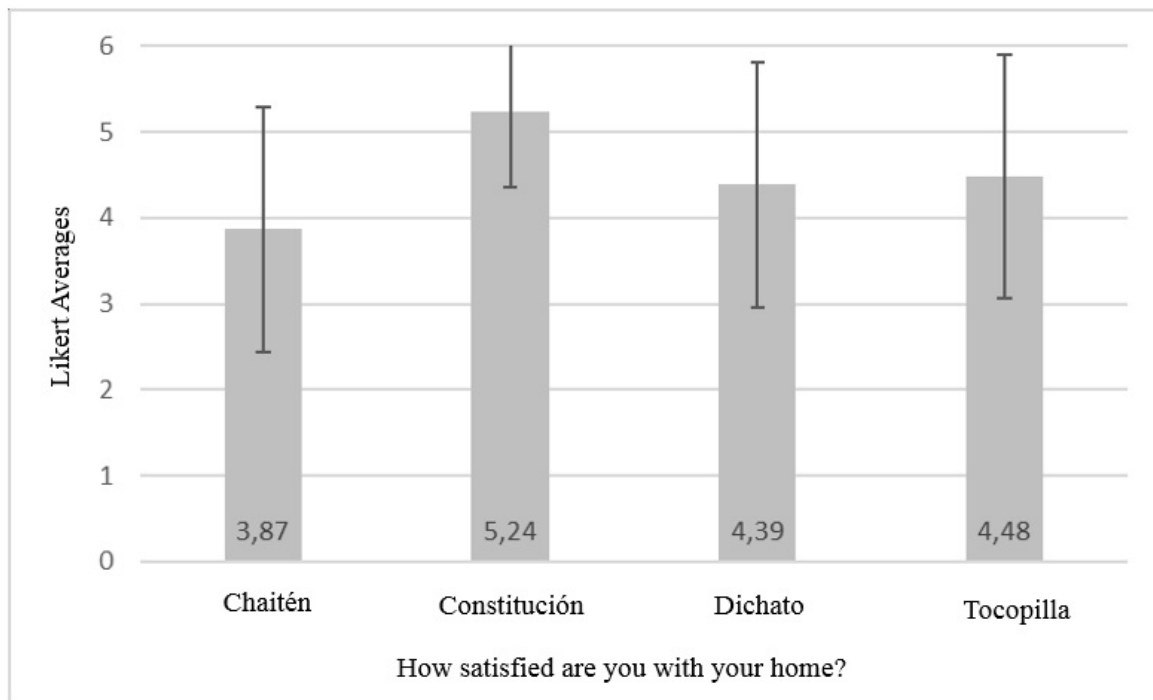
Figure 3. Levels of satisfaction with current home (average Likert) in each sector.

Loss. We identified narratives of the transformative experience of a socio-natural disaster that identified the loss of individual and community factors and incorporated them into pessimistic discourse. In general, they describe locations that are no longer physically and emotionally identical after the event. In order to describe the loss, the participants' narrative is based on the pre-existing connection with the environment, which develops into an assessment of the past and present space to determine the content of the loss and its subsequent acceptance or discomfort. We have identified emerging categories of rooting and loss of livelihoods, the desire to lose space and the privatization of public space.

The characteristics of these loss reports vary from location to location. From the experience of Chaitén displaced persons, loss means a way of life that no longer exists, losing the rural nature of their contacts and practices, taking a negative attitude towards these changes and turning them into dissatisfaction. The words of loss also appear in Dichato; however, they are characterized by a positive re recognition. The improvement in housing conditions coincided with nostalgia for a previously low visibility urban lifestyle.

Civility. Based on a civic and optimistic discourse of public space, these stories have changed public space through a socio-natural disaster and provided important ideas for adaptation and intervention practice to improve the quality of life of residents. The concept of losing space exists, but in these stories, the focus is on actions to achieve citizenship. Considering the transformation process, residents have a sense of obedience to the lost space, and their civic practice is understood as a way to reuse space, especially starting from community union. We identified the emerging categories of the "ideal community is the one that is unified", "cultural and neighborhood practice" and "public space care practice". These speeches are reflected in the experience of the residents of the San Aurora settlement, especially when they mean rebuilding the community as a conquest of the community union. There are also stories of economic and emotional support networks in Dichato and Constitución, neighborhood networks from which spaces are transformed and improved.

Control and dispute. It reveals that the change of space and social control is not caused by the state, but by the private institutions. The participants in this study proved the importance of this dispute, because community organizations need to respond to this dispute by protesting and seeking to participate in the planning and decision-making of public space and housing characteristics. We have identified emerging categories of protests as a tool

for space and participation in the protection of rights in Dichato, Constitución and Tocopilla. These statements emphasized that participation is a key mechanism for negotiating and influencing the decisions of the reconstruction process through confrontation and cooperation strategies. Another presentation was on the significance of space as a producer of exclusion and stigma, showing experiences not before the disaster, such as the case of displaced persons from Chaitén and inhabitants of Bahía Azul (Dichato). These narratives about public space are composed of practice and meaning. Practice-such as community participation, and the meaning related to space-such as residential satisfaction, are also affected by the changes of social space. It is the basis of realizing the process of space occupation, at a more abstract level, rather than the previous and three-dimensional elements established by them. We notice how the ideological meaning of public space is copied from the discursive relationship defending it.

5.5. Result integration

In order to illustrate the community environmental psychology interpretation of the results of the method we described, we propose a comprehensive scheme in **Figure 4**, which is the result of indexing and coding the generated materials. First of all, in order to understand the dynamics of social spatial linkages in the context of social and natural disaster changes, it is necessary to understand that disaster risk will occur only when there are threatened communities. Under this premise, we must believe that the political model of territorial management by governments is also a basic factor in considering threats. Among the most important community aspects to be considered, we have identified two aspects: one is the high attention of government action to the emergency stage, the other is post disaster planning, prevention and education, and the other is the lack of participatory planning focusing on the community.

Therefore, the threat of losing social-spatial connection experienced by residents in the affected areas is a psychosocial process of forming political action. Residents' strategy to deal with this threat is mainly to make new speeches on public space, territorial disputes, protests and strengthening community participation to protect their rights. These strategies are developed by different actors in the community and are driven by the mutually supportive community dynamics of the affected communities, while reconstruction plans and strategies mainly act as obstacles, requiring community efforts to minimize unnecessary impacts.

Therefore, these community strategies help to improve and change some reconstruction processes, which are related to the experience expressed in residential satisfaction with existing housing, community awareness and citizen participation, as well as attachment and local identity in the communities that take such action. At the same time, these community strategies have revised and adjusted the reconstruction plan and strategy, strengthened the vitality of the community, and thus gave feedback to the process.

An example of this is the San Aurora housing area in the Constitución. Unlike the other three sites studied, the state rebuilt housing in the same place of origin and the resident community was actively involved in the reconstruction process. The results show that under the current living conditions, these people have a high degree of attachment, location identity, residence satisfaction, community awareness and citizen participation. On the other hand, in the case of Chaitén, it moved to a new community in a remote city and dismembered the community of origin, resulting in a sense of decoupling and uprooting, making it difficult to assess and integrate into the new community network. In this case, the payment of individual bonuses to each family helps individuals find housing, which further consolidates the disintegration of social spatial ties.
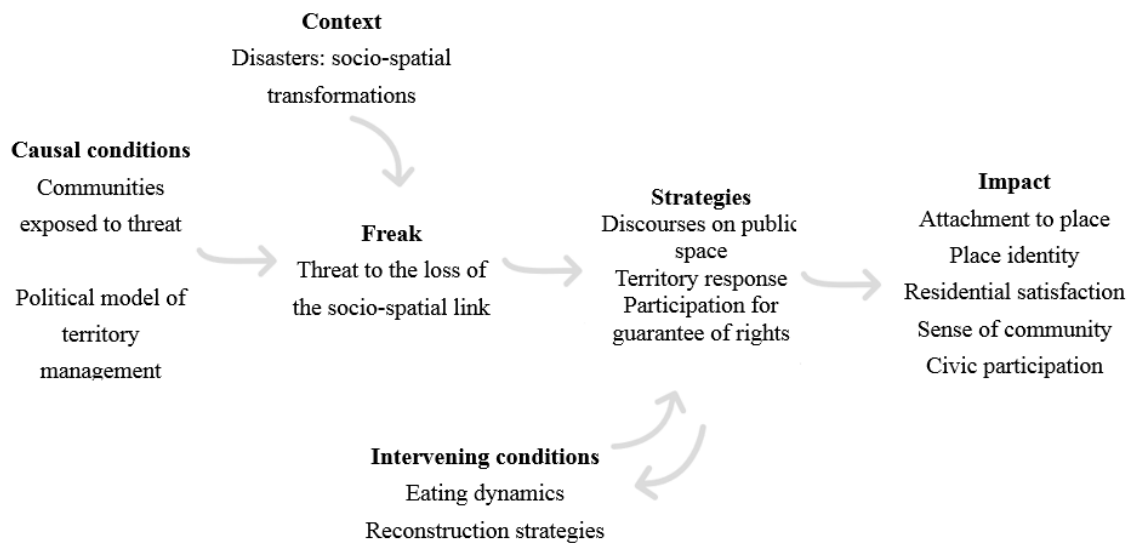
Figure 4. Result integration.

6. Conclusion

In this article, we propose to explore the impact of community on socio-natural disasters by clarifying two branches of Psychology (environmental psychology and community psychology). Therefore, we propose what we call social-spatial connection. Therefore, we organize the research results according to these areas and their potential in the research and intervention of socio-natural disasters.

Considering Wiesenfeld[72] and Zara[73], most programs and actions targeting the population are technology-oriented and do not draw nutrition from local knowledge and replicate the relationship between oppression and inequality. The environment community link is an opportunity to provide more comprehensive solutions to environmental problems[22], which aims to give priority to research related to residents' participation.

We found that in addition to the theoretical elaboration in understanding the concepts of these two disciplines, this reading also expanded the understanding of the elements of power and territorial disputes, and highlighted the psychosocial defects of these residents in the reconstruction of solutions.

As we pointed out in our previous article[32], the connection process with place, the dynamics between community subjects and the material transformation in space are not separable concepts when involved. This leads us to consider the importance of interdisciplinary and social participation in research in this field. By saving our epistemological position, this understanding puts us in a compromise approach[3], according to which we understand individuals, communities and the environment as a confluence of indivisible factors that are constructed and transformed into each other in a positive way[20]. We believe that the focus must be on understanding the social structure of the people's development to the territory, which requires understanding the political and ideological conditions that support their work.

It is therefore necessary to understand how people live, interpret and respond to disasters, what happens during displacement and eventual resettlement, and how their connections with new spaces and communities are rebuilt.

It cannot be ignored that people have social space significance before the disaster. Before displacement, they are bound to mourn for what they have lost, which obviously cannot reduce material losses. This is crucial because the adaptation process depends not only on the differences between the old and new environments, but also on the possibility of establishing satisfactory social and spatial linkages.

In this regard, we believe that it is necessary to conduct research to understand how the difficulties of

networking in new communities or communities affect common collective practices and the meaning of social space.

With regard to post disaster interventions, we believe that if the actions being taken continue to focus on the material aspects, the level of attachment to new destinations is expected to be low. Community processes must be considered because, as we have observed in this study, housing satisfaction alone does not guarantee a high level of community awareness, local attachment, local identity or participation. This will mean that government action should be based on a community psycho-environmental approach, starting with the recognition of the meaning and practices of individuals and communities to the population and the identification of their problems and needs. Therefore, we advocate efforts to achieve the best materiality in housing and public space, and actively involve communities in the processes and decisions of displacement and reconstruction, while respecting the rights that every community has before the intervention of social programs[74].

Conflict of Interest

No conflict of interest was declared by the authors.

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