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Original Research Article

From Justice as Fairness to Lived Space: A Rawlsian Interpretation of Public Spaces in Residential Housing Complexes (Case Study: Fadak Residential Complex, Urmia)

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Abstract

Problem statement: Social justice, as a foundational concept in contemporary urban planning and environmental design, plays a decisive role in the quality of public spaces and in the lived experience of residents. Nevertheless, much of the existing literature has examined spatial justice mainly through physical and distributive indicators, while its perceptual, behavioral, and procedural dimensions have received less systematic attention. Such a reductionist view has narrowed the translation of social justice into the design of public spaces.

Research objective: This study aims to conceptualize and operationalize the principles of John Rawls's theory of justice in the design and evaluation of public spaces within residential housing complexes. It also seeks to identify the components that contribute to the realization of spatial, social, and perceptual justice in residents' everyday experience.

Research method: The study employed a mixed-methods approach based on a sequential explanatory design. In the quantitative phase, 286 valid questionnaires collected from residents of the Fadak Residential Complex in Urmia were analyzed using SPSS and AMOS through correlation analysis and structural equation modeling. In the qualitative phase, semi-structured interviews, field observations, and residents' perceptual narratives were analyzed through a grounded-theory logic. The two strands were integrated at the interpretation stage.

Conclusion: The findings indicate that social justice in public spaces is a multidimensional construct produced through the interaction of physical, social, and perceptual components. The structural model shows that equitable access and perceived justice exert the strongest effects on the realization of social justice, while place attachment emerges as the socio-emotional outcome of this process. The study demonstrates that Rawls's theory of justice can be meaningfully applied to the design and evaluation of public spaces in residential complexes and can contribute to improving urban quality of life and social cohesion.

Keywords: *Social justice, Perceived justice, Public spaces, Rawls's theory of justice, Fadak Residential Complex, Urmia.*

Introduction and Problem Statement

Improving urban quality of life is one of the fundamental goals of contemporary urban planning and environmental design. Architecture, as one of the most direct instruments for intervening in human living environments, plays a decisive role in shaping citizens' lived experiences (Mouratidis, 2021; Moroni, 2023; Fadhil & Hinthel, 2024; Kato Nabirye, 2024). In this context, residential complexes, as a dominant form of urban housing, have a significant influence on the everyday quality of life of their residents (Li et al., 2022; Vazquez et al., 2024; Taghipour, 2025).

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The public spaces of such complexes constitute the primary setting for social interaction, social capital formation, and the perception of spatial justice (Hjort et al., 2018; Li et al., 2022). The quality of these spaces improves when principles of social justice are systematically integrated into design, spatial organization, and management (Moroni, 2023; Guan & Wang, 2023; Kołacz, 2025; Weghorst et al., 2025). Accordingly, understanding how justice is reflected in the spatial structure of residential environments has become a central concern in contemporary architecture and urban studies.

Despite the growing literature on spatial justice, most studies have addressed justice primarily from distributive and physical perspectives. Phenomenological, behavioral, and perceptual dimensions of public spaces, especially at the scale of residential complexes, have been less thoroughly examined. In Iranian studies, attention has also tended to focus on service standards, access, and the distribution of facilities, while the systematic connection between normative theories of social justice and the architectural design of residential public spaces remains underexplored. This situation points to a theoretical and practical gap in translating social-justice concepts into operational design indicators.

At the theoretical level, John Rawls's theory of justice as fairness provides a normative framework for organizing social relations around two core principles: equal basic liberties and the difference principle (Rawls, 1971; Crawford & Maldonado, 2020; Storgaard, 2023). Although Rawls's theory was formulated within political philosophy, it has considerable potential for extension into architecture and urban design, especially when justice is understood not only as a matter of resource distribution but also as a matter of lived experience and spatial perception.

The main research problem is therefore how the principles of Rawlsian justice as fairness can be conceptually and operationally articulated in relation to residents' lived experiences in the design and assessment of public spaces in residential complexes.

This study seeks to bridge the gap between social-justice theory and architectural design by using a mixed quantitative-qualitative approach with a phenomenological orientation. It further argues that residents' perception and experience of space can serve as a key indicator in evaluating spatial justice.

The purpose of the study is to identify and explain components and indicators that are consistent with Rawls's theory of justice and that can also be used to analyze residents' lived experience and improve the social quality of public spaces in residential complexes. Ultimately, the study aims to contribute to the enhancement of urban quality of life through a justice-oriented design framework.

Theoretical Framework and Research Background

• Normative foundation: John Rawls's theory of justice

The theoretical framework of this study is grounded in John Rawls's theory of justice as fairness, which defines justice as the first virtue of social institutions and as a fundamental criterion for evaluating social and spatial structures (Rawls, 1971, 1999, 2001). In this view, justice is not merely an abstract moral value but a basic standard for organizing institutions, distributing resources, and regulating social relations.

Rawls builds his theory on two major principles. The first is the principle of equal basic liberties, which emphasizes that all persons should enjoy an equal scheme of fundamental rights and liberties. The second is the difference principle, together with fair equality of opportunity, which states that social and economic inequalities are acceptable only when they produce the greatest benefit for the least advantaged members of society (Rawls, 1971; Crawford & Maldonado, 2020; Storgaard, 2023). These principles are framed through concepts such as the original position and the veil of ignorance, whose purpose is to ensure impartiality and fairness in the choice of principles of justice (Rauhut, 2018; Donoso & Queiroga, 2023; Feitosa et al., 2024; Sundaram et al., 2026).

Contemporary studies suggest that this normative framework has strong analytical capacity for the idea of the just city, particularly in relation to environmental justice, urban health, resource allocation, and spatial planning (Alfasi & Fenster, 2014; Crawford & Maldonado, 2020; Storgaard, 2023; Moroni,2023;Feitosaetal.,2024;Weghorstetal.,2025).In extending this theory to urban planning and architecture, public spaces and residential environments may be interpreted as micro-spatial institutions in which opportunities for social presence, interaction, and access to collective resources are distributed.

• Translating Rawlsian concepts into socio-spatial indicators

Rawlsian principles are expressed at an abstract normative level and are not directly formulated in the language of design or planning. Therefore, their application to architectural scale requires the translation of abstract concepts into observable and measurable indicators. This study draws on interdisciplinary literature on spatial justice, the just city, participatory planning, and lived experience to build a socio-spatial framework. The translation can be summarized as follows:

- The principle of equal liberties is interpreted as equal access to public spaces and the possibility of movement and presence without unnecessary restriction (Malekshahi & Vakili, 2017; Pereira et al., 2018).
- The difference principle is interpreted as special attention to the needs of vulnerable groups, including children, older adults, and persons with disabilities (Weghorst et al., 2025).
- Fair equality of opportunity is interpreted as real, not merely nominal, opportunity to use public spaces (Rauhut, 2018; Crawford & Maldonado, 2020).
- Justice as fairness is interpreted as users' perception that the space, its rules, and its opportunities are fair (Crawford & Maldonado, 2020).

In this framework, public spaces in residential complexes are considered only when they provide not only physical access but also meaningful presence, social interaction, safety, and place attachment for all residents (Moroni, 2023).

• Spatial justice as the spatial manifestation of Rawlsian theory

In contemporary literature, spatial justice has often been treated as a spatial extension of Rawlsian theory in urban planning. Scholars have argued that urban and spatial institutions can be understood as part of the basic structure of justice (Moroni, 2023). Recent studies also show that concepts such as the veil of ignorance and the difference principle can be used in spatial policymaking to reduce place-based inequalities (Rauhut, 2018; Donoso & Queiroga, 2023; Feitosa et al., 2024). In this approach, spatial justice concerns not only resource distribution but also the mechanisms by which inequalities are reproduced (Dikeç, 2001).

In the present study, spatial justice is not treated as a theory independent from Rawls; rather, it is understood as the spatial manifestation of Rawlsian principles. Other approaches serve complementary and explanatory roles, helping to operationalize Rawls's theory rather than replacing it. This distinction is essential for maintaining theoretical coherence.

• Perceived justice as an empirical extension of Rawlsian fairness

Perceived justice refers to how individuals experience and interpret the fairness of a space. It emphasizes that justice is not only a matter of objective resource distribution; it is also formed at the level of perception and lived experience. Based on Colquitt's model (Colquitt et al., 2013), perceived justice includes four dimensions: distributive justice, procedural justice, interactional justice, and informational justice. These dimensions can be extended to spatial environments: the distribution of public spaces corresponds to distributive justice; the way spaces are managed corresponds to procedural justice; the quality of social relations corresponds to interactional justice; and the clarity of rules for using space corresponds to informational justice (Colquitt et al., 2013; Moroni, 2023). In this study, perceived justice is treated as the empirical translation of fairness in Rawls's theory: a space

is just when users perceive its rules, qualities, and opportunities for presence as fair and non-discriminatory.

• Interdisciplinary connection of perceived justice

Perceived justice is an interdisciplinary concept located at the intersection of sociology, psychology, and urban planning (Rot et al., 2025). In urban sociology, the perception of justice reflects individuals' positions within social structures and power relations (Hajer et al., 2001; Baasch, 2020). Individuals may experience spaces differently depending on their social position, and even under apparently equal access, they may still perceive inequality.

In environmental psychology, perceived justice is understood as a cognitive-emotional construct that influences satisfaction, trust, participatory behavior, and place attachment (Colquitt, 2001). In urban planning, it functions as a link between physical space quality and users' social experience (Feitosa et al., 2024; Moroni, 2023; Rot et al., 2025). Spatial qualities become socially just only when users interpret them as signs of fairness, respect, and recognition.

• Phenomenological approach and lived experience of space

One important development in recent literature is the shift from structural analyses of justice toward analyses of the lived experience of justice (Rot et al., 2025; Juhila & Perälä, 2024). Within this approach, justice is not only an objective condition; it is also a perceptual and emotional experience embedded in everyday urban life (Nygren & Quesada, 2020; Herzog et al., 2022; Juhila & Perälä, 2024). This study employs a phenomenological orientation to understand justice at the experiential level. From this perspective, space is not merely a physical reality but a perceived and meaningful phenomenon produced in interaction between people and the environment. Lived experience includes how individuals perceive, feel, and interpret their everyday environment (Hjort et al., 2018; Li et al., 2022).

• Operationalizing Rawls's theory in the research indicators

Based on the theoretical foundations, the main research indicators include equitable access, security and safety, environmental quality, spatial legibility, social interaction, participation and belonging, and perceived justice. These indicators are the socio-spatial translations of Rawlsian ideas such as equal liberty, fairness, fair equality of opportunity, and support for less advantaged groups. Table 1 presents the operationalization of these principles.

As shown in Table 1, Rawls's principles are converted into measurable socio-spatial indicators. Equal liberties are interpreted through equitable access, security, presence, and spatial legibility. The difference principle is reflected in sensitivity to the needs of vulnerable groups. Justice as fairness is operationalized through perceived justice, participation, belonging, and the sense of legitimate presence in space. Thus, public spaces in residential complexes are just when they are not only physically usable but also experienced by residents as fair, understandable, safe, and place-supportive.

Literature Review

• Key concepts

To ensure conceptual coherence, the key concepts are defined as follows.

Urban justice refers to the fair distribution of resources, services, and urban opportunities together with equal access and effective benefit for all citizens (Crawford & Maldonado, 2020).

Spatial justice refers to the geographical distribution of facilities and opportunities in a way that place of residence does not produce inequality in access (Moroni, 2023).

Perceived justice refers to the subjective and lived experience of fairness in the environment and shows that justice has both objective and cognitive-social dimensions (Colquitt, 2001).

Lived experience, in a phenomenological approach, refers to how individuals perceive, feel, and interpret

Table 1. Translation of Rawls's justice principles into the socio-spatial indicators of the study. Source: Authors.

Rawlsian principle/ concept	Spatial interpretation in residential public spaces	Operational indicators	Measurement in this study
Equal basic liberties	All residents should have an equal possibility to enter, move through, use, and remain in public spaces.	Equitable access; security and safety; spatial legibility	Path and distance analysis; mapping of facilities; resident survey; field observation; assessment of presence capacity
Difference principle	Design should improve the effective and safe use of space by less advantaged or vulnerable groups, including children, older adults, women, and persons with disabilities.	Environmental quality; security; accessibility; distribution of facilities	Field observation, analysis of different residents' experiences, and resident survey
Fair equality of opportunity	The opportunity to use public spaces should not be limited to the physical existence of space; it must be accessible, understandable, and usable for all groups.	Equitable access; legibility; environmental quality; social interaction	Assessment of residents' perception of equal use and statistical relationships among components
Justice as fairness	A space is just when users perceive its rules, environmental quality, and opportunity for presence as fair and non-discriminatory.	Perceived justice; participation and belonging; social interaction	Perceived-justice questionnaire; semi-structured interviews; analysis of residents' narratives
Veil of ignorance	Space should be designed without privileging any particular group and as if users' social status, gender, age, or ability were unknown.	Balanced distribution of facilities; removal of exclusive spaces; non-discriminatory access	Field observation; analysis of spatial distribution; interpretation of qualitative data
Social primary goods	Public spaces should provide security, respect, social interaction, comfort, and opportunities for collective presence.	Security and safety; environmental quality; social interaction; sense of belonging	Questionnaire; correlation analysis; structural equation modeling
Rational acceptance of institutions	Residents perceive the space as just when spatial order, rules of use, and environmental quality are understandable, legitimate, and fair.	Perceived justice; spatial legibility; participation and belonging	Quantitative analysis of perceived justice and qualitative analysis of lived experience
Procedural fairness	Justice is not only the final outcome of design; it also depends on residents' participation in decision-making, maintenance, and management.	Social participation; belonging; collective responsibility	Interviews; observation; resident survey

their environment in the context of everyday life (Juhila & Perälä, 2024; Feitosa et al., 2024).

- **Evolution of justice in urban studies: From distribution to perception**

Since the second half of the twentieth century, particularly after the emergence of the "right to the city," space has increasingly been understood not as a purely physical container but as a socio-perceptual construct. In this approach, space is both the medium and the product of social relations (Dikeç, 2001; Jian et al., 2020). Contemporary literature indicates that urban justice has evolved from a purely distributive interpretation toward a multidimensional concept that includes structural, procedural, and perceptual dimensions (Jian et al., 2020; Wang & Gu, 2023; Feitosa et al., 2024). This evolution suggests that analyzing urban justice without considering both objective structures and interpretive-perceptual experience remains incomplete.

- **Spatial justice, aesthetics, and the just city**

Recent studies indicate that the just city is one of the most important applied extensions of Rawlsian theory. These studies emphasize that the difference principle should guide the distribution of urban resources, that equal access to services should be guaranteed, and that urban policies should be oriented toward less advantaged groups (Alfasi & Fenster, 2014; Moroni, 2023).

- **Spatial Justice and Aesthetics**

Spatial justice is not limited to the distribution of resources. Visual experience, landscape quality, lighting, and spatial proportions also contribute to the perception of justice. The visual quality of space can be interpreted, within a Rawlsian framework, as part of the social primary goods necessary for a desirable life. From this standpoint, light, view, and spatial proportion are not merely aesthetic qualities but also instances of equitably distributed environmental quality (Mehta, 2014; Moroni, 2023).

In traditional Iranian architecture and urbanism, justice has often been interpreted as placing each element in its proper position and maintaining balance between parts and the whole. The organic structure of traditional cities and housing reflected balanced

access to resources, light, ventilation, and public spaces (Jenab et al., 2022; Abdollahzadeh, 2022). In Iranian-Islamic architecture, justice and beauty are intrinsically interconnected; balance, moderation, and respect for the human scale are regarded as indicators of justice in spatial design (Habibi Kandsar et al., 2020). This tradition provides a suitable theoretical basis for rethinking spatial justice in contemporary architecture.

• Communicative planning, procedural justice in residential public spaces

Communicative planning theory argues that urban decision-making should be based on dialogue, participation, and interaction among stakeholders. By criticizing traditional rationalist planning, this approach emphasizes the real participation of citizens and social groups in spatial design and urban decisions (Forester, 1980; Habermas, 1981; Davis et al., 2025). The works of Patsy Healey (1997) and John Forester (1980) demonstrate that active discourse and social participation can reduce communicative distortions and reveal value conflicts among stakeholders. However, critics such as Purcell (2009) remind us that language and dialogue are always affected by power relations; therefore, communicative planning cannot achieve real justice unless such relations are considered.

• Participation and procedural justice in residential spaces

Procedural justice is a key dimension of justice and concerns the participation of individuals in decision-making processes. Studies show that residents' participation in the design, management, and maintenance of public spaces strengthens their sense of justice and belonging (Healey, 1997). In a Rawlsian framework, this dimension can be interpreted as fairness in process rather than only fairness in outcome. Thus, public spaces are just when residents have an active role in shaping and managing them.

- Public spaces of residential complexes and the realization of justice on a micro scale

Public spaces in residential complexes play a central role in social interaction, social capital, and place attachment (Walzer, 1987; Hjort et al., 2018; Li et al., 2022). These spaces can support social justice when they provide equal conditions of access, environmental quality, lighting, landscape, ventilation, legibility, and usability for all users (Harper & Stein, 1992; Mehta, 2014; Moroni, 2023). Recent research emphasizes that just design requires simultaneous attention to physical, social, and perceptual dimensions (Crawford & Maldonado, 2020; Vazquez et al., 2024). Iranian studies likewise show that light quality, ventilation, landscape, spatial hierarchy, resident participation, and diversity of shared spaces are important in shaping perceived social justice (Jenab et al., 2022; Jalil Poraghdam et al., 2023).

Research Background

Relatively equal spatial access to employment, transport, public services, and open spaces has been a central theme in urban justice literature (Alfasi & Fenster, 2014; Mouratidis, 2021; Feitosa et al., 2024). Some scholars have shifted from isolated projects to structural analyses of rules and urban institutions, including housing policies, urban charters, and planning systems (Moroni, 2023). Studies inspired by Rawls have also formulated location-allocation models in which distance to urban services is treated as a welfare indicator and is weighted more heavily for disadvantaged groups (Donoso & Queiroga, 2023; Feitosa et al., 2024; Kang et al., 2025).

In social housing, empirical evidence shows that improving physical access to shelter alone is insufficient for spatial justice. For example, a study in Alexandra, Johannesburg, showed that despite improvements in infrastructure, lack of stable employment, safety, and effective resident participation limited the realization of the right to the city (Mndze, 2022). Similarly, research based on the Rawlsian difference principle argues that access to services and public spaces must especially improve the conditions of the least advantaged (Rauhut, 2018).

Moreover, the just-city literature, by recognizing the priority of justice, provides criteria for

evaluating urban policies and plans and emphasizes participation, equality, and diversity (Farsiastaneh & Sad Berenji, 2024; Suárez et al., 2025; Masi & Rodó-Zárate, 2026).

Many studies have demonstrated the role of public open and green spaces in physical, mental, and social health, yet their distribution is often unequal and linked to socioeconomic and locational characteristics (Yi & Zou, 2024; Yang & Tang, 2025; Kang et al., 2025; Liu et al., 2025; Shan & He, 2025). In China, better access to urban parks is often associated with higher housing prices, causing low-income and migrant groups to benefit less from such advantages (Kang et al., 2025). In response, several studies have proposed operational frameworks that combine access, resource distribution, environmental quality, social inclusion, and perceived justice (Mareere, 2020; Mouratidis, 2021).

Jian et al. (2020) likewise identify access, management, social inclusion, and the demand–supply relationship as key dimensions of spatial justice in public open spaces.

At the micro scale, particularly in residential complexes, the literature consistently shows that public and semi-public spaces influence social interaction, place attachment, and resident satisfaction. Behrad & Bahrami (2015) demonstrate that active use of residential public spaces strengthens sense of community and quality of life. Sedagati & Gholizadeh (2024) likewise show that improving the quality and effectiveness of open spaces can enhance environmental vitality. A systematic review by Ramos-Vidal & De La Ossa (2024) indicates that perceived public-space quality and walkable access strengthen sense of community. Nowzari et al. (2023) further show that the spatial organization of green areas, lighting, access, and shared-space furniture significantly affects residents' use patterns and social interaction. Studies of urban green spaces similarly indicate that contact with nature contributes to subjective well-being through perceived environmental justice and social benefits (Mouratidis, 2021; Liu et al., 2025).

- **Research gaps**

The literature review reveals four major gaps: limited application of Rawls's theory to the scale of residential public spaces and lived experience; lack of integrated approaches linking spatial justice and perceived justice; insufficient use of phenomenological approaches; and the absence of testable conceptual models based on Rawlsian justice.

- **Contribution of the study**

In response, the present study transfers Rawls's theory to the level of lived experience, translates it into measurable socio-spatial indicators, incorporates perceived justice as an empirical dimension, uses mixed methods to analyze the multilayered nature of justice, and proposes an operational model for public spaces in residential complexes.

Methodology

This study employed a mixed quantitative-qualitative approach based on a sequential explanatory design. Its purpose was to explain and operationalize John Rawls's theory of justice as fairness in the design of public spaces within residential complexes. This approach was selected because justice has a dual nature: it includes an objective and measurable dimension as well as a perceptual and interpretive dimension. Combining quantitative and qualitative data made it possible to analyze the gap between actual justice and perceived justice and to understand residents' lived experiences in a multilayered way.

Within this framework, quantitative data provided a basis for structural analysis and for examining the general status and relationships among the components of socio-spatial justice. Qualitative data, in contrast, revealed residents' lived meanings and interpretations of those relationships. For example, quantitative analysis shows the extent to which equitable access contributes to social justice, whereas qualitative analysis explains that access, from the residents' perspective, is not limited to physical entrance but also includes feeling accepted, having a legitimate presence, and being free from social exclusion.

The methodological structure of the study was organized around four axes: Rawls's theory of justice for extracting and explaining justice indicators; perceived justice for designing measurement tools, including questionnaires and interviews; phenomenology for analyzing lived experience and qualitative data; and mixed methods for integrating objective and perceptual analyses of spatial justice.

In the first stage, the quantitative phase was conducted to measure relationships among socio-spatial justice components. The statistical population included residents of the Fadak Residential Complex in Urmia. The sample size was determined using Cochran's formula, and after screening the questionnaires, 286 valid responses were used for analysis. The instrument was a researcher-developed questionnaire based on theoretical foundations and indicators derived from Rawls's theory, spatial justice, perceived justice, and the quality of public spaces. Items were measured on a five-point Likert scale ranging from "strongly disagree" to "strongly agree." The location and visual characteristics of the case study are shown in Fig. 1.

The main quantitative components were spatial legibility, social interaction, environmental quality, participation and belonging, security and safety, equitable access, and perceived justice. These were defined as operational dimensions of social justice in residential public spaces. Face and content validity were assessed by experts in architecture, urban planning, and spatial justice. Reliability was evaluated using Cronbach's alpha. Quantitative data were analyzed in SPSS and AMOS through descriptive statistics, normality testing, Pearson correlation, and structural equation modeling.

In the second stage, the qualitative phase was carried out to provide a deeper interpretation of the quantitative findings and to understand residents' lived experience of spatial justice or injustice. Participants were selected purposefully to represent variation in gender, age, duration of residence, and patterns of use of public spaces. Data were collected through semi-structured interviews, field observations, and perceptual narratives. Analysis was conducted through open, axial, and selective coding in MAXQDA. In open coding, initial concepts were extracted from residents' narratives; in axial coding, these concepts were organized into major categories of socio-spatial justice; and in selective coding, the

Fig. 1. Location and images of the Fadak Residential Complex, Urmia. Source: Authors based on Google Earth.

core category was formulated as "social justice as lived and perceived spatial experience."

Findings

In the sample, 53.1% of respondents were female, and 46.9% were male. Regarding marital status, 28.7% were single, and 71.3% were married. Educational distribution showed that 29.1% had a high-school diploma or lower, 23.5% had an associate degree, 41.2% had a bachelor's degree, and 6.2% had a master's degree or higher. In terms of age, 9.2% were 15-24 years old, 42.2% were 25-34, 22.3% were 35-44, 16.6% were 45-54, and 9.7% were 55-64. Given the five-point scale of the variables, descriptive statistics, including mean, standard deviation, skewness, kurtosis, minimum, and maximum, were calculated. The Kolmogorov-Smirnov test was used to examine normality. As reported in Table 2, the significance level for all variables was greater than 0.05; therefore, the normality assumption was confirmed, and parametric methods, including Pearson correlation and structural equation modeling, were considered appropriate.

Pearson correlation coefficients were calculated to examine the relationships among the components. The results reveal significant positive relationships at the 0.05 and 0.01 levels (Table 3). The structural equation model was estimated using the covariance matrix of 21 observed variables. The model included 235 distinct sample moments and 79 estimated parameters, yielding 142 degrees of freedom. The fit indices reported in Table 4 confirm an acceptable fit between the conceptual model and the empirical data. All factor loadings were greater than 0.40 and significant at the 95% confidence level (Table 5); therefore, no item was eliminated. Table 6 and Fig. 2 summarize the direct and indirect effects among the components.

Analysis and Discussion

• Quantitative findings and their relationship with Rawls's theory

- Demographic characteristics of respondents and theoretical implications

The demographic diversity of respondents in terms of gender, age, marital status, and educational level suggests that the perception of spatial justice in this

Table 2. Descriptive indicators and Kolmogorov-Smirnov normality test for socio-spatial justice variables. Source: Authors.

Variable	N	Mean	SD	Skewness	Kurtosis	Minimum	Maximum	K-S Z	Sig.	Result
Legibility	286	3.81	0.59	-0.41	-0.36	1.30	4.77	1.138	0.084	Accepted
Social interaction	286	3.12	0.68	-0.38	-0.31	2.62	4.68	1.282	0.076	Accepted
Environmental quality	286	3.48	0.81	-0.63	-0.31	1.92	4.54	1.218	0.082	Accepted
Participation and belonging	286	3.62	0.66	-0.39	-0.18	2.07	4.48	1.142	0.074	Accepted
Security and safety	286	3.42	0.71	-0.26	-0.65	1.48	4.46	1.482	0.071	Accepted
Equitable access	286	3.64	0.69	-0.34	-0.63	1.25	4.58	1.298	0.083	Accepted
Perceived justice	286	3.18	0.82	-0.29	-0.71	1.15	4.30	1.126	0.074	Accepted

Table 3. Pearson correlation matrix for socio-spatial justice components. Source: Authors.

Component	Legibility	Social interaction	Environmental quality	Participation and belonging	Security and safety	Equitable access	Perceived justice
Legibility	1	-	-	-	-	-	-
Social interaction	0.497	1	-	-	-	-	-
Environmental quality	0.392	0.512	1	-	-	-	-
Participation and belonging	0.418	0.504	0.401	1	-	-	-
Security and safety	0.621	0.748	0.310	0.366	1	-	-
Equitable access	0.422	0.588	0.319	0.297	0.309	1	
Perceived justice	0.758	0.449	0.388	0.408	0.292	0.329	1

Table 4. Final model fit indices. Source: Authors.

Fit index	Desired value	Model value	Final judgment	Explanation
χ^2	$p > 0.05$	245.32 ($p = 0.003$)	Acceptable with a large sample	Because χ^2 is sensitive to large samples, other indices were used as primary criteria.
χ^2/df (NC)	$1 < NC < 3$	1.73	Acceptable	Good fit
SRMR	< 0.08 (preferably < 0.05)	0.052	Acceptable	Good fit
RMSEA	< 0.05 good; < 0.08 acceptable	0.047	Acceptable	Good fit
CFI	> 0.90 (preferably > 0.95)	0.96	Acceptable	Good fit
NFI	> 0.90 (preferably > 0.95)	0.94	Acceptable	Good fit
IFI/TLI	> 0.90	0.95	Acceptable	Good fit
CN	> 200	286	Acceptable	Sample size is adequate
AIC	Lower is better	478.902	Acceptable	This model performs better than the saturated model (600.000) and the independence model (3612.582).

Table 5. Standardized/unstandardized factor loadings and interpretation of components. Source: Authors.

Component (factor)	Unstandardized loading	SE	t (CR)	p-value	AVE	Interpretive reading
Legibility	0.72	0.08	9.00	0.001	0.65	A cognitive dimension of justice; despite being the lowest loading, it remains within the acceptable range and indicates the complexity of measuring this dimension.
Social interaction	0.78	0.07	11.14	0.001	0.71	A strong relational dimension focused on the quality of interpersonal relations; CR indicates very good internal consistency.
Environmental quality	0.81	0.06	13.50	0.001	0.69	An ecological dimension of justice integrating environmental and social justice; AVE indicates acceptable validity.
Participation and belonging	0.68	0.09	7.56	0.001	0.64	A social-capital dimension with the lowest factor loading; nevertheless, the critical ratio confirms reliable measurement.
Security and safety	0.76	0.08	9.50	0.001	0.73	A fundamental prerequisite for other dimensions of justice, reliability is strong.
Equitable access	0.79	0.07	11.29	0.001	0.77	A key measurement dimension with the highest convergent validity, reflecting the centrality of distributive justice.
Perceived justice	0.83	0.05	16.60	0.001	0.75	The interpretive core of the model, subjective perception, was measured with high precision and low error variance.

Table 6. Significant direct, indirect, and total effects of the research dimensions. Source: Authors.

Independent variable	Total effect (β)	Direct effect (β)	Indirect effect (β)	Unstandardized B	t (C.R.)	p-value	VIF
Legibility	0.433	0.354	0.079	0.318	5.21	<0.001	2.1
Social interaction	0.492	0.399	0.093	0.348	6.03	<0.001	2.3
Environmental quality	0.527	0.436	0.091	0.412	7.85	<0.001	2.5
Participation and belonging	0.406	0.288	0.118	0.218	4.76	<0.001	1.9
Security and safety	0.565	0.456	0.109	0.287	5.92	<0.001	2.8
Equitable access	0.624	0.527	0.097	0.309	8.14	<0.001	3.2
Perceived justice	0.597	0.508	0.089	0.358	9.23	<0.001	3.0

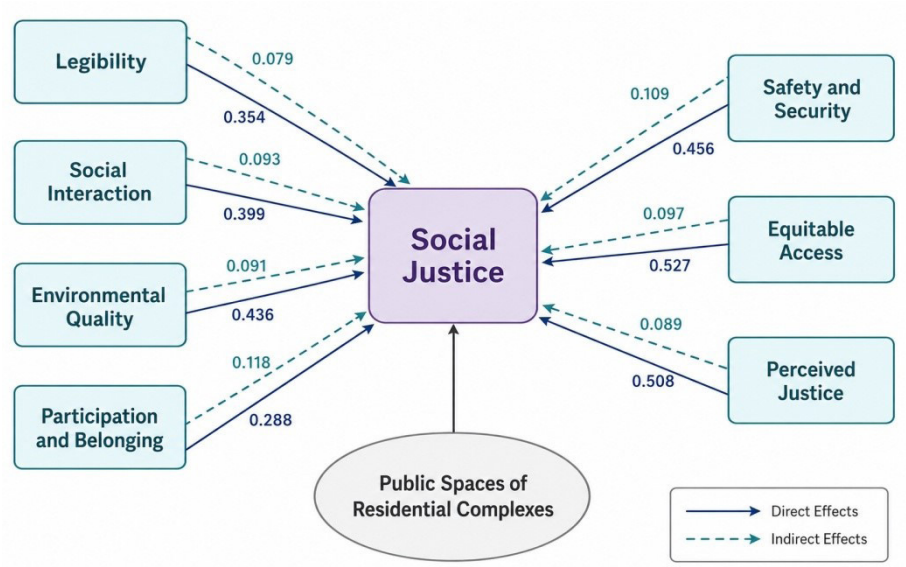

Fig. 2. Direct and indirect effects of the components. Source: Authors.

study is not merely the experience of one social group but reflects a broad range of residents' lived experiences. The relatively balanced distribution of women and men allows for a less biased analysis of perceived social justice. The predominance of married respondents indicates that experience of public spaces is often formed within family life, which highlights the importance of security, environmental quality, and social interaction in perceived spatial justice.

- Descriptive indicators and the concept of perceptual justice

The descriptive statistics show that the mean values of all components are above the mid-point of the scale, suggesting that the overall condition of spatial justice in the case-study complex is perceived as relatively favorable. Spatial legibility has the highest mean value, indicating that legibility is not only a physical or visual quality but also a prerequisite for cognitive justice. Only in spaces that are understandable, predictable, and perceptually ordered can diverse social groups use space equally and knowingly. Low standard deviations also point to a relatively high level of perceptual agreement among residents.

- Correlation of components and the interactive nature of justice

The Pearson correlations show that all relationships among the components are positive and significant. This finding indicates that social and spatial justice is not a linear or one-dimensional construct, but rather an interactive network of mutually related components. The strong correlation between spatial legibility and perceived justice ($r = 0.758$) indicates that the more understandable and predictable a space is, the more likely residents are to perceive it as fair. Similarly, the strong correlation between social interaction and security/safety ($r = 0.748$) suggests that security is not merely produced by physical control or formal surveillance, but also by social relations, mutual trust, and active presence.

- Structural equation model fit and theoretical coherence

The structural equation model confirms the theoretical coherence of the conceptual framework. The fit indices indicate that the Rawlsian framework derived from social-justice literature has sufficient explanatory power for interpreting the spatial reality of the Fadak Residential Complex. Social justice is appropriately modeled as a higher-order construct formed through the interaction of objective components, such as access, environmental quality, and security, and perceptual-procedural components, such as perceived justice, participation, and social interaction.

- Factor loadings analysis and construct validity

The factor analysis shows that standardized loadings for all components are above the acceptable threshold. The highest loadings belong to perceived justice, environmental quality, and equitable access.

This finding shows that, in residents' perceptions, fairness and equal access to spatial facilities and services constitute the strongest foundations of social justice. The result is consistent with Rawls's second principle of justice, which emphasizes opportunities and benefits for less advantaged groups. The high composite reliability and average variance extracted values further confirm the reliability and convergent validity of the measurement structure.

- Analysis of the direct, indirect, and total effects of the constructs

The analysis of direct, indirect, and total effects shows that equitable access has the largest total effect on social justice (β = 0.624), followed by perceived justice (β = 0.597) and security/safety (β = 0.565).

These findings indicate that equal access to spaces, services, and facilities is the most important factor in shaping residents' perception of social justice. Significant indirect effects also show that components such as participation and belonging, although having smaller direct effects, contribute to social justice through mediating dimensions such as perceived justice and security. This pattern confirms the systemic and networked nature of spatial justice.

Overall, the findings confirm that social justice is a multidimensional construct in which both objective components, such as equitable access, and subjective-perceptual components, such as perceived justice, play essential roles. In relation to Rawlsian justice, the dimensions can be interpreted as follows:

- Distributive justice is reflected in equitable access and environmental quality and emphasizes the fair distribution of spatial resources and opportunities.
- Procedural justice is reflected in perceived justice, participation, and belonging, and concerns the fairness of processes through which residents participate and become present in space.
- Interactional justice is reflected in social interaction and security/safety and emphasizes social trust, mutual respect, and the quality of relations among users.
- Cognitive justice is reflected in spatial legibility and concerns users' ability to understand, interpret, and use the environment consciously.

• Qualitative findings and the lived interpretation of Rawlsian justice

Qualitative data were analyzed using a grounded-theory logic through open, axial, and selective coding. In open coding, residents' narratives, descriptions, and perceptual responses were examined line by line, and initial concepts were extracted. These codes reflected users' direct feelings, evaluations, and interpretations of spatial quality, presence, and social justice. In axial coding, the initial codes were organized into main categories, each representing one dimension of socio-spatial justice. At this stage, seven main categories were identified and constructed. In selective coding, the core category was identified: social justice as the lived and perceived experience of space (Fig. 3).

- Examining the role of physical-social components in the realization of Rawlsian justice

The focus of the qualitative data analysis was on the lived experience of residents of public spaces in residential complexes. The main goal was to reconstruct the meanings and perceptions of users and to scrutinize how social justice and a sense of belonging to the place are reflected in their everyday experience. In this process, quantitative findings - including means, correlation coefficients, and structural effects - were used as supporting evidence and empirical validation tools.

- Qualitative findings and residents' lived experience of justice

The qualitative analysis was conducted through open, axial, and selective coding. In open coding, residents' statements and field observations were examined line by line to extract initial concepts. These concepts included feelings of acceptance, fear, comfort, exclusion, trust, spatial confusion, social recognition, environmental neglect, participation, and attachment. In axial coding, these concepts were organized into broader categories corresponding to the main dimensions of the research model. In selective coding, the central category was formulated

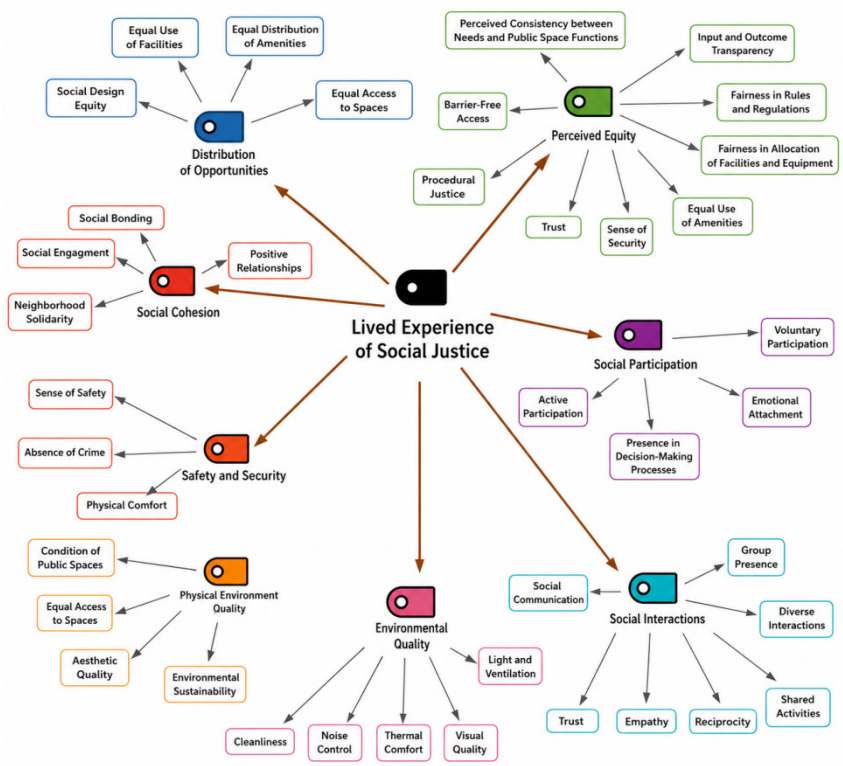

Fig. 3. Concepts and categories extracted from qualitative data. Source: Authors.

as social justice as the lived and perceived experience of space.

- Social justice as a framework for interpreting spatial experience

The qualitative findings show that residents do not experience social justice as an abstract philosophical concept. They encounter it in ordinary practices: walking at night, sitting in the courtyard, letting children play, passing through internal pathways, greeting neighbors, using shared facilities, or participating in decisions about common areas. These ordinary practices are the points at which space becomes fair or unfair in residents' daily lives.

One participant stated: "When I can walk in the courtyard at night, and nobody bothers me with their looks, I feel that this space really belongs to us." This statement reveals that justice is experienced as the ability to be present without fear, judgment, or social pressure. It links safety, recognition, and belonging. From a Rawlsian perspective, it expresses equal basic liberty as lived freedom in space.

Another resident explained: "I can sit here, but I always feel like a guest, as if the space belongs to some people and not to everyone." This narrative shows that access is not simply physical. A person may be physically present in a space while feeling socially excluded. This is one of the most important qualitative insights of the study: social justice requires legitimate presence, not just physical availability.

1. Physical layer (objective): includes accessibility, environmental quality, and spatial legibility

2. Social layer (Interaction-oriented): includes social interaction, participation, and security

3. Perceptual layer (Cognitive): includes perceptual justice and sense of belonging

These layers do not operate linearly and independently, but rather affect each other in an interactive and recursive relationship. Perceptual justice is the result of the simultaneous experience of these three layers and, at the same time, as an interpretive filter, shapes the perception of other components.

- Sense of place and place attachment as the socio-emotional outcome of justice

The qualitative findings show that sense of place and place attachment are not merely emotional reactions to physical design. They are outcomes of perceived justice. Residents feel attached to a place when they

experience it as safe, fair, accessible, meaningful, and socially recognized. Belonging, therefore, reflects more than familiarity; it reflects the feeling of being legitimately included.

One resident stated: "When my children can play freely in the courtyard, and nobody bothers them, I feel that this place is really ours." This statement shows that place attachment emerges when public space supports the rights, safety, and recognition of the household. In this sense, belonging can be interpreted as the affective dimension of Rawlsian justice. It is the emotional result of fair spatial conditions.

The final model, therefore, positions sense of place as the lived outcome of social justice and place attachment as the sustained emotional bond produced by repeated experiences of fairness. A just public space not only distributes resources. It creates the conditions under which residents can develop trust, responsibility, memory, and attachment.

- Equitable access and equal basic liberties: An objective manifestation of social justice

The qualitative data confirm the quantitative finding that equitable access is the most important predictor of social justice. Residents described access in terms such as ease, permission, acceptance, and comfort. They did not define access only as the ability to enter a space. Instead, access included the feeling that one is allowed to use the space without being judged, displaced, or informally excluded. Equitable access, therefore, has several dimensions.

- Physical access to spaces and facilities,
- Social access in the form of acceptance by other users,
- Perceptual access as the feeling of being permitted to use space,
- Balanced distribution of open areas,
- Removal of mobility barriers
- The possibility of use without discrimination.

The results of the quantitative research showed that 'equitable access', with the highest total and direct effect coefficient, was the strongest predictor of social justice.

A space that is formally shared but informally controlled by a particular group cannot produce equal freedom. In Rawlsian terms, equitable access is the spatial translation of equal basic liberties. It is the first level of justice because, without access, other dimensions cannot be realized. Safety, interaction, participation, and belonging all depend on the possibility of being present. The high direct and total effects of equitable access in the structural model confirm its foundational role.

- Safety and security as preconditions for real freedom

Safety and security emerged as one of the strongest components in both the quantitative and qualitative findings. Residents repeatedly connected safety with the possibility of using spaces freely. One participant stated: "I can come outside at night without feeling stressed." This simple statement shows that safety is not merely a technical condition; it is the emotional precondition for exercising the right to presence.

Without safety, even a well-designed and accessible space cannot be used meaningfully. This is especially important for women, children, older adults, and other vulnerable groups. A public space may be formally open to everyone, but if some residents avoid it because of fear, harassment, poor lighting, hidden corners, or lack of social surveillance, their freedom is only formal. Rawlsian justice requires real freedom, not nominal access.

The findings also show that safety is socially produced. It depends on lighting, visibility, natural surveillance, and spatial openness, but also on trust, familiarity, and the presence of responsible users. The strong correlation between safety and social interaction confirms this. In a residential complex, safety is created through the combination of design and social relations.

- Environmental quality and the difference principle

Environmental quality includes light, landscape, greenery, cleanliness, furniture, maintenance, human scale, and overall comfort. Residents did not describe these qualities merely as aesthetic preferences. They interpreted them as signs of respect, dignity, and social value. One participant stated: "When the benches are

broken, and nobody repairs them, you feel that we do not matter." This statement shows that environmental neglect is experienced as social neglect.

Environmental quality can therefore be understood as a spatial expression of human dignity. A well-maintained environment communicates that residents deserve care. A neglected environment communicates indifference. From the perspective of Rawls's difference principle, environmental quality should be distributed in a way that does not disadvantage weaker blocks, peripheral areas, children, older adults, or residents with fewer options. The aim is not simply equal quantity, but fair and dignified quality for all users.

The quantitative model showed that environmental quality had a significant direct and total effect on social justice and a high factor loading. This indicates that residents experience justice partly through the material quality of their surroundings. A justice-oriented design approach must therefore treat maintenance, greenery, lighting, furniture, and visual quality as ethical and social issues, not merely technical or aesthetic concerns.

- Spatial legibility and cognitive justice

Spatial legibility refers to the ability of users to understand the organization of space, recognize routes, identify functions, and know where they can move, sit, play, or gather. Qualitative findings show that illegibility can create hidden forms of exclusion. One resident explained: "When we first moved here, I did not know where I should pass or where I could sit. I felt as if I was disturbing others." This narrative indicates that confusion can become a social barrier.

Legibility is therefore more than a design quality. It is a form of cognitive justice. A space that is difficult to understand may disadvantage new residents, children, older adults, and people who are socially less confident. Even when physical access exists, unclear spatial order may prevent real use. In Rawlsian terms, fair equality of opportunity requires that the spatial environment be understandable and usable by all groups.

The strong relationship between legibility and perceived justice confirms that residents connect spatial clarity with fairness. Clear paths, recognizable entrances, visible public functions, readable signs, and understandable spatial hierarchy help residents feel that the space is organized fairly and that they know how to participate in its use.

- Social interaction and fair cooperation

Social interaction is the point at which justice moves from spatial structure to lived relationship. Residents described fair space as a space where people greet one another, recognize one another, children play together, and informal encounters occur without exclusion. One participant stated, "Here, people know each other and say hello. You do not feel invisible." This statement shows that justice involves recognition as well as distribution.

Rawls defines society as a fair system of cooperation among free and equal persons. At the scale of a residential complex, this cooperation appears in everyday practices: greeting, conversation, shared care, mutual observation, and coexistence. Public spaces that support these practices can strengthen the social foundation of justice. Conversely, spaces that discourage encounter, produce isolation, or allow domination by one group can weaken perceived fairness.

The quantitative results showed a significant effect of social interaction and a strong relationship with safety. This indicates that interaction is not merely a pleasant outcome of design; it is part of the mechanism through which justice is produced. Interaction creates familiarity, familiarity creates trust, and trust strengthens safety and belonging.

- Participation, belonging, and procedural fairness

Participation transforms residents from passive users of space into active co-producers of the residential environment. When residents participate in decisions, maintenance, and management, they develop a stronger sense of responsibility and attachment. One participant said, "When we ourselves were involved in the decisions, we no longer wanted to let the space be damaged." This statement shows the link between participation, ownership, and care.

Although participation and belonging had the lowest direct effect in the quantitative model, they had the highest indirect effect among the components. This is theoretically important. Participation may not immediately produce social justice as strongly as access or safety, but it strengthens other dimensions such as perceived justice, belonging, trust, and care for shared spaces. It functions as a mechanism for stabilizing justice over time.

In Rawlsian terms, participation corresponds to procedural fairness. Justice is not only a matter of final distribution; it also concerns the fairness of the processes through which spaces are designed, managed, and maintained. Residents are more likely to accept spatial rules and conditions when they believe that procedures are fair and that their voices have been considered.

- Perceived justice as the interpretive core of the model

Perceived justice is the interpretive core of the model because it reveals how residents translate spatial conditions into judgments of fairness. A participant stated: "Maybe on paper everything looks good, but the feeling is different." This statement captures the central argument of the study. Technical adequacy does not automatically produce justice. Justice must be experienced as fair.

Perceived justice includes trust in rules, fairness of use, absence of discrimination, respect, recognition, and legitimate presence. It is the point at which objective design and subjective experience meet. A public space may be accessible, safe, and well-maintained, but if residents feel that it is controlled by certain groups, managed unfairly, or socially exclusionary, perceived justice remains weak.

The high factor loading and strong direct effect of perceived justice confirm its central role. It can be understood as the spatial translation of Rawls's concept of justice as fairness. In a just residential environment, residents do not merely have access to space; they feel that the space treats them as equal and respected members of the community.

• Rawlsian interpretation of the integrated findings

The integration of quantitative and qualitative findings shows that social justice in the public spaces of the Fadak Residential Complex is not limited to the distribution of facilities. It is produced through the interaction of equitable access, safety and security, environmental quality, spatial legibility, social interaction, participation, perceived justice, and place attachment. From a Rawlsian perspective, these components can be interpreted as spatial translations of equal liberty, the difference principle, fair equality of opportunity, procedural fairness, and justice as fairness.

First, equitable access corresponds to equal basic liberties. At the spatial scale, liberty means the possibility of being present, moving, using, and staying in shared spaces. Second, safety and security are preconditions for real liberty. Without safety, the right to use space remains formal. Third, environmental quality corresponds to the difference principle because the distribution of quality should not reinforce disadvantage and should especially support vulnerable users. Fourth, spatial legibility corresponds to fair equality of opportunity because users must be able to understand and use space effectively. Fifth, social interaction corresponds to fair cooperation because public spaces are arenas of everyday social relations. Sixth, participation corresponds to procedural justice because residents should have a role in decisions affecting shared spaces. Seventh, perceived justice corresponds to justice as fairness because residents must experience spatial arrangements as legitimate and non-discriminatory.

The final interpretation is that justice in residential public spaces is a dynamic cycle. Equal access and safety allow residents to be present. Environmental quality and legibility make presence meaningful and dignified. Interaction and participation convert presence into social cooperation. Perceived justice transforms spatial conditions into a sense of fairness. Sense of place and attachment stabilize the system by encouraging responsibility, care, and continued

participation. This cycle reflects a spatial version of a Rawlsian society: fair institutions create fair citizens, and fair citizens help sustain fair institutions. The correspondence between these findings, Rawlsian principles, and their design implications is summarized in Table 7.

Table 7 demonstrates that the quantitative and qualitative findings can be systematically interpreted within Rawls's theory. Equitable access is the strongest component and reflects the principle of equal liberties because it provides equal opportunities for presence, movement, and use. Security is the condition of real liberty, since without a sense of safety, the right to use space is practically restricted. Environmental quality and balanced distribution of facilities can be explained through the difference principle. Legibility, interaction, participation, and perceived justice demonstrate that justice is not limited to the distribution of physical space; it is also realized through understandability, equal interaction,

Table 7. Alignment of research findings with Rawls's theory of justice and design implications. Source: Authors.

Component	Research finding	Rawlsian interpretation	Alignment with global studies	Contribution/innovation	Design interpretation
Equitable access	Strongest effect on social justice	Direct expression of equal liberties; access as a prerequisite of justice	Emphasizing the Role of Accessibility in Spatial Justice (Talen, 1998; Pereira et al., 2018; Mouratidis, 2021)	Integration of physical, social, and perceptual access in one model	All residents should have equal ability to be present in and use shared spaces.
Security and safety	High total effect and strong relationship with social interaction	Security as a social primary good; real liberty without fear	Security as a Condition for the Use of Space (Gehl, 2011)	Interpreting security as a social rather than merely physical construct	Space should be safe for women, children, older adults, and all groups.
Environmental quality	High factor loading and significant effect	Related to the difference principle, the fair distribution of quality	Environmental Quality: A Factor of Satisfaction and Justice (Mehta, 2014)	Interpreting environmental quality as a sign of social dignity	Quality should not be concentrated only in selected or central areas.
Spatial legibility	Strong correlation with perceived justice	Related to fair equality of opportunity; cognitive access to space	Legibility in Environmental Perception (Lynch, 1960; Mouratidis, 2021)	Introducing cognitive justice as an emerging dimension	Space should be understandable and usable for all groups.
Social interaction	Strong relation with security and perceived justice	Expression of fair cooperation in Rawlsian society	The Role of Interaction in Urban Life (Jacobs, 1961; Gehl, 2011)	Interpreting interaction as a justice-oriented practice	Public space should enable equal and non-exclusionary relations.
Participation and belonging	Strong indirect effect as a mediating dimension	Related to procedural fairness	Participation in urban justice (Healey, 1997; Arnstein, 1969)	Showing the structural but indirect role of participation	Residents should participate in managing and making decisions about shared spaces.
Perceived justice	Highest factor loading and key variable	Expression of justice as fairness	Perceived justice in behavior (Colquitt, 2001; Tyler & Blader, 2003)	Transferring perceived justice to the scale of residential public spaces	Space should be experienced as fair, respectful, and attachment-supportive.
Lived experience	Mediates between space and perceived justice	Bridge between spatial structure and the perception of fairness	(Seamon, 2000; Relph, 1976; Li et al., 2022)	Combining quantitative and qualitative methods to assess experience	Lived experience connects the physical environment to social justice.
Multidimensional justice	Justice as a networked and multilayered construct	Consistent with Rawls's view of the basic structure	(Moroni, 2023)	Integrated physical-social-perceptual model	Justice operates as an interactive system produced by synergy among spatial, social, and perceptual components.

decision-making participation, and the experience of fairness. Accordingly, Rawls's theory can be translated from political philosophy into a framework for the design and evaluation of public spaces in residential complexes.

• Synergy of Quantitative and Qualitative Findings

In this study, integration of findings was performed at the final interpretation stage. The quantitative findings, through statistical tests and structural equation modeling, revealed the strength and direction of relationships among socio-spatial justice components. In other words, they identified which components were more influential and how structural relations among them were formed. The qualitative findings, in contrast, explained the lived meaning of these relationships from the residents' perspective and answered why and how these relationships become meaningful in everyday experience.

Quantitative findings showed patterns in the distribution and structural functioning of spatial justice in the case-study complex, but such statistical patterns alone could not fully explain their social and perceptual consequences. Qualitative data demonstrated how structural inequalities are experienced as feelings of injustice, reduced place attachment, and weakened social trust. For example, quantitative results showed that equitable access had the strongest effect on social justice. Qualitative analysis deepened this finding by showing that residents understand access as physical entrance, perceived permission, social acceptance, non-exclusion, and equal right to presence. Similarly, the high effect of security in the quantitative model was interpreted through narratives about presence without fear, nighttime use of space, and the comfort of women, children, and older adults.

The intersection of the two strands lies in the concept of the gap between objective justice and perceived justice. Quantitative data reveal spatial structures and distribution patterns, whereas qualitative data explain the lived and social meaning of these structures. This methodological synergy makes it possible to analyze urban justice not merely as a distributive pattern but as a lived, perceived, and multilayered experience.

• Summary

The structural analysis indicates that the Fadak Residential Complex has, to a considerable extent, embodied Rawlsian principles in the physical and spatial organization of its public spaces. The findings show that spatial justice in this complex results from the interaction and synergy of physical, social, and perceptual components operating in an intertwined and hierarchical structure. The hierarchy of intervention can be summarized as follows:

1. In sequencing interventions, security should be addressed first as a prerequisite, followed by access as a structural condition and participation as a stabilizing mechanism.
2. Distributive justice, including equitable access and environmental quality, forms the objective foundation and strongest predictor of social justice.
3. Procedural and interactional justice, including social interaction, legibility, and security, provide the basis for fair liberties and interactions.
4. Participatory/belonging-based justice functions as a feedback mechanism that stabilizes just spatial relations.
5. Perceived justice is the final and experiential outcome of the coordinated operation of the preceding components.

Overall, spatial justice emerges as a multidimensional, dynamic, and hierarchical construct. It begins with equal access and security, continues through environmental quality and social interaction, and is ultimately realized through place attachment, subjective satisfaction, and the perception of fairness. This cycle reflects a spatial version of the Rawlsian ideal society: just institutions support the formation of just citizens, and just citizens, in turn, preserve and strengthen just institutions. From this perspective, the public spaces of residential complexes are not merely physical environments but arenas for practicing

justice, fair coexistence, and the reproduction of social capital.

Conclusion

This study examined the application of John Rawls's theory of justice in the design of public spaces in residential complexes, focusing on the Fadak Residential Complex in Urmia. It sought to reduce the gap between normative justice theory and spatial-design practice. The findings demonstrate that Rawlsian principles, contrary to the common assumption that they are purely abstract philosophical ideas, can be translated into objective, social, and perceptual indicators in the built environment and can serve as a theoretical basis for analyzing and designing public spaces.

The most important theoretical contribution is a spatial-experiential reading of Rawlsian justice. The findings indicate that the principle of equal basic liberties can be reinterpreted as equal access to space and security in using it, so that liberty becomes not only a legal right but also a spatial capacity for presence, movement, interaction, and action. The difference principle, at the level of environmental design, appears as inequality-sensitive distribution; environmental quality and spatial facilities should be organized in a way that benefits the less advantaged and vulnerable groups most, rather than being distributed only uniformly. Justice as fairness, in residents' lived experience, is manifested as perceived justice, legitimate presence, social respect, participation, and place attachment.

Another important finding is that Rawlsian justice in space remains incomplete without attention to its perceptual dimension. The concept of perceived justice, highlighted in this study, shows that justice is not realized only through physical structures or distributive patterns; it also gains meaning through users' perception, interpretation, and experience. This can be interpreted in relation to Rawls's idea of the rational acceptance of institutions: institutions are just when individuals perceive them as fair, legitimate, and acceptable. Public spaces, as spatial institutions, likewise require perceptual legitimacy among their users.

Practically, the findings have clear implications for urban design and policymaking. First, public-space design should move beyond purely physical and aesthetic approaches toward a justice-oriented framework in which equal access, security for all groups, and fair distribution of environmental quality are treated as fundamental criteria. Second, attention to vulnerable groups such as children, older adults, and persons with disabilities should not be a marginal intervention but should be seen as the practical realization of the difference principle in environmental design. Third, planning and design should involve active resident participation, because participation is a mechanism for procedural justice, place attachment, social responsibility, and spatial sustainability.

In sum, spatial justice at the scale of residential complexes is a multilayered, dynamic, and process-based phenomenon formed through the synergy of three levels: the physical level, including access, environmental quality, and security; the social level, including interaction and participation; and the perceptual level, including perceived justice and place attachment. To achieve such justice, public-space design should be understood not merely as the creation of form and spatial organization, but as the shaping of fair conditions for collective life. In this approach, designers and planners not only arrange space; they also create the conditions through which residents feel recognized, respected, safe, and equally entitled to presence. The final research model is presented in Fig. 4, and the resulting design and policy recommendations are summarized in Table 8.

Research Limitations

Like all empirical studies, this research has limitations that should be considered when interpreting the results and designing future studies. First, the focus on a single geographical setting, the Fadak Residential Complex in Urmia, limits direct generalization to other cities, cultures, or urban scales. Nevertheless, the findings can provide an analytical basis for similar

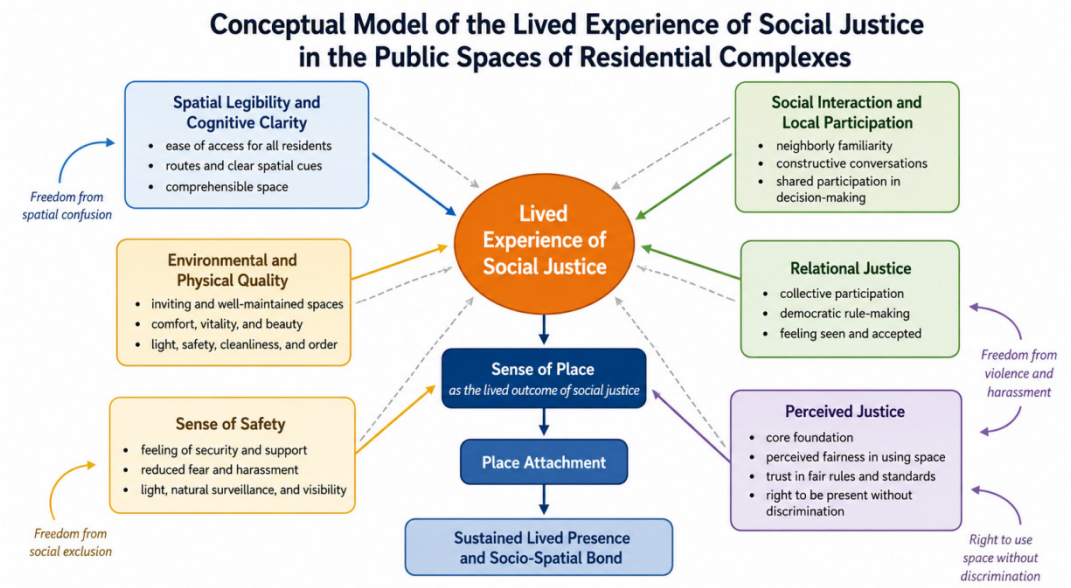

Fig. 4. Final conceptual model of the research. Source: Authors.

studies on spatial justice, lived experience, and environmental design.

Second, although the qualitative phase attempted to maximize diversity in participant selection in terms of gender, age, duration of residence, and patterns of public-space use, the limited number of interviews may affect the transferability of findings related to residents' lived experience.

Third, the study is cross-sectional and examines perceptions of spatial justice at a specific point in time. Possible changes in residents' experiences and perceptions over time were not analyzed. Future longitudinal studies could clarify the dynamics of spatial-justice experience and the effects of social and physical transformations.

Finally, some external variables, including broader urban policies, economic conditions, management structures, and cultural differences, were not included in the model, although they may affect perceived spatial justice and the quality of residents' lived experience. Future interdisciplinary research at broader scales should examine the role of these variables.

Declaration of No Conflict of Interest

The authors declare that they have no conflict of interest in conducting this research.

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Table 8. Design and policy recommendations based on social-justice components in residential public spaces. Source: Authors.

Intervention level	Strategic axis/ model layer	Empirical basis	Rawlsian interpretation	Macro strategy	Design, management, and policy recommendations
Spatial design	Equitable access - objective layer	Highest total effect and high factor loading	Realization of Rawls's first principle through equal liberties and opportunities	Achieve spatial equality in access.	Prioritize equitable access in locating public spaces; Create comparable distances from housing blocks; Ensure equal-quality access; Design routes and spaces for all age groups; Enable equal use by women and men; Adapt paths for persons with disabilities and older adults; Avoid exclusive or semi-private shared spaces; Prevent social exclusion through design; Consider physical, visual, and social access together.
	Spatial legibility - contextual layer	High mean and strong correlation with perceived justice	Fair access to the understanding of space; cognitive justice	Increase spatial clarity and perceived control	Strengthen legibility; Reduce confusion; use environmental cues; Create spatial hierarchy; Design continuous and understandable paths; Improve orientation; Avoid unnecessary complexity.
Social-managerial	Social interaction - contextual layer	High total effect and strong correlation with security	Equal liberty through social capital and fair cooperation	Strengthen equal social interaction	Design multifunctional collective spaces; Enable interaction among different age groups; Support simultaneous presence of diverse social groups; Provide seating, conversation, and pause spaces; Include diverse activities; Avoid unfair separation of groups; Increase the presence capacity of public spaces.
	Environmental quality - objective layer	Significant direct effect and high AVE	Human dignity, environmental justice, and fair distribution of quality	Quality as a sign of justice	Improve visual and aesthetic quality; Consider landscape, lighting, and visual comfort; Improve furniture and environmental elements at human scale; Distribute quality equally; Avoid concentrating quality in central or prestigious spaces; Treat environmental quality as a sign of equal respect for residents.
	Participation and belonging - contextual layer	Considerable indirect effect	Procedural justice and participation in decision-making	Participation as a justice mechanism	Involve residents in decisions about public spaces; Include them in maintenance and management; Use participatory design during design and use phases; Strengthen psychological ownership; Enhance belonging and social cohesion; Treat participation as an instrument of spatial justice.
	Security and safety - objective layer	Significant direct effect and strong correlation with interaction	Real liberty without fear; condition of justice	Security as a prerequisite of attachment	Improve natural surveillance; Strengthen social rather than purely physical control; Increase visual transparency; Activate public spaces at different times; Increase safety without exclusion; Consider women's perception of safety; Address the security needs of children and older adults.
Urban policy	Regulations and standards	-	Institutionalization of spatial justice	Justice-oriented regulation	Include spatial justice indicators in the design regulations of residential complexes; Integrate social-justice indicators into design guidelines and urban-development instructions.
	Project evaluation	-	Justice-oriented assessment of spatial institutions	Justice-based evaluation	Evaluate housing projects not only through physical criteria but also through social and perceptual criteria; Assess the extent to which public spaces realize social justice.

Rest of Table 8.

Intervention level	Strategic axis/ model layer	Empirical basis	Rawlsian interpretation	Macro strategy	Design, management, and policy recommendations
Urban policy	Perceived justice - perceptual layer	High direct effect and strong factor loading	Practical core of justice: subjective acceptance of fairness and legitimacy	Perception-based policy	Measure residents' perception of justice in public spaces; Complement technical assessments with perceptual evaluation; Recognize that standard design is insufficient without the feeling of justice; Include perceived justice in residential-space quality assessment systems.
The fair structure of society	Social justice - final layer	Excellent model fit	Result of synergy among spatial, social, and perceptual dimensions	Improve urban quality of life	Adopt an integrated approach to design, management, and policymaking; Define just public spaces as fair, meaningful, and attachment-supportive; Recognize spatial justice as a basis for urban quality of life and social sustainability.

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