

The "Space Paradox": Between Pedagogical Excellence and Environmental Transparency in Inclusive Kindergartens

Yarden Gali¹

¹ Talpiot College of Education, Holon, Israel

E-mail: yardengali2@gmail.com

ORCID: <https://orcid.org/0009-0008-8690-7581>

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ABSTRACT:

This study examines the space paradox in inclusive kindergartens, defined as the tension between strong pedagogical-professional support and under-adapted physical-acoustic environments. Using a quantitative correlational multistakeholder design supplemented by open-ended responses, the study analyzed data from 251 adult stakeholders in one large Israeli municipality, including inclusion teachers, kindergarten principals, inclusion assistants, and parents of children in inclusive placements. The findings showed consistently high ratings of professional-organizational support and pedagogical processes, alongside substantially lower evaluations of the physical-acoustic environment. Significant differences emerged between stakeholder groups, with kindergarten principals rating environmental adequacy more favorably than inclusion teachers and assistants. Hierarchical regression indicated that the physical-acoustic environment made a unique contribution to predicting satisfaction with inclusion beyond professional and pedagogical factors. Open-ended responses further clarified recurring concerns related to noise, lack of quiet microspaces, and differing perceptions of environmental adequacy between managerial and frontline participants. During the COVID-19 period, the home environment moderated the association between pedagogical processes and satisfaction with inclusion. The findings suggest that inclusion quality in early childhood should be assessed not only through pedagogy and staffing, but also through the environments in which inclusion is enacted.

Keywords: inclusive education; early childhood inclusion; physical-acoustic environment; kindergarten; special education

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1. Introduction

Inclusive education is widely framed as a matter of rights, participation, and pedagogical support, yet its realization in early childhood settings also depends on whether the physical environment is

adapted to inclusive practice (OECD, 2024). This issue is especially consequential in kindergarten, which is often the child's first sustained encounter with an educational institution and a key site for belonging, participation, and early developmental support (Pascal & Bertram, 2022).

At the same time, inclusive reforms are frequently discussed in terms of policy, staffing, and services, while the concrete spaces in which inclusion takes place receive less systematic attention (Kershner, 2023). As a result, inclusion is often expected to succeed in environments that are crowded, noisy, and only partially suited to the needs of young children who require sensory regulation, protected work areas, or flexible transitions between activities (Henderson et al., 2024).

This challenge is not unique to Israel. Internationally, including in the United States, special education and inclusion policies have expanded access to mainstream settings, but the physical infrastructures of schools and early childhood classrooms often lag behind the pedagogical ambitions placed upon them (Florian, 2019; Kershner, 2023; Lindsay & Hart, 2024). The result is a broader systems-level question: can inclusion succeed when human support advances faster than environmental adaptation? (Lindsay & Hart, 2024).

International scholarship on inclusive education has increasingly shifted from deficit-oriented models toward approaches that emphasize participation, belonging, and meaningful access to learning for diverse learners within shared settings (Florian, 2019). In early childhood education, this perspective is especially important because inclusion is enacted through everyday routines, relationships, and flexible responses to children's developmental, social, and sensory needs (Pascal & Bertram, 2022). Approaches such as differentiated instruction, co-teaching, and Universal Design for Learning suggest that high-quality inclusion depends not only on professional expertise, but also on the capacity of the setting to support varied forms of engagement and participation (Veloso & Tyner, 2022). At the same time, studies have shown that even strong pedagogical practice may be constrained when staff work in overcrowded or under-resourced environments (Lyons et al., 2024). A growing body of research indicates that the physical environment is not simply a backdrop to teaching, but an active condition that shapes children's learning, regulation, and

participation (Barrett et al., 2019; DeVries, 2021). In early childhood and special education, features such as noise, density, spatial layout, lighting, access to quiet areas, and the organization of activity zones can influence attention, sensory regulation, behavior, and well-being, particularly for children with autism spectrum disorder, ADHD, and related support needs (Henderson et al., 2024). Research on the environment as the "third teacher" likewise suggests that spatial design can either support or undermine inclusive pedagogical intentions (Barrett et al., 2019; O'Mahony & Shiel, 2024). In practice, however, investments in professional development and support services are not always matched by parallel investment in spatial infrastructure, leaving professionals to implement inclusion in environments that are only partially adapted to its demands (Veloso & Tyner, 2022; Lindsay & Hart, 2024).

In Israel, this tension has become more visible following Amendment 11 to the Special Education Law (2018), which advanced a rights-based model of inclusion and strengthened the principle that support should follow the child into mainstream settings rather than depend primarily on separate placements (Ministry of Education, 2021). In early childhood, this policy shift increased the importance of professional support systems within mainstream kindergartens, including principals, inclusion teachers, assistants, therapists, and municipal support centers (Ministry of Education, 2021). Yet while the reform expanded the service dimension of inclusion, the physical infrastructure of many kindergartens remained largely unchanged. Thus, the institutional logic of inclusion moved forward, but the spatial conditions required to enact it did not always advance at the same pace (Lindsay & Hart, 2024).

This mismatch between pedagogical ambition and environmental capacity is not a marginal design issue but a core feature of how inclusion is experienced. Although international scholarship has increasingly examined inclusive education, fewer studies have investigated how the physical-acoustic environment functions as an explanatory dimension of inclusion in early

childhood settings. Much of the literature focuses on access, professional roles, or instructional practices, whereas less attention has been given to how spatial conditions are perceived by different stakeholders and how they shape satisfaction with inclusion (Lindsay & Hart, 2024). In particular, few studies have quantitatively tested whether the physical-acoustic environment predicts satisfaction with inclusion beyond professional-organizational support and pedagogical processes across stakeholder groups. This gap became even more visible during the COVID-19 period, when learning temporarily shifted from institutional settings to the home and raised new questions about how different environments support or constrain participation, safety, and pedagogical continuity (Pascal & Bertram, 2022).

To capture this tension, the present study develops the concept of the *space paradox*. The term refers to a situation in which a system may demonstrate strong professional commitment, organizational support, and pedagogical effort, while the physical-acoustic environment remains only partially adapted to inclusive practice. In such contexts, inclusion is supported by human capital but constrained by space. The paradox becomes especially salient when pedagogical excellence requires protected, flexible, and calming environments for young children with diverse needs, while institutional expectations continue to favor openness, visibility, and standardization (Grek, 2023). The space paradox thus provides the conceptual lens guiding the present study's research questions and hypotheses.

The present study contributes to international special education scholarship in three ways. First, it places the physical-acoustic environment at the center of inclusion analysis rather than treating it as contextual background (Barrett et al., 2019; Lindsay & Hart, 2024). Second, it integrates perspectives from multiple stakeholder groups rather than relying on a single professional voice (Lindsay & Hart, 2024). Third, it combines quantitative and qualitative evidence to explain not only whether environmental conditions matter, but also how they are experienced in daily

inclusive practice (Henderson et al., 2024; Pascal & Bertram, 2022).

By framing the findings in relation to broader international inclusion debates, the study extends beyond a local case. The Israeli setting serves as an analytically useful case of a challenge that likely appears in other policy contexts, including U.S. preschool special education and international kindergarten systems, whenever support personnel are added without equivalent attention to classroom acoustics, density, microspaces, and sensory-responsive design (Henderson et al., 2024; Lindsay & Hart, 2024; Veloso & Tyner, 2022).

Against this backdrop, the present study examines the space paradox in inclusive kindergartens in a large Israeli municipality. Using a quantitative correlational design supplemented by open-ended responses, the study analyzes the perspectives of four stakeholder groups: inclusion teachers and coordinators, kindergarten principals, inclusion assistants, and parents of children in inclusive placements. The study addressed three research questions: (1) How do key stakeholder groups experience the space paradox in inclusive kindergartens during routine conditions and during the COVID-19 period? (2) To what extent do stakeholder groups differ in their perceptions of the adequacy of the physical-acoustic environment for inclusion? and (3) To what extent does the perceived adequacy of the physical-acoustic environment predict satisfaction with inclusion beyond professional-organizational support and pedagogical processes, and how was this relationship shaped by the home environment during COVID-19? Based on these questions, the study tested three hypotheses: H1, stakeholder groups would differ significantly in their perceptions of the physical-acoustic environment, with parents and frontline practitioners reporting lower adequacy than kindergarten principals; H2, the perceived adequacy of the physical-acoustic environment would make a unique contribution to predicting satisfaction with inclusion beyond professional-organizational support and pedagogical processes; and H3, the home environment during the COVID-19 period would moderate the

relationship between pedagogical processes and satisfaction with inclusion.

2. Methodology

2.1 Design

The study used a quantitative correlational multistakeholder design based on survey data, supplemented by analysis of open-ended responses used to enrich interpretation of the quantitative findings. Structured questionnaires were used to examine patterns and relationships among the core dimensions of the space paradox across stakeholder groups. The quantitative analyses addressed questions of prevalence, group differences, and predictive relationships, whereas the open-ended responses provided supplementary contextual insight into how participants described enabling and constraining spatial conditions in day-to-day inclusion practice.

2.2 Participants

The study was conducted in a large coastal municipality in Israel during the 2020–2021 kindergarten year. The target population comprised key stakeholders in kindergarten-level inclusion processes: inclusion teachers and domain coordinators, kindergarten principals, inclusion assistants, and parents of children in inclusive placements. Administrative data were obtained for children receiving inclusive support through institutional and individual funding schemes at the pre-kindergarten and kindergarten levels.

In total, 282 children in participating kindergartens received inclusive support through these funding schemes, encompassing both high-incidence and lower-incidence conditions. The profile of needs included high-incidence conditions such as learning disabilities, ADHD, language or developmental delays, and emotional-behavioral difficulties, as well as lower-incidence conditions such as autism spectrum disorder, intellectual disability, sensory impairments, physical disabilities, rare diseases, and borderline intellectual functioning.

Twenty-seven of 28 inclusion teachers and domain coordinators, 74 of 120 kindergarten principals, 26 of 44 inclusion assistants, and 124 parents of 282 children in inclusive placements completed questionnaires, yielding data from 251 adult stakeholders. Questionnaire data were available for 121 of the 282 children in inclusive placements, based on parent and staff reports. Overall, the study obtained responses representing participation rates of 96% for inclusion teachers and domain coordinators, 61% for kindergarten principals, 60% for inclusion assistants, 44% for parents, and 43% for children in inclusive placements.

A purposive convenience sampling strategy was used to capture heterogeneity across socioeconomic areas and population profiles. The study does not claim statistical representativeness beyond the focal municipality; rather, it seeks analytic transferability to comparable inclusive early childhood systems.

2.3 Instruments

Four parallel questionnaires were developed for the four stakeholder groups. All versions were grounded in the conceptual framework of the space paradox and the bioecological model and were designed to address the research questions and hypotheses. Each questionnaire contained four main clusters: (1) professional-organizational support, (2) pedagogical processes and adapted teaching, (3) physical-acoustic environment, and (4) overall satisfaction and experience of inclusion.

Most items were rated on a five-point Likert scale. In addition, each questionnaire included several open-ended items intended to capture contextual comments regarding environmental features that supported or hindered children's participation, the presence or absence of quiet microspaces, and the ways spatial conditions shaped support during routine and emergency periods. These open-ended responses were used to contextualize and clarify the quantitative findings rather than as an independent qualitative strand.

Internal consistency of the main clusters was good to excellent across scales: approximately .85–.90 for professional-organizational support, .88–.92 for pedagogical processes and adapted teaching, .78–.82 for the physical-acoustic environment, and .80–.86 for overall satisfaction with inclusion. Construct validity was examined through exploratory factor analysis followed by confirmatory factor analysis, supporting the four-cluster model.

2.4 Procedure

Data were collected during periods of face-to-face kindergarten operation and COVID-19 lockdowns. Prior to data collection, authorization to conduct the study in participating kindergartens was obtained from the local municipal authority and the municipal support center overseeing inclusive education services. Following these approvals, all kindergartens with recognized inclusion provision in the municipality were invited to participate through the municipal support center and the education department. Principals who agreed to participate distributed links to online questionnaires to inclusion teachers, inclusion assistants, and parents; paper questionnaires were also provided in a small number of settings with limited digital access. Participation was voluntary and anonymous. An information page at the beginning of each questionnaire described the aims of the study, confidentiality procedures, the right to withdraw at any time without consequences, and the intended use of the data for research and evaluation purposes.

The study was conducted in accordance with the Declaration of Helsinki. The research protocol was approved by the Chief Scientist's Office of the Israeli Ministry of Education (project identification code: 555-2020-777, date of approval: 12/ 2020 and received authorization from the local municipal authority and the municipal support center responsible for inclusive education services in the participating kindergartens.

Informed consent for participation was obtained from all adult participants involved in the study. Because the study relied on anonymous

questionnaires and did not include identifying participant information in the manuscript, no individual publication consent was required.

2.5 Data Analysis

Data analysis proceeded in stages aligned with the research questions and hypotheses. First, descriptive statistics were computed for all items and scales, and reliability and factor-analytic results were used to confirm the suitability of composite indices. To address Research Questions 1 and 2 and Hypothesis 1, scale means and response distributions were calculated for each stakeholder group, and between-group differences were tested using one-way analyses of variance followed by post hoc comparisons where appropriate. For Research Question 3 and Hypothesis 2, Pearson correlations were computed among the main indices, followed by hierarchical regression analyses in three steps: background variables, human-capital variables, and the physical-acoustic environment.

To address Hypothesis 3, the role of the home environment during the COVID-19 period was examined using subgroup correlations, Fisher's *r*-to-*z* comparisons, and regression-based moderation analysis. These procedures were used to test whether the association between pedagogical processes and satisfaction with inclusion varied as a function of the perceived home environment. Open-ended responses were reviewed to identify recurring descriptions of enabling and constraining spatial conditions, with the aim of clarifying and contextualizing the quantitative patterns. These responses were used illustratively to deepen interpretation of the main findings, including perceived environmental barriers, references to quiet microspaces, and differences between managerial and frontline perspectives. Because the study was designed and presented as a quantitative investigation, these textual data served a supplementary interpretive function rather than a standalone qualitative analytic strand.

3. Results

The findings are presented in relation to the study's three research questions and hypotheses.

In keeping with the journal template, tables are embedded directly within the Results section at the relevant analytic point, and the text reports the main findings without extended interpretation.

3.1 Background findings and descriptive statistics

Before examining the structural barriers associated with the space paradox, the analysis first mapped key features of the inclusion system's pedagogical and organizational support.

Evaluation data indicated high levels of trust in the municipal support center and in inclusion teams as professional anchors. Overall, 96.3% of inclusion teachers reported that the municipal support center served as a central professional reference point for pedagogical guidance and mediation with other services, and 88.5% of parents viewed the center as a significant professional actor in promoting their child.

Table 1 presents the sample and response rates across stakeholder groups.

Table 1
Sample and response rates

Stakeholder group	Population (N)	Participants (n)	Response rate (%)
Inclusion teachers	28	27	96
Kindergarten principals	120	74	61
Inclusion assistants	44	26	60
Parents	282	124	44
Children	282	121	43

Table 2 summarizes respondents' evaluations of the municipal support center across stakeholder groups.

Table 2
Satisfaction with municipal support center

Statement	Inclusion teachers	Kindergarten principals	Inclusion assistants	Parents
The support center serves as a professional pedagogical anchor	96.3	74.6	86.2	88.5
I receive timely, focused responses to practice-based questions	96.3	76.8	86.2	88.5
There are ongoing, high-quality collaboration and communication	96.3	97.2	85.7	89.0

In addition, 97.2% of inclusion teachers described close and effective collaboration with kindergarten principals, reflected in a willingness to align expectations, adapt daily routines, and mobilize organizational resources for children in

inclusive placements. Table 3 presents descriptive statistics for the four core indices in the study. Professional-organizational support and pedagogical processes showed high mean levels,

whereas the physical-acoustic environment index was notably lower.

Table 3
Descriptive statistics for main indices

Index	n	M	SD
Professional-organizational support	241	4.32	0.58
Pedagogical processes and adapted teaching	241	4.21	0.62
Physical-acoustic environment	241	3.05	0.81
Overall satisfaction with inclusion	241	4.08	0.86

3.2 Differences among stakeholders (H1)

At the classroom level, 92.5% of inclusion teachers reported feeling successful in providing adapted, differentiated instruction based on individualized educational planning that contributed to children's progress in cognitive, language, and social domains. Open-ended

responses repeatedly described the inclusion teams as committed and collaborative in supporting early childhood inclusion.

Table 4 presents key pedagogical indicators reported by inclusion teachers and kindergarten principals.

Table 4
Pedagogical indicators of inclusion

Pedagogical indicator	Inclusion teachers	Kindergarten principals
Team-based consultation when writing IEPs	77.7	90.4
Monitoring, documenting, and adjusting IEPs over time	81.4	91.6
Adapted teaching contributed to children's progress	92.5	90.4
Varied instructional strategies to realize potential	92.6	85.0
The learning environment is adapted and organized	37.0	72.6

Table 5 reports group means, standard deviations, and ANOVA results for the four main indices across stakeholder groups.

Table 5
Group differences in main indices

Index	Group	n	M	SD	F (3, 237)	p	η^2
Professional-organizational support	Kindergarten principals	74	4.45	0.52	8.72	<.001	.10
	Inclusion teachers	27	4.38	0.49			
	Inclusion assistants	26	4.19	0.63			
	Parents	114	4.16	0.60			
Pedagogical processes	Kindergarten principals	74	4.36	0.55	6.15	<.001	.07
	Inclusion teachers	27	4.42	0.47			
	Inclusion assistants	26	4.11	0.69			
	Parents	114	4.03	0.64			
Physical-acoustic environment	Kindergarten principals	74	3.52	0.77	14.30	<.001	.15
	Inclusion teachers	27	2.96	0.68			
	Inclusion assistants	26	2.88	0.73			
	Parents	114	2.94	0.78			
Overall satisfaction	Kindergarten principals	74	4.32	0.55	7.04	<.001	.08
	Inclusion teachers	27	4.24	0.50			
	Inclusion assistants	26	4.05	0.63			
	Parents	114	3.92	0.71			

There was a significant group effect for the physical-acoustic environment, $F(3, 237) = 14.30$, $p < .001$, $\eta^2 = .15$. Kindergarten principals reported more favourable physical-acoustic conditions ($M = 3.52$, $SD = 0.77$) than inclusion teachers ($M = 2.96$, $SD = 0.68$) and inclusion assistants ($M = 2.88$, $SD = 0.73$). Post hoc comparisons indicated that principals' mean ratings of the physical-acoustic environment were significantly higher than those of inclusion teachers and inclusion assistants.

Overall, the findings support Hypothesis 1. Pedagogical indicators showed high levels across stakeholder groups, whereas a marked gap

emerged in perceptions of environmental adaptation, particularly between kindergarten principals and frontline practitioners.

3.3 Contribution of the physical-acoustic environment to satisfaction (H2)

To examine the specific environmental dimension of the space paradox, Table 6 presents descriptive data on selected indicators of physical-acoustic adequacy. The table highlights a pronounced perceptual gap between kindergarten principals and inclusion teachers with regard to the organization and suitability of the learning environment.

Table 6
Perceived physical-acoustic adequacy

Indicator	Kindergarten principals	Inclusion teachers	Gap (%)
Learning environment is adapted and organized	72.6	37.0	35.6
Presence of a quiet corner for individual work	68.0	42.4	25.6
Acoustic conditions allow for concentration	55.0	28.5	26.5

To test whether the physical-acoustic environment contributed uniquely to predicting overall satisfaction with inclusion beyond professional-organizational support and

pedagogical processes, a three-step hierarchical regression analysis was conducted. Table 7 presents the regression model.

Table 7
Hierarchical regression predicting satisfaction with inclusion (N = 241)

Step and predictor	B	SE B	β	R ²	ΔR^2
Step 1: Background variables				.06	.06
Role (principals vs. others)	0.18	0.07	.17*		
Seniority (years)	0.01	0.01	.08		
Type of setting (inclusive vs. other)	0.05	0.06	.05		
Step 2: Human-capital predictors				.32	.26
Professional-organizational support (centered)	0.21	0.06	.26**		
Pedagogical processes (centered)	0.28	0.06	.32**		
Step 3: Physical-acoustic environment				.39	.07
Physical-acoustic environment (centered)	0.24	0.05	.30**		

Note. a Dummy coded (1 = principal, 0 = other). All continuous predictors were mean-centered. $p < .05$. $p < .001$.

Background variables explained 6% of the variance in satisfaction in Step 1, $R^2 = .06$, $F(3,$

237) = 5.05, $p < .01$. Adding professional-organizational support and pedagogical processes increased the explained variance to 32%, $\Delta R^2 = .26$, $F \text{ change}(2, 235) = 43.28$, $p < .001$. In Step 3, the physical-acoustic environment accounted for an additional 7% of the variance, $\Delta R^2 = .07$,

F change (1, 234) = 19.74, $p < .001$, and emerged as a significant predictor, $\beta = .30$, $p < .001$.

These findings support Hypothesis 2 and indicate that perceptions of the physical-acoustic environment made a statistically significant contribution to satisfaction with inclusion beyond human-capital predictors.

3.4 Home environment during COVID-19 (H3)

During the COVID-19 period, when learning moved from kindergarten to the home, new patterns emerged regarding the role of space. While teaching staff frequently reported pedagogical challenges in remote teaching, many parents reported high satisfaction with aspects of online and home-based provision. Table 8 summarizes parents' evaluations of home-based inclusion.

Table 8
Parents' evaluations of home-based inclusion

Indicator	Parents
Online sessions provided emotional and social support for my child	81.2
Mediation and guidance by the inclusion teacher were significant	84.3
My child felt safe and relaxed when learning in the home environment	86.1

To address Hypothesis 3, the sample was divided into two groups based on perceptions of the home environment (supportive vs. constraining), and the relationship between pedagogical processes and satisfaction with

inclusion was examined separately in each group. Table 9 presents the correlations between pedagogical processes and satisfaction for each home-environment group.

Table 9
Correlations by home environment

Group	n	r	p
Supportive home environment	118	.34**	<.001
Constraining home environment	87	.56**	<.001

Note. ** $p < .001$.

Among participants who perceived the home environment as more supportive, the correlation between pedagogical processes and satisfaction was moderate, $r = .34$, $p < .001$, whereas among those who perceived the home environment as constraining, the correlation was stronger, $r = .56$, $p < .001$. A Fisher r -to- z comparison indicated that this difference was significant, $z = 2.45$, $p = .01$.

A regression-based moderation analysis also indicated a significant interaction between pedagogical processes and home environment in predicting satisfaction with inclusion. The main-effects step explained $R^2 = .34$ of the variance in satisfaction, and adding the interaction term resulted in a significant increase in explained variance, $\Delta R^2 = .03$, F change (1, 201) = 4.37, $p = .038$. The interaction term was significant, $\beta =$

.18, $p < .05$, indicating that the strength of the association between pedagogical processes and satisfaction depended on the perceived home environment during COVID-19.

Simple-slope analyses showed that the association between pedagogical processes and satisfaction was stronger under constraining home conditions than under supportive home conditions. These findings support Hypothesis 3

and suggest that the home environment during COVID-19 functioned as a moderating context in the relationship between pedagogical processes and satisfaction with inclusion.

Table 10 presents perceptions of resilience anchors during the emergency period among inclusion teachers, kindergarten principals, and parents.

Table 10
Resilience anchors during the emergency

Indicator	Teachers & principals	Parents
Maintaining regular, continuous contact with child/family	92.4	88.5
Child's sense of belonging to the setting despite distance	76.5	82.3

The findings in this section indicate that stakeholders identified continuity of contact and preservation of belonging as key strengths of the inclusion system during the emergency period.

4. Discussion

The present study examined the implementation of early childhood inclusion reform in a large Israeli municipality through the lens of the space paradox: a strong pedagogical engine operating within a physical acoustic environment that is only partially adapted for inclusion (Reiter et al., 2022). Across stakeholder groups, professional organizational support and pedagogical processes were consistently rated at high levels, whereas perceptions of the physical acoustic environment were notably weaker, especially among inclusion teachers and assistants (Lyons et al., 2024). Taken together, these patterns suggest that inclusion quality in this system cannot be understood only in terms of who teaches and how they teach but must also include where inclusion is expected to occur (O'Mahony et al., 2024).

4.1 Human capital as a key strength

The findings align with literature emphasizing professional learning communities, shared leadership, and sustained pedagogical support as central conditions for successful inclusion (O'Mahony et al., 2024). Across stakeholder groups, the data indicated high levels of trust in

the municipal support center and inclusion teams, as well as strong perceptions of pedagogical competence. Inclusion teachers and kindergarten principals reported frequent team based consultation around IEPs, systematic monitoring of children's progress, and widespread use of differentiated instructional strategies, while parents expressed high satisfaction with professional, emotional, and social support (Florian, 2019).

These findings suggest that, in this municipal system, the main challenge is not a lack of expertise or commitment, but the conditions under which this expertise is enacted (Kershner, 2023). The inclusion system thus rests on a strong pedagogical infrastructure, while the spatial infrastructure remains only partially aligned with inclusive demands.

4.2 The space paradox as a structural and perceptual gap

As shown in Table 5, this pattern of high professional organizational support and weaker ratings of the physical acoustic environment was evident across stakeholder groups. A central contribution of this study is to document the space paradox as both a structural and a

perceptual gap. Structurally, perceptions of professional organizational support and pedagogical processes were consistently stronger than perceptions of the physical acoustic environment, reinforcing arguments that spatial conditions are integral rather than peripheral to inclusive practice (Veloso & Tyner, 2022). Perceptually, a marked discrepancy emerged between managerial staff and frontline practitioners. As reflected in the large percentage point gaps in perceived environmental adaptation between principals and inclusion teachers (Table 6), principals tended to view the environment as more adequately adapted, whereas frontline practitioners reported more critical assessments. kindergarten, whereas inclusion teachers and assistants who work with children in the space daily reported more critical assessments (Lyons et al., 2024).

The regression findings (Table 7) help clarify why this discrepancy matters. Even after accounting for background characteristics and human capital dimensions of inclusion, the physical acoustic environment made an additional contribution to explaining satisfaction with inclusion. This pattern highlights the physical acoustic environment as a substantive component of stakeholders' evaluations of inclusion rather than as a neutral backdrop within which pedagogy simply unfolds (Kershner, 2023). In practical terms, this means that investments in training and organizational support, although necessary, are not sufficient. When classrooms are crowded, noisy, and lack quiet microspaces for regulation or small group work, even highly skilled professionals may be constrained in their ability to translate pedagogical intentions into daily practice (Lyons et al., 2024). The present findings therefore extend work on the environment as the "third teacher" by showing that, in early childhood inclusion, this third teacher can either amplify or constrain pedagogical excellence (O'Mahony et al., 2024).

4.3 The COVID-19 period and the role of home space

As shown in Table 9, the association between perceived pedagogical processes and satisfaction

was moderate under supportive home conditions but substantially stronger under constraining conditions. The findings from the COVID-19 period extend literature on resilience in early childhood and crisis contexts by showing that inclusion is shaped not only by pedagogical continuity, but also by the spatial conditions within which that continuity is enacted (Pascal & Bertram, 2022). While staff often reported frustration with remote teaching, many parents of children in inclusive placements described high satisfaction with aspects of home-based learning when emotional support and mediated guidance were provided by inclusion teachers, and noted that reduced group size, quieter surroundings, and more focused adult mediation helped their children feel safer and more relaxed (Henderson et al., 2024).

The moderation findings suggest that the relationship between pedagogical processes and satisfaction with inclusion depended on how the home environment was experienced. In more supportive home environments, the association was positive but more moderate; in more constraining home environments, it was stronger, indicating that when everyday spaces are experienced as demanding, stakeholders become especially sensitive to the quality of pedagogical mediation (Florian, 2019). This pattern reinforces a bioecological understanding of inclusion, according to which kindergarten and home environments jointly shape participation, protection, and wellbeing.

Taken together, the findings from the COVID-19 period illustrate that inclusion can succeed even under the complex conditions of a global pandemic when the physical environment is experienced as more adaptive, as many parents reported in the home setting. The moderation results further indicate that home and kindergarten spaces jointly shape stakeholders' satisfaction with inclusion, particularly when everyday environments are experienced as constraining. These findings also suggest that some of the reported gains during the emergency period were linked not only to digital access or individual effort, but to spatial reconfiguration itself: reduced group size, quieter surroundings,

and more focused adult mediation. Translating these conditions back into kindergarten design, for example, through intentional creation of protected microspaces may help preserve some of the benefits observed during remote learning (Velooso & Tyner, 2022).

4.4 Implications for policy and practice

Several implications follow from these findings. Inclusion reforms that focus primarily on funding formulas, eligibility procedures, and professional roles risk overlooking a critical dimension: the physical acoustic standards required for sustainable inclusion. Pursuing inclusion without parallel investment in spatial adaptation may widen the gap between inclusive policy discourse and the daily realities experienced by staff, children, and families.

The perceptual gap between kindergarten principals and inclusion teachers suggests a need for more structured dialogue around space, for example through participatory mapping of classroom spaces, shared walkthroughs, or co-design discussions that align managerial and frontline perspectives and inform decisions about resource priorities. The unique contribution of the physical acoustic environment to satisfaction with inclusion also strengthens the case for integrating spatial indicators such as classroom density, acoustic treatment, availability of quiet or withdrawal spaces, and flexibility of spatial organization into local and national monitoring frameworks, so that these conditions are treated as core components of inclusion quality rather than as secondary design concerns.

4.5 Transferability of the space paradox

Although this study is grounded in one municipality with a relatively strong support center, the space paradox framework has broader relevance for education systems that are expanding access to early childhood inclusion without parallel investment in spatial infrastructure. In contexts where funding follows the child but capital budgets for buildings and learning environments remain constrained, similar tensions are likely to emerge between strengthened professional capacity and under

adapted physical-acoustic environments. In such settings, the space paradox provides a useful lens for examining how inclusion reforms unfold, where they stall, and which combinations of professional and spatial supports are needed to move from policy intentions to everyday inclusive practice.

5. Limitations and future research

Several limitations should be acknowledged. First, the study is based on kindergartens in a single municipality and on purposive convenience sampling; accordingly, the findings should be interpreted primarily in terms of transferability rather than statistical generalizability. Second, the data relies on self-report by principals, inclusion teachers, assistants, and parents and do not include direct observations of classroom routines or spatial use, and the relatively small subsamples of inclusion teachers and assistants limit the precision and statistical power of some group comparisons. Third, data collection took place during the COVID-19 period, which provided a unique opportunity to examine inclusion under crisis conditions but may also have shaped how participants interpreted home and kindergarten spaces. Future research should also consider recruiting larger and more diverse samples across multiple municipalities, allowing for a priori power analyses and sufficient statistical power to detect smaller differences between professional subgroups involved in early childhood inclusion. Children's perspectives were not collected directly; instead, information about their participation and regulation was reported by parents and staff, which should be considered when interpreting the findings.

6. Conclusion

This study shows that early childhood inclusion may be characterized by a paradoxical configuration: a strong pedagogical engine operating within an under-adapted spatial chassis. While the municipal system examined here succeeded in building professional capacity and a trusted support structure, the physical-acoustic environment of kindergartens continued to limit the full realization of inclusive intentions.

To move toward more sustainable and equitable inclusion, policy frameworks need to address not only eligibility, funding, and professional roles, but also minimum physical-acoustic standards for inclusive kindergartens. These include density and class size parameters, acoustic treatment, availability of quiet and

withdrawal areas, and flexible arrangements that support small-group and individualized work. More broadly, the findings suggest that when policy, professional capacity, and spatial design are brought into closer alignment, inclusion is more likely to become a lived, calmer, and sustainable reality for children and adults alike.

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