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From Technoference to Digital Surrogacy? Early Years Practitioners' Perspectives on Childhood Nurturance

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Research Article

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Abstract

This conceptual study examines how technology serves as digital surrogacy tool, similar to technoference, quietly infringes on child nurturance duties filled by parents and caregivers. The study adopted a descriptive research design, and a simple random sampling method was used to select early years practitioners, who intimately understand the significance of early childhood development, provide firsthand accounts of the subtle but profound changes in children's behavior, emotional well-being, and relationship-building capacities. A total of n = 172 respondents participated in the study. The findings revealed that 81.4% (140) believed that digital surrogacy is technoference, while 18.6% (32) believed otherwise. The study concluded that technology may foster deep connections if checked and disconnections if unchecked, severing the natural relationship between significant adults and the child. This calls for a critical reflection on the usage of technology in modern parenting and caregiving, urging us to preserve the irreplaceable human elements in child nurturance.

Introduction

The rate at which technology is transforming post-COVID-19 human relationship and interaction is quite enormous which has created a phenomenal transformation. It has touched down in on every human activities, even to the basic level of human nurturance which is the home. Parents now leverage technology as assistant in raising children, or rather what looks like it. The concept of technoference then emerges as a critical issue of discussions surrounding technology's role in childhood development and parental engagement. It deals with the interruptions in social interactions due to the use of technology gadgets. Technoference damages the responsiveness that is essential for nurturing effective parent-child relationships. However, technoference shares similitude with digital surrogacy, in that, where technology substitutes direct parental interaction, potentially influencing the caregiving approaches adopted by caregivers, parents or teachers with possible implications for child development.

However, different studies have reported how technology is hampering the appropriate trajectories of parent-child relationship. Technoference negatively interrupts the relationship of preschoolers with their co-parents, damaging the quality parent–child relationship (Gahler, 2024). This showed that parents even perceived the adverse effect of technology adoption in raising their kids but could not regulate its level of interference in bonding process with their children. Parents experience in burnouts and stress placed them in disentangled position that makes them to seek solace in technological gadgets which isolate them from the meaningful relationship that they could possibly build with their children (Shao, 2024; Yıldız et al., 2025). These are evidences to prove how disruptive technology could be in unchecked and if concerted effort are ignored to neglect it when it comes to child nurturance is this era of internet of things. Moreover, it seems that the issue of technoference is blurred by digital surrogacy, i.e., the process in which technology does not only interfere but also directly replaces parental involvement (Zhang et al., 2025), which defines caregiving routine in home and early childhood education environments. Such an overlapping concept raises some relevant questions concerning the existence of dissimilarity or relationship between the two concepts and the impact on the perceptions and practices involving

childcare management. It is against this backdrop that the proposed study aims to provide clarity of these concepts, establish their relationship and how early years teachers understand and react to such phenomena as represented in the following research questions:

Research Questions

This conceptual review answers the following research questions:

1. What is the concept of technoference?
2. What is digital surrogacy in childcare and nurturance?
3. What is early years teachers' perceptive on whether technoference is digital surrogacy?
4. Is technoference also digital surrogacy in childcare and nurturance?

Conceptual Framework

Technoference

One critical aspect of technoference is that it has an impact on parental sensitivity and response. Such smartphone addicted parents often miss crucial moments when children are trying to connect with them, thus, they lack the necessary amount of emotional connection and attention (Braune-Krickau et al., 2021). It indicates that the involvement of parents in the use of digital devices significantly decreases the ability of the parents to read between lines between their children. This dissociation has major implications on early childhood development; this lack of responsive parenting could be denying children the type of interactions that are key to secure attachment and exploration of the environment they live in (Toledo-Vargas et al., 2025).

The findings revealed that there is a notable relationship between the element of parental technoference and the problematic media use by children (Zhang et al., 2025). Their reasoning was that children often resort to overconsumption of television in order to achieve a type of compensating mechanism of neglected parental love. This highlights the negative implication of reduced parent-child interactions and the vicious mechanism where technology replaces that of the parents like a digital version of surrogacy. As the parents do not set specific restrictions on technology usage, the children might become increasingly dependent on technology, therefore, making the issue even more acute and establishing the feedback loop of digital device dependencies (Janssens et al., 2024).

The consequences of technoference do not end at direct interpersonal losses; rather the implication extends much further to the broader context of developmental outcomes. Relationships between perceived parental distraction and mental health issues among adolescents, with the finding that the disrupted participation of attention in the parents may provide anxiety and depressions (Deneault et al., 2024). The emotional consequences of these disturbances usually manifest in the children and this implies that parental behavior depends on the development of a child. When combined with the

statistics presented by Toledo-Vargas et al., (2025) which align the usage of technology by parents with such negative development signs as adverse development milestones, it becomes apparent that the digital world introduces significant threats into the nurturing process which is essential during the formative years of a child.

It is complicated by the fact that the views of parents regarding their role, according to the increasing usage of the technologies, demonstrate a complex relationship. Janssens et al. (2024) researched in more detail the different points of view on the effects of mobile gadgets on family relations which revealed that both parents and children have socio-emotional challenges related to technoference. These viewpoints represent the divide in operations and anticipation with regards to use of technology in the family setting, emphasizing the fact that, different opinions are critical in consideration of how technoference ripens and influences the family dynamics.

Also, its socio-economic setting plays a major role to interpret the technoference experiences. The study of Islam shows that contextual factors such as access and the cost of technology are different, and they influence how mothers interact with their children in such cities and rural areas (Islam, 2023). The lack of face to face, which is usually discerned in resource-era contexts, facilitates the circle in which the technology replaces the relationship, considering the concept of digital surrogacy even more eminently in impoverished conditions. The interplay between parental distraction and the patterns in children still forms a pertinent area of study in contemporary child development. According to Coyne et al. (2025), although the consequences of technoference might seem minute-by-minute, their overall effect creates relevant concerns with regards to long-term development and growth patterns of children. The awareness of the broader implications of the technology utilization not only as a personal challenge but also as a part of a person-made turbulence in family units highlights the importance of the need to take actions that would minimize technoference.

Digital Surrogacy

Digital surrogacy is defined as a modern paradigm of using technology as surrogacy when it comes to the regulation and nurturing of children especially in the environments of over-dependence on the electronic devices and tools. Digital engagement features influence the change of parenting and child nurturance significantly as they establish a new set of interactions between parents and children. The phenomena is symbolic display of potentials and limitations of modern family systems since enhanced technology affects the general role and responsibility in child development.

Digital platforms have expanded to a wide range of abilities that includes the role of being support systems and digital community centers of parents and caregivers. Social networking channels such as Facebook, Games, and others have evolved into not just the social engagement sites but also nursing grounds where groups of people congregate around parenting notions and experiences. The interaction in the online communities may enable a person to connect and share experiences that would have been met with legal or societal barriers as Lavoie and Coto explain (Lavoie & Cote, 2023). The organized

version of these online encounters provides an example of how technology can be used to facilitate human relationships as interlocutors could glean insights, advice, and emotional-related information out of the communal information posted within the platforms.

At the same time, due to the interconnection of early childhood nurturance and digital interactions, the considerations of programming education and thought processes on computations among young children need to be addressed. Wei et al. (2024) mention the urgency to implement programming in early childhood education and express the opinion that these measures may enhance cognitive skills and develop a basic technological literacy that is essential in the contemporary social environment. This aspect of learning puts to the test a growing movement that places a load on educators to guide children not only in the emotional and social realms, but also in navigating along the complex digital realms that are quickly becoming familiar to modern childhood lives.

In addition, the concept of family life being Bridged by Qian and Hu (2024) asserts that due to the unification of familial bond within a digitally mediated domain, traditional caring tasks have been altered. They built a layered paradigm that investigates how online communities create group identities without altering the boundaries of the family and, at the same time, vary the norms of the traditional family by showing that the digital age reveals new challenges and opportunities to change parent-child relationships (Qian & Hu, 2024). The consequences are definitely grave because caregivers are now forced to navigate a world full of information and potential distractions, which makes the immediacy and proximity that define conventional nurturing practices off-kilter.

The concept of digital surrogacy is also relevant to enhancing the creativity and cognitive processing through exposure to child-friendly digital screens through processing data. The analysis of the technology access and the interface design proves the fact that good tools of digital character have the capacity to enhance language skills and creativity in an infant child. This highlights the fact that, although digital devices can work as nurturing surrogates, they should be thoughtfully designed to make sure that positive developmental effects are achieved (Muawanah et al., 2023). The point is that technology is not to be used instead of people and human bonds but rather as an enhancing aid that is to be used alongside nurturing.

What further complicates the situation is the investigation of the ethical concerns and overlapping in bioethics with regards, childhood internet activity. It shows that the understanding of multiple implications of technology on children involves stringent bioethical analysis, especially address the issue of social justice and equality of access technical resources (Brunnel et al., 2024). To bring about an equitable developmental environment among all children, with the increasing prevalence of digital surrogacy, it is becoming crucial to ascertain that marginalized individuals have equal opportunity to participate in the digital world. The ethical dilemmas, the role of online communications and their transformational possible power within nurturing environments invite to observe the constant proceeding of societal understandings in the times of crisis. According to Ricciardelli et al. (2023), the digitalization of interactions is considered to be a resilient adaptation to connectivity in this era of the

COVID-19 pandemic, as digitalized social ties can be viewed as an adaptive solution regarding maintaining relationships in a difficult situation. The concept highlights the thought that technology can also serve as an important supplement to human interactions, introducing order and stability amidst the untold circumstances.

This adaptation corresponds to the ideas proposed by Morse and Birnhack (2022), who speak about the permanence of digital identities and their ongoing control of personal data. Their results suggest a transition, in which a border between active parenting and technology mediation develops even less distinctly and allows a special continuity in child growth and family relationships. Since more parents are using technology to spy and regulate the activities of their children, it creates an issue of privacy and psychological consequences to children as they become individuals possessing online identities.

The assessment of relevant studies on the role of technology demonstrated that it negatively impact parent-child relationships and connections, resulting to technoference. This notion was extensively researched and it showed that it had similitude with what is termed digital surrogacy which is the way caregivers or parents entrust into the hands of technology tools or gadgets the role and obligations of child nurturance, education and care. However, if digital surrogacy is carried out with prudence and without will provide suitable consequences- either positive or bad.

Methodology

Research Design

This study employed a descriptive research design to explore early years practitioners' perspectives on technoference as digital surrogacy in relation to childhood nurturance. This research design, descriptive design was suitable to allow a systematic collection of data that describes current attitudes, and experiences without manipulating the two variables. The method provided an organized means of understanding how early years practitioners perceive the connections between digital tools and how it moderates the parent-child relationships.

Population and Sampling

The target population consisted of early years practitioners in preschools (Creche, Nursery, Preschool) in Lagos State, Nigeria. These groups were chosen as individuals who have direct involvement with teaching and nurturing children, reporting their observations from parent-child relationships as mediated by technology.

A purposive sampling method was adopted to select participants who had at least two years of professional experience in early childhood education, classroom and teaching. These are to ensure that the respondents (early years practitioners) possessed sufficient exposure to classroom and caregiving practices that could influence and inform their level of knowledge. Therefore, a total of 172 early years practitioners participated in the research study.

Instrumentation

The dataset was obtained through a self-designed questionnaire developed to explore early years practitioners' perceptions. The instrument, titled Parental Digital Surrogacy Assessment Survey (PADSAS), focused on assessing views around Digital Surrogacy, Technoference and Nurturance. Specifically, the items examined whether parents' use of technology served as a substitute for direct child nurturance. To capture the responses effectively, the survey utilized and adapted a 4-point Likert scale (Strongly Agree, Agree, Disagree, Strongly Disagree), enabling a descriptive interpretation of the practitioners' insights.

Validity and Reliability

This instrument was constructed by the researcher, and its validity was carried out by two psychometricians from two separate universities and an experts in early childhood education, using face, content and construct validity. The survey instrument provided reliability co-efficient alpha score of 87.9 alpha level, using Cronbach's Alpha, which confirmed the internal consistencey of the items.

Data Collection Procedure

The uestionnaire was circulated electronically to the participants, using the Microsoft Office form. Respondents were assured of their confidentiality at the beginning of the questionnaire to ascertain their voluntary participation, and informed consent was obtained prior to responding to the data collection form. Completed questionnaires were retrieved within the space of three (3) months.

Data Analysis

The collected dataset was analyzed using descriptive statistics (mean score, percentage), graphical display tools like bar chart and pie chart, and factor and structural analysis of the variables: technoference and digital surrogacy were used to explain the connections between the two constructs. This facilitated the identification of patterns and connections in early years practitioners' responses and also highlighted the level of agreement or disagreement with key statements about technoference and digital surrogacy. The findings were presented in tables, figures, supported by factor and structural analysis for narrative interpretations to provide deeper insights into early years practitioners'. The data were analyzed using Jamovi 2.5.6 and Microsoft Excel.

Results

The data from the questionnaire show the following response distribution from early years teachers:

Figure 1**and** Table 1 reveal that early years teachers largely perceive technoference, that is parents' and children's engagement with digital devices, as functioning like a form of digital surrogacy, where screens often substitute or reshape traditional caregiving and interaction. Across most items analyses, teachers'

perceptions agreed that technoference is digital surrogacy which affects the conventional roles and relationships between the child and the mother or caregivers, with 81.4% (140), and 18.6% (32) respondents believed otherwise. Teachers also widely observed that parental device use during drop-off and pick-up interrupts meaningful connection, and that screens are frequently employed at home as a tool to manage routines or occupy children in place of direct interaction. While there was broad consensus that technology plays a regular role in caregiving and influences classroom behavior, one item, whether screen exposure negatively affects communication and social skills, was more divergent in responses, indicating some uncertainty or variability in experiences. Overall, the pattern of responses suggests that teachers see technology not just as a background influence but as an active “stand-in” for adult presence and interaction, aligning closely with the concept of digital surrogacy as explained in technoference literatures and studies.

Table 1
Early years teachers' perception on technoference as digital surrogacy

Items	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)	Mean Score	Key Insight
1. I have observed children who appear less engaged or emotionally responsive during interactions in the classroom	32%	48%	15%	5%	3.1	Majority agree that digital use affects classroom engagement.
2. Some children in my class seem more attached to digital content than to adult or peer interactions	38%	45%	12%	5%	3.2	Strong agreement that digital content competes with human interaction.
3. Parents are often using mobile devices during drop-off or pick-up times	35%	47%	13%	5%	3.1	High agreement on parental device use during key interaction times.
4. Children frequently talk about digital content (e.g., shows, games) more than about family or home experiences	42%	46%	9%	3%	3.5	Highest agreement—digital content dominates children's conversations.
5. Digital technology appears to be a regular part of how some families manage caregiving routines	40%	44%	12%	4%	3.3	Strong consensus on tech's role in caregiving.
6. Children with frequent exposure to screens may demonstrate challenges in areas like communication or social interaction	28%	42%	20%	10%	2.8	Most divisive question—some disagree on tech's negative effects.
7. Screens are sometimes used by families to occupy children in place of direct interaction	37%	45%	13%	5%	3.2	Strong agreement that screens replace direct engagement.

(Researcher's Data, 2025)

Items	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)	Mean Score	Key Insight
8. Children's classroom behavior is sometimes influenced by how technology is used at home	33%	48%	14%	5%	3.1	Majority see a link between home tech use and classroom behavior.
9. Parents often describe screen use as educational or helpful for managing routines	36%	46%	13%	5%	3.2	Many acknowledge parental justification of screen use.
10. **Technology use at home may be influencing the way parents and children connect and relate to each other**	35%	47%	13%	5%	3.1	Strong agreement that tech impacts parent-child relationships.
(Researcher's Data, 2025)						

The chart (Fig. 2.) shows that a significant majority of early years practitioners (81.4%) agree either strongly or moderately that digital surrogacy can be understood as a form of technoference in childhood nurturance. This indicates that most practitioners recognize the growing impact of digital devices as substitutes for direct parental or caregiver interaction, potentially interfering with children's emotional and social engagement. Nevertheless, some respondents (18.6%) disagreed, proving that although there may have been a small group who did not experience technology as such, it merely proves that the vast majority shared the idea that the use of digital technology is transforming, and in some cases, discrediting traditional caregiving roles in early childhood.

Discussions

Conceptual Proposition

Based on several empirical research studies on the influence of technology on parent-child interaction and connections, which translates to the concept of technoference, and the quantitative data collected from early childhood teachers in this study. It is imperative to create an integrative diagram that fashions out the nexus between the two concepts – technoference and digital surrogacy. These evidences instigate the need for a detailed conceptual linkage in form of a conceptual framework and factorial analysis to validate and establish the relationship and connections that confirm the sameness of the two concepts. Figure 3 serves as both conceptual Framework and Factorial Analysis illustrating how technoference and digital surrogacy are the same in impacting parent-child relationship outcomes through key mediators and moderators.

Structural Framework

The integrated figure depicts how technology positively and negatively affects parent-child interactions in two opposite ways. The vicious circle (left route) starts off with technoference (digital interruptions of parent-child interactions) giving rise to parental digital surrogacy (transference of care-taking onto the screens). The succession leads to negative results manifested by insecure attachment, anxiety, despair, which worsen the initial detachment. On the other hand, positive-connection cycle (the right route) begins with intentional connection facilitated by regulation, control and involvement (systematic management of technology). This facilitates positive outcomes such as safe attachment, love and pleasure which act further to strengthen the connection base. Critical crossing arrows depict the direct regulation on the one hand, that minimizes technoference and the connection on the other hand, which excludes digital surrogacy- establishing both the paths as mutually exclusive relational situations. Behavioral manifestations described in Fig. 3 are also expounded on: technoference manifests itself in the form of divided attention and delayed response, digital surrogacy in screen-based pacification, and regulation in co-viewing and tech limitations.

Functional Dynamics & Implications

The combined chart makes this image translated into reality with three comparing columns: Negative Pathway, Positive Pathway, and Interaction Effects. It shows how technoference and regulation are competing forces the former enabling digital surrogacy (i.e. device mediated parenting), the latter, allowing engaged co-use (i.e. co-engagement). The outcome table shows there is an irreconcilable conflict that low regulation situations only produce insecure attachment and anxiety, whereas high regulated situations only produce the secure attachment and contentment. The self-reinforcing loops created by these reinforcement mechanisms - dependency on screens leads to the further development of detachment whereas enjoyment of co-experiences leads to developing a sense of connection. The intervenant part gives cross-pathway solutions: breaking the negative cycle with the "tech-free micro-moments" and "attachment repair protocols" while accelerating the positive cycle via "digital bridge activities" and the "tech empowerment ladder" (audit → boundaries → co-engagement → literacy). Red flag symptoms can help identify which channels are dominating, including child prefers screens over hugs (negative indicator) and child initiates tech-sharing (positive indicator) so steps can be taken immediately to shift relationship trends back toward healthy integration of technology.

Conclusion

The results indicate that most of the early years practitioners (81.4%) view digital surrogacy as an act of technoference, which shows rising concerns on technology taking the position of direct parental and caregiver contact. While digital tools have undeniable value in early childhood education in the way it enhances learning through storytelling, comics, infographics, robotics, simulations, digital games, and media-rich platforms (Al-Abdullatif, 2022; Nikolopoulou, 2022; Rahiem, 2021) their overuse in caregiving contexts risks reshaping nurturance into mediated rather than relational experiences. Research shows

that digital storytelling and other technologies are perfect tools to promote creativity, language learning, and social learning (Patel et al., 2025; Purnama et al., 2022; Rout, 2024), and educational videos and computer-assisted learning concepts improve cognitive abilities necessary in the 21st century (Kalyani, 2024; Zou et al., 2025). At the same time, researchers warn of the adverse effects of excessive gadget use, which may lead not only to social alienation and reduced face-to-face communication but also to an impaired understanding of people and their learning (Prakash et al., 2024; Rashid et al., 2021).

Digital surrogacy must, therefore, involve a moderate but deliberate step taken through searching, digital media has had a transformative effect on promoting cognitive, emotional, and social development in children, and ensuring that the human connection that is nurture itself is not replaced by the technological one (Rout, 2024; Zou et al., 2025). Awareness and training should be provided to parents and educators, so they would be able to mediate digital interactions of children in a responsible manner (Apdillah et al., 2022; Bayar et al., 2025; Youssef, 2025). The preschools are important in shaping the digital users, parental connectivity, and sustaining the surroundings to prioritize interhuman interaction and IT fluency (Brinck et al., 2023; Rashid et al., 2021). On the one hand, despite its actualization of the life-related skill in terms of digital proficiency, where young people and adults are involved (Brinck et al., 2023), the intrusion of the digital in early childhood should be intentional, situational, and well-thought out.

Finally, positioning technoference as a form of digital surrogacy introduces a multidimensional discussion on the caregiving in the digital era and its relationship with inequality, access, parenthood involvement, and the original meaning of nurturing itself (Prakash et al., 2024; Pulijala, 2024; Sriandila and Suryana, 2023). This lens makes educators, policymakers, and families question how technology is doing more than changing education but also the nature of childhood nurturance itself. Since electronic gadgets and mobile phones continue to serve as substitutes to parental companionship, protecting the sanctity of human relation is essential. The way ahead is the development of the balanced approaches to advancing purposeful and responsible media use by parents, incorporation of innovative digital childhood experiences in learning, and respecting the relational context of childhood development. This is how digital surrogacy could be perceived as not replacing, but augmenting nurturance so that the power of technology does not replace, but enhances the early human relationships that determine the futures of children.

Declarations

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Declaration of Interest Statement

No potential conflict of interest was reported by the author.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon request.

Consent for publication

Not applicable

Availability of data and materials

Dataset used for the study is readily available.

Competing interests

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Figures

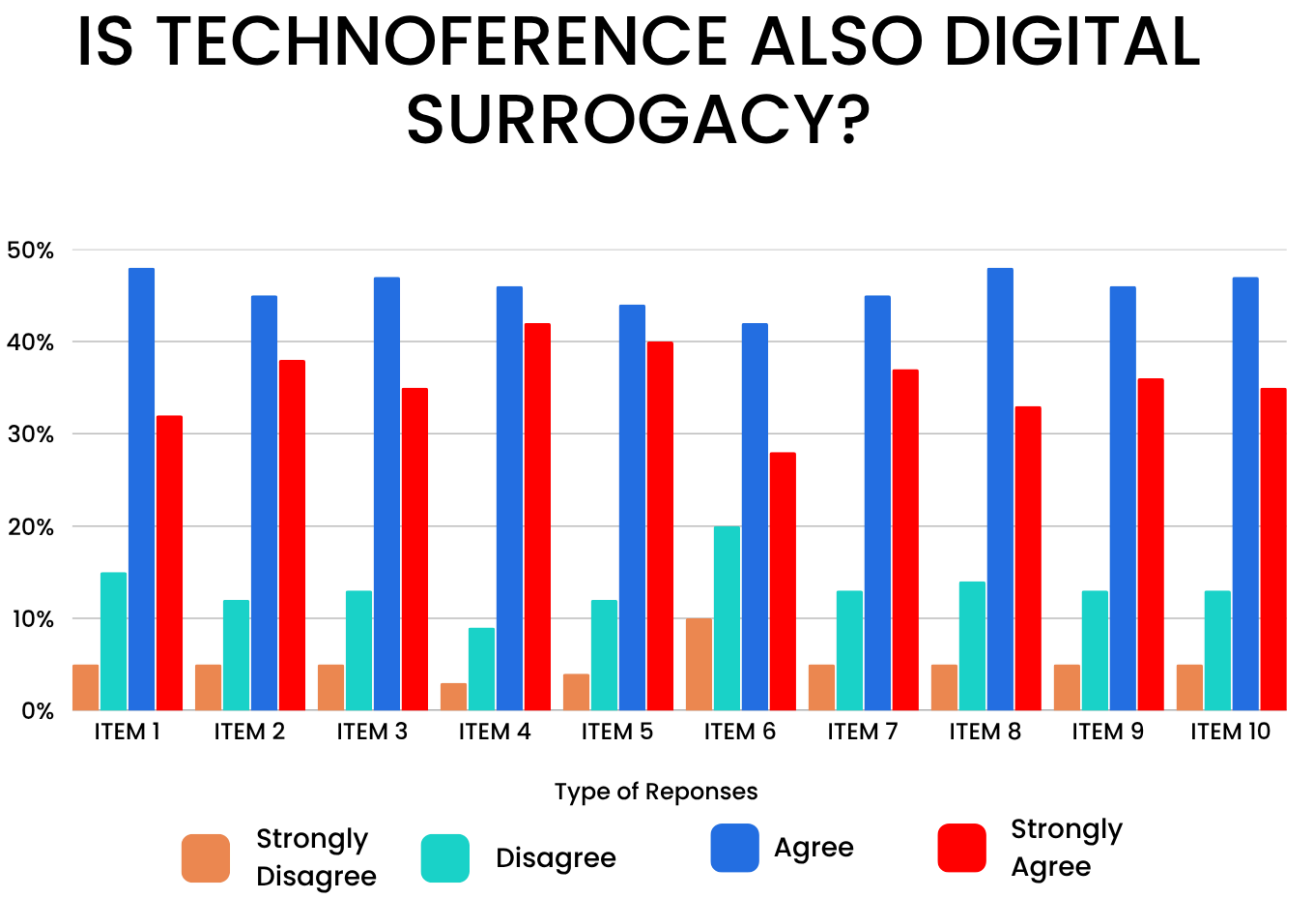
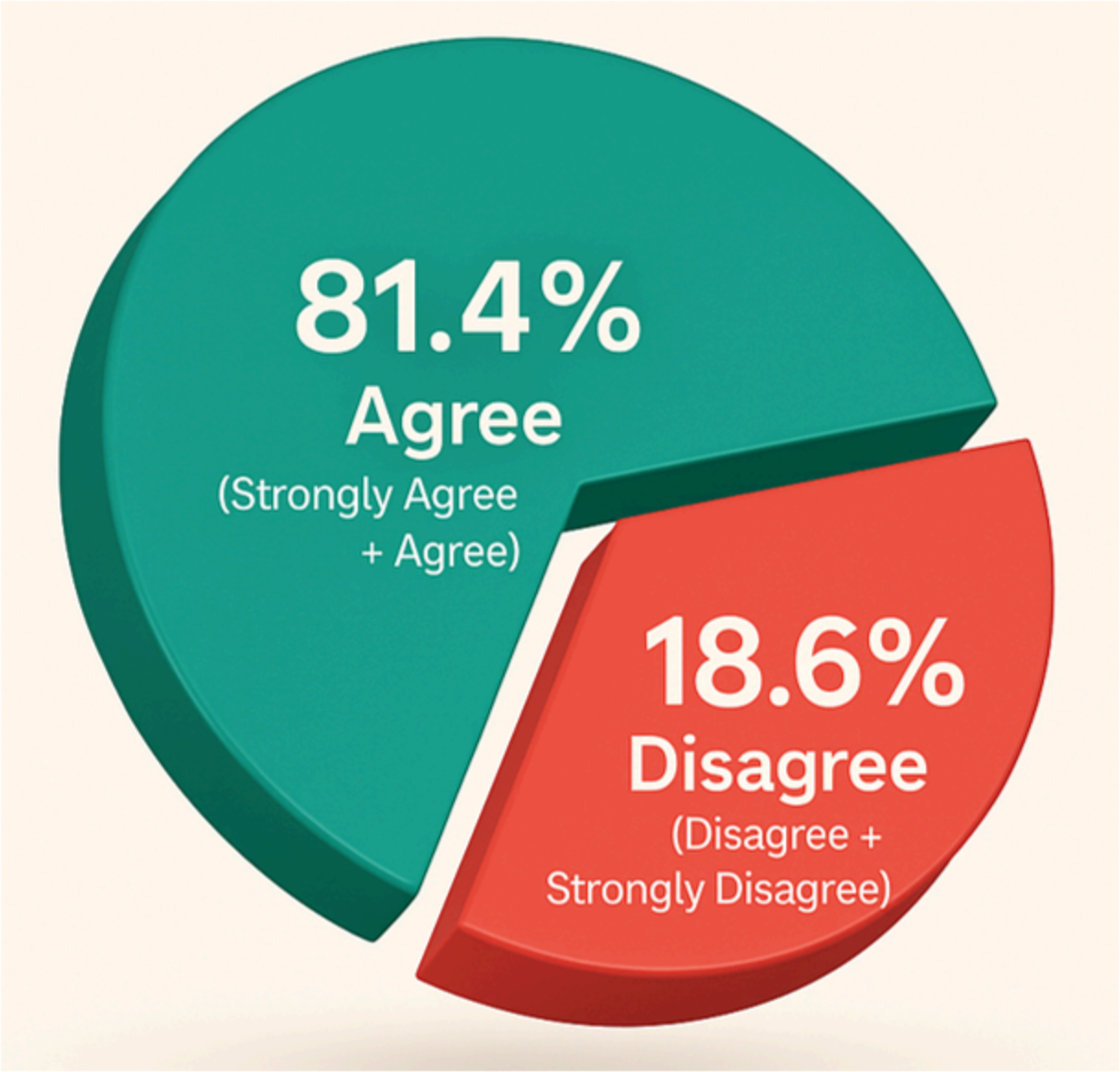


Figure 1

Early years teachers' perception on technoference as digital surrogacy

(Researcher's Data, 2025)



(Researcher's Data, 2025)

Figure 2

Pie chart

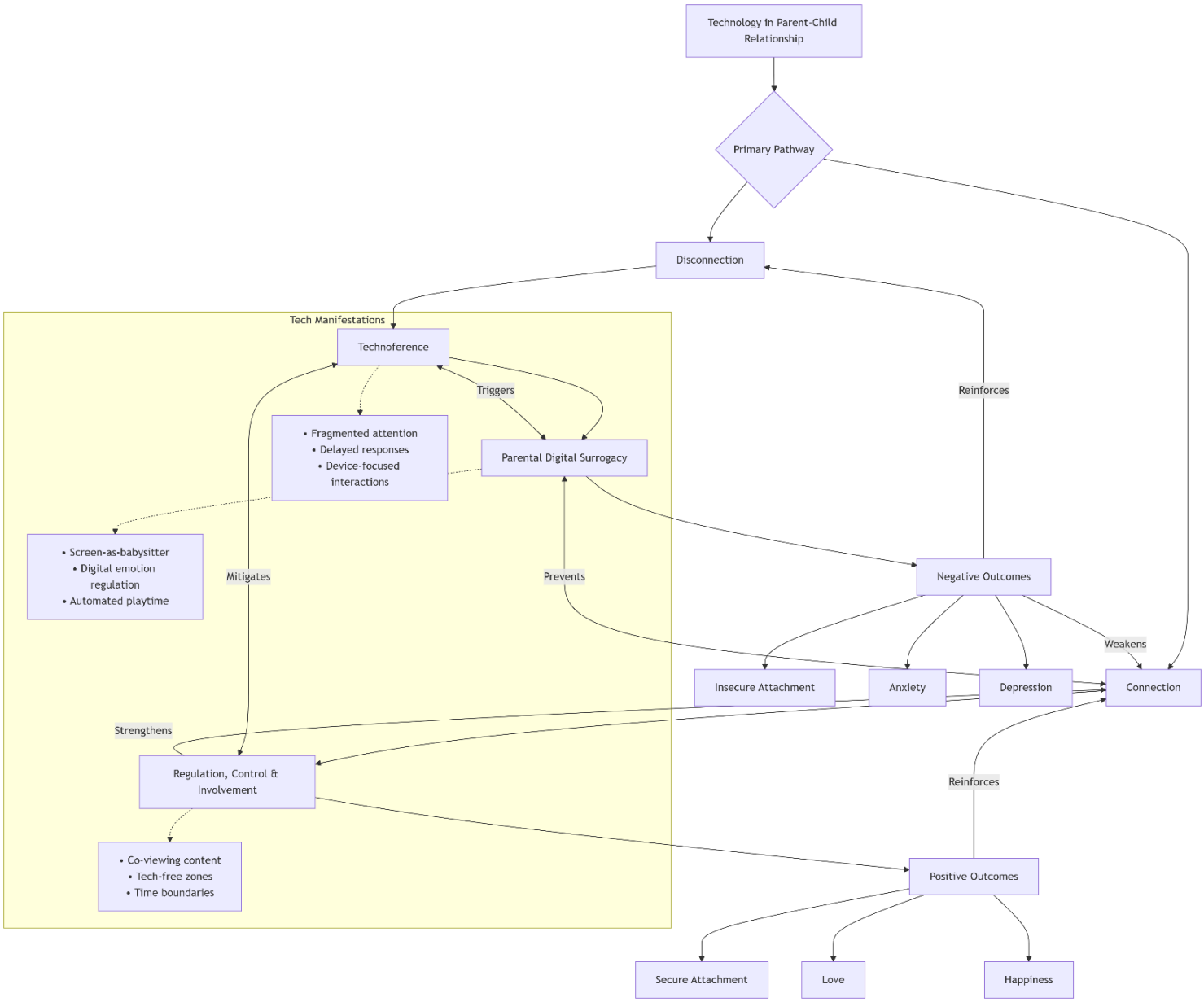


Figure 3

Conceptual Framework and Factorial Analysis for Technoference as Digital Surrogacy

(Researcher's Data, 2025)