"The Name of the Title Is Hope' – Hope and Resilience in Child-Computer Interaction

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Abstract

How is Hope conceptualized in HCI with children? To explore this question, we reviewed Interaction Design and Children (IDC) conference proceedings examining how concepts of "Hope", "Resilience" and "Coping strategies", are invoked. Our analysis revealed that while these terms are often mentioned, they are not clearly explained, and there are few shared ways to systematically study or measure them. This provides an opportunity for the Child–Computer Interaction (CCI) community to carefully articulate what hope and resilience mean in research and design practices. By drawing on and adapting ideas from psychology, especially Snyder's Hope Theory, we show how clearer definitions and frameworks can help researchers address these three facets of hope in participatory design in more thoughtful and meaningful ways. We argue that adapting this theory can help move from simply talking about hope to truly designing for hope.

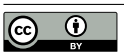
CCS Concepts

• **Human-centered computing → HCI theory, concepts and models**.

Keywords

HCI, Children, hope, Resilience, CCI

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1 Introduction

Have you ever asked yourself why the standard title of the ACM template[1] contains the word *hope* ("The Name of the Title Is Hope")? In a world marked by crisis, emergency and war, what does *hope* even mean? What does design that offers *hope* mean [26]? In design research, hope is often implicitly tied to resilience: hope sustains motivation and agency, while resilience enables people to cope with and respond to difficult circumstances. How is hope conceptualised in HCI, and, even more crucially, what does it mean in HCI practice with children?

In 2025, the Interaction Design and Children (IDC) conference had the theme of *Hope*, with the aim to join together different generations to dream about and act upon a better future for us all: "Even if the world around us can be worrisome, and children can feel sad and helpless due to on-going discussions on wars, health problems, and political struggles, adults should try to find ways for supporting children to remain brave, hopeful, and kind towards all, also towards those who are different from us." [19]. Through such a theme, the IDC community envisions a life full of bravery, kindness, and hope, and implicitly resilience. In this paper we explore how this unfolds in child-computer interaction (CCI) research practice.

There has been a recent increase in work which involves children in thinking about environmental sustainability, in particular, the climate crisis. The rationale for this is that involving children early on will allow them to become the "stewards of the future" [61]. At the same time, there is ample evidence that "climate anxiety" is widespread in children and young people [17]. As such, there is potential for Participatory Design (PD) activities around the

[1] ACM placeholder title in the official article template

climate crisis (or other "heavy topics") to amplify and exacerbate their anxiety.

With this in mind, and with a desire to ensure we support children, we pursue the question: Is it possible to develop methods and techniques that, while still addressing complex and potentially "heavy" topics such as the climate crisis, foster hope and resilience? If so, how might these methods look in practice? To establish a foundation for addressing these questions, we reviewed literature in the IDC conference, examining how hope and resilience have been conceptualized and integrated into the CCI community. We found that engagement with these theoretical concepts of hope and resilience remains largely descriptive, lacking generative use of theory. In this paper, we therefore present the Hope Model for Interaction Design and Children, and offer provocations for deeper engagement with hope and resilience in a broader range of research applications.

2 Background

2.1 Hope

Hope has been found to be an important predictor of life satisfaction [37]. Freire et al. [12] introduced the Pedagogy of Hope, viewing hope as an active desire to change or improve the world. The HOPE framework [48] defines hope as a result of a child's relations (feeling safe and supported), environment (stability), engagement (belonging), and emotional growth (resilience), which form the basis for creating a healthy and positive experience for children.

Hope has traditionally been viewed from an individual perspective but can also be considered socially [45]. A communal approach helps children build character by understanding others' perpectives and situations. Character building is positively related to social support seeking, unselfishness, community and social participation and helping others. Schornick et al. [45] suggest hope should be defined as a "virtue that has a communal value".

Røkenes and Jornet [43] investigated hope and hopelessness in relation to youth struggles to articulate when learning about climate change and environmental destruction, while Curnow and Uttamchandani [8] examined ways of treating hope and hopelessness as emotional configurations and sense-making tools. Drawing on theories such as hope as a discipline, active hope, and critical hope, they argue for politicized understandings of hopelessness as an often-necessary part of climate education [8].

Despite multiple theoretical perspectives, Snyder's Hope Theory is widely regarded as a dominant cognitive theory of hope [40]. Snyder et al. [50] defines hope as a cognitive process involving goal-directed thinking, specifically the ability to conceptualize goals, create pathways (routes) to achieve them, and possess the motivation (agency) to pursue those paths. Snyder's theory is central to positive psychology, emphasising strengths, not just fixing deficits, and argues for strength building in the treatment and prevention of mental illness [50]. Similarly, Snyder's theory is well suited for HCI as an action-oriented framework comprising three components: *goals* (what would I like?), *pathway thinking* (how can I achieve my goals?) and *agency thinking* (motivation and belief in reaching the goals).

Figure 1 demonstrates the temporal flow of Snyder's Hope Theory model, showing how goal pursuit is shaped by feed-forward and feedback processes. An individual's *learning history* forms the foundational agency and pathways, influencing emotions and expectations entering new goals. Children from the age of one have been shown to start developing *hope*ful thoughts [47]. In the *prevent* phase, people appraise a goal's value before deciding to act. During the *event sequence*, pathways and agency thoughts interact, guiding progress and motivating persistence. Emotions from successes, obstacles, failures, or unexpected events feed back to update pathways and agency beliefs, shaping future goal pursuits and overall hopefulness. Although not explicitly defined in the model, resilience plays a crucial role in overcoming obstacles or failures and appears related to hope [49].

2.2 Resilience

Resilience may be referred to as the ability to cope and manage difficulties, however, "resilience is a complex construct, and it may be defined differently in the context of individuals, families, organisations, societies and cultures" [54]. Individual response to adversity varies, for some it takes a long time to recover and they might suffer long lasting depression or anxiety, while others recover and turn bad experiences into opportunities to move forward. This is referred to as psychological resilience, to turn a bad experience into something to learn from, or to change attitudes, and experience an increase in meaning and experiences [60]. These processes can be identified through how individuals or groups maintain daily activities and employ coping mechanisms.

While research has traditionally focused on individual resilience, there is now an increased focus on the resilience of groups and communities [4, 29]. For instance, how groups and communities manage natural disasters like floods and storms [28] and studies exploring social perspectives such as community support and psychological strategies [44]. An indicator of the ability to adapt to change can be seen through the traits of resilience [3, 64], but also the ability to manage and approach challenges in a positive manner, which supports resilience and brings hope. Hope is viewed as a resilience factor, which often contributes to positive outcomes and promotes well being, and can be impactful in challenging situations. Senger [49] found hope helped people manage their resilience in a more positive way during the COVID-19 pandemic.

Stoilova et al. [56] raise two key questions about resilience in children: "There is little evidence on how children can build resilience and what protective factors exist. Is exposure to risk necessary for the development of resilience? What preventive strategies can be effective?". We propose that CCI research could provide an answer to the second question, through participatory research methods, and the design of technologies that support children to build resilience and coping strategies – hope in design, hope by design, and hope through designing.

2.3 Measuring hope and resilience

One approach to measure hope and resilience is through assessing teaching, e.g. coping strategies (Coping approach) and training children in managing emotional responses (emotion-regulation) [7, 14, 23]. King et al. [22] reviewed methods used to measure

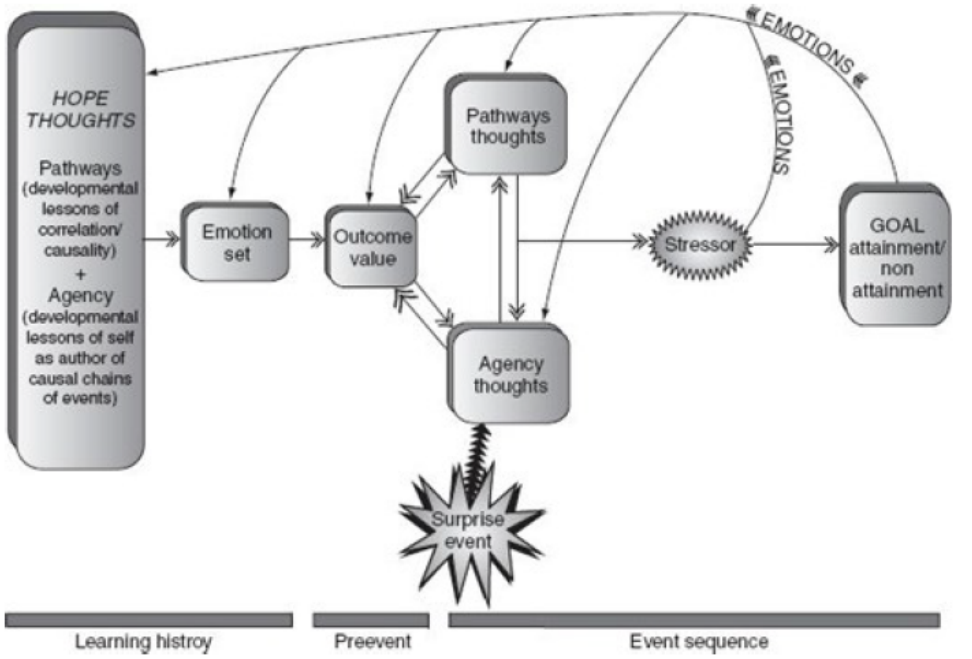


Figure 1: Synder's Hope Model [39]

resilience in children across 36 research studies and found most relied on self-reporting or parent-reporting. The authors suggest adding observational behavioural measures to reduce biases and improve reliability. The Challenging Puzzles Task (CPT) test is an example of a mixed method tool for evaluating children's ability to manage under stress [11]. Participants complete puzzles and then answer three survey questions measuring positive self-evaluation, hopefulness, and motivation [11]. Other evaluations of hope when working with children are also often based on self-evaluations. The Children's Hope Scale [51] asks participants to rate the pathways and agency on a Likert scale. This is a popular evaluation method as it is easy and fast to use, but critiqued for lacking observational measures to validate the self-reviews and that it does not evaluate hope in a community context [46].

3 Methodology

In order to better understand the ways in which the CCI community engages with the concepts of hope, resilience and related coping strategies, we conducted a literature review, looking at all papers published at IDC since the first conference in 2002. In line with several recent literature reviews that used the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) approach [32] for conducting reviews in HCI [55], we applied an adapted PRISMA statement for scoping reviews [59] as depicted in Figure 2. The objective of this review was to examine the conceptual and practical landscape of hope within the IDC community, with particular attention to three core themes: hope by design (as embodied in artefacts), hope through design (as experienced in the use of artefacts), and hope in designing (as manifested within design processes).

3.1 Eligibility

The inclusion criteria were established using the Population–Concept –Context (PCC) framework, as recommended for scoping reviews.

Population: The review targeted studies published within the ACM Interaction Design and Children (IDC) conference proceedings that involved children, adults, or relevant stakeholders such as teachers and caregivers. Studies including participants were eligible if the technology or design intervention was explicitly intended to foster hope or resilience, or if it was evaluated against constructs related to these concepts.

Concept: The central concept concerned the integration of hope or resilience within interaction design. Eligible studies were required to address at least one of the following:

(1) Application of theoretical frameworks or models of hope or resilience.
(2) Design of technologies or interventions aimed at promoting hope or resilience.
(3) Evaluation of such technologies with respect to their impact on hope or resilience.

Context: The review encompassed all contexts relevant to IDC research, including formal educational settings, homes, community environments, and academic or simulated spaces where technologies were tested with the intention of supporting children's development of skills relating to hope or resilience. To be included, papers had to report on the design or evaluation of technology in relation to hope or resilience. Studies were excluded if they only

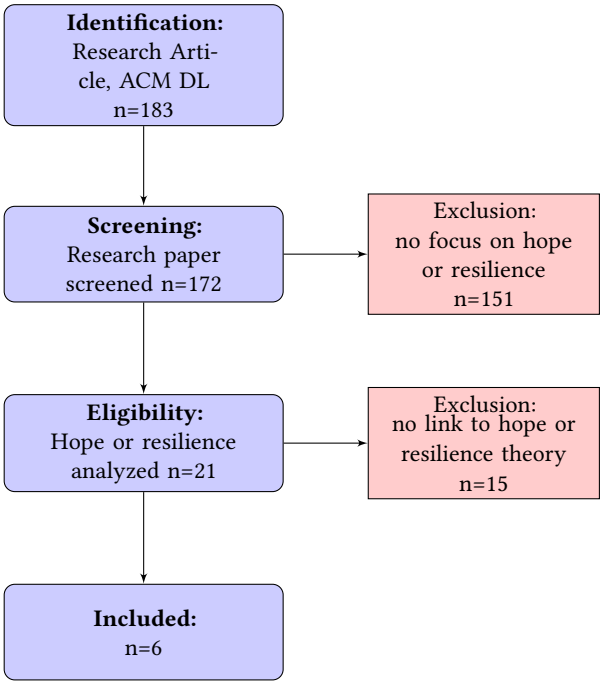


Figure 2: Adapted PRISMA flow diagram representing the selection and refinement process in our review, from the identification of 183 records by abstract search to screening eligible papers and arriving at our final corpus of 6 papers. For each of the stages where papers were excluded (identification, screening, and eligibility) we further present the total of excluded records.

described or proposed a technology without linking it directly to hope or resilience. There were considerable papers that mentioned they hoped to improve children's lives (e.g. [31]) or anticipated that the technology may make children more resilient in the future (e.g. [63]). These papers were excluded, along with papers that had statements such as "hope to get feedback" [25].

3.2 Identification

A comprehensive search was conducted in the ACM Digital Library within the proceedings of the Interaction Design and Children Conference. All conference papers published from the first IDC conference until November 2025 were included in the review. Two separate searches were conducted with the following strings: ("Hope" OR "Resilience") and ("Coping Strategy"). The search yielded 78 papers for ("Hope" OR "Resilience") and an additional 105 for "Coping Strategy", giving a total of 183 papers.

3.3 Screening

Of the 183 papers, 11 duplicates were removed before screening. For the remaining 172 papers, titles and abstracts were assessed against the inclusion criteria, and 151 were excluded after the first screening phase. Full text articles were retrieved for the remaining 21 papers. The full text screening process was carried out independently by the paper authors, with each paper reviewed by a single reviewer who presented their conclusions to the group. This resulted in only 6 papers being included in the review. The entire screening process is summarised in the PRISMS-ScR flow diagram (Figure 2).

3.4 Analysis

The general description of the studies included in the corpus was the following: publication types, technology types, the context of the reported studies, type of application area, and age range of participants.

The qualitative analysis of the studies looked at the types of definitions and categories of measures for hope, resilience and coping strategies.

In order to understand the role of theory and theoretical positions related to resilience, hope and coping strategies in the corpus, we use four theoretical roles for coding across the corpus: descriptive, application, analysis and synthesis (similar to [10, 27] with inspiration from [16, 20, 42]). The *Descriptive* role refers to a situation where a theory is used to frame the work without further engagement with the theory or concepts. Basically, this means that theory is mentioned or used without elaborating on it. *Application* of theory is when the role is to inform constructive and/or empirical work and the analysis thereof without engaging with the merits or qualities of the theory or concepts themselves. This is work demonstrating how existing theory is implemented and applied in the design. *Theoretical Analysis* involves engaging with a particular theoretical framework with the goal of discussing its qualities and/or developing its inner concepts. This is work where the theoretical and conceptual developments are still self-referential and internal to the works, resulting in concepts that converge on similar topics, concepts and analyses. *Synthesis* refers to work that compares and juxtaposes multiple theories with the goal of integrating multiple concepts into a unified framework. This is work that develops frameworks or strives to integrate multiple perspectives from related work into useful models and concepts. The four categories are intended to convey what the chosen framing does for the work and how the papers engage with the theoretical framing. The former two use the theory 'as is', whereas the latter two take a more generative perspective [27].

In our analysis, a consensus-based approach was applied [2], inter-rater reliability was not calculated.

4 Results

Table 1 provides a general overview of the reviewed papers, including year, title, paper type and reference, while the sections below describe the general characteristics of the papers as well as their relationship to theories of hope and resilience.

4.1 Paper type and year, and country of origin

Only one of the six papers in the corpus is a full article [18], while the rest are shorter formats: demo [15], workshop proposal [33] and work-in-progress [5, 9, 38], indicating that much of the research is still in an early developmental stage. We also identified that all papers except for one [15] were published within the last two years, and that all four papers focused on hope were published in 2025, the same year that hope was the theme of the IDC conference. Taken together, this suggests that research on hope and resilience focused

Year	Title	Paper Type	Reference
2009	FearNot! Providing Children with Strategies to Cope with Bullying	Demo	Hall et al. [15]
2024	Grow with Your AI Buddy: Designing an LLMs-based Conversational Agent for the Measurement and Cultivation of Children's Mental Resilience	Article	Hu et al. [18]
2025	Director's Cut: Hope-Filled Approaches to Amplifying LGBTQ+ Youth Voices in Healthcare	Workshop	Nickley et al. [33]
2025	Touching Hope and Safety: Designing Interactive Puzzles for Children's Healing and Empowerment after Trauma	WiP	Choi [5]
2025	"Whispers of Hope": A Narrative-Driven, Immersive, Digital Game to Foster Hope and Emotional Growth in Children	WiP	Pasupuleti et al. [38]
2025	HopeFix: An AR System for Building Hope Through Toy Repair	WiP	Deng et al. [9]

Table 1: The final corpus of six included papers which discuss hope, resilience or coping strategies, deriving from the Interaction design and children (IDC) conference proceedings up until November 2025.

technologies for children is an emerging but still underexplored area.

The studies are geographically dispersed, spanning countries including the UK, USA, China, and India, highlighting global interest in the topic.

4.2 Type of technology

Games are the most common type of application; a narrative driven AR digital game in [38], and interactive puzzles (multisensory physical/digital interfaces) in [5]. Since most papers are from 2025 we see many emerging technologies: Augmented Reality (AR) system with AI voice prompts in [9], LLM based conversational agent designed for children [18], and a virtual Learning Environment with autonomous synthetic characters and emergent narrative in [15]. In [33] there was a design toolkit/method rather than a computational system.

4.3 Application area

Four papers focus on hope and are applied to: LGBTQ+ voices in healthcare [33], healing after trauma [5], emotional growth [38], and toy repair [9]. One paper had the theme of coping strategies [15], which was applied to bullying, while another paper focused on building mental resilience [18] using artificial intelligence. This indicates that hope, resilience and coping strategies are typically applied in sensitive application areas with vulnerable users.

4.4 Methods

Across the six identified papers, participatory and iterative methods each appear in three papers [6, 9, 33], observational methods in two [6, 18], with a predominance of qualitative, child-centered design approaches, with several papers foregrounding rich, contextual insights into children's experiences and interactions. In particular, four studies place strong emphasis on qualitative methods such as PD, co-design, interviews, and observational analysis, prioritizing depth of understanding over large-scale measurement [6, 9, 18, 33].

Two of the studies combine qualitative inquiry with quantitative assessment, resulting in mixed-methods designs that integrate user-centered exploration with pre- and post-test evaluations to assess outcomes such as psychological resilience [9, 18]. In contrast, one study stands apart through its purely experimental and quantitative approach, employing a longitudinal classroom-based design with control groups and questionnaires, and offering limited participatory engagement in the design process [15].

One study explicitly adopts a trauma-informed and emotionally focused perspective, analyzing participants' emotional responses, comfort, and therapeutic potential as central design considerations [6].

4.5 Definitions

Both Pasupuleti et al. [38] and Deng et al. [9] use the definition of hope from Hope Theory as defined by Snyder et al. [50] (see Section 2.1). In the remaining papers, no definitions were provided for hope, resilience, or coping strategy.

4.6 Theoretical grounding and the role of theory

Following on from definitions of hope, both Pasupuleti et al. [38] and Deng et al. [9] draw explicitly on Hope Theory by Snyder et al. [50]. In addition, the interaction design in [38] is guided by Hope Theory [50] in focusing on three key dimensions: goal support, pathways thinking, and agency strengthening.

In Nickley et al. [33], we see how the research is inspired by former US president Barack Obama's vision of hope. In "Audacity of Hope: Thoughts on Reclaiming the American Dream" [35], Obama shares his beliefs and political foundation, which include staying true to core values, selecting role models and mentors, establishing a support system, learning to compete in an unfamiliar environment, overcoming stereotypes, and maintaining political rightness. Although the theory from Obama [35] serves as an inspiration in [33], its role remains *descriptive*.

In contrast, given that the interaction design in [9, 38] draws explicitly on the Hope Theory [50], its use of theory can be considered to be an *application*. Overall, however, the theory on hope and resilience is basically used "as is" in the corpus. There is a distinct lack of more generative use of theory, such as *theoretical analysis* and *synthesis* [10, 27].

4.7 Measurements

In terms of explicit measurements of hope, only one paper mentions the use of a targeted measurement. Deng et al. [9] note the use of a revised version of the Children's Hope Scale, based on Snyder et al. [50] but specifically adapted for children. In this case, the authors revised it to focus on the relationship between hope and toy repair.

The general lack of using instruments explicitly for measuring hope suggests the need for future work in this area. Indeed, if we do not measure hope, how will we know if our design processes and outputs are effective?

5 Discussion

The literature review indicates that hope and resilience remain underexplored and insufficiently systematized. This gap is also reflected in other domains [24], where few relevant studies are identified. Papers in this review often lacked strong theoretical grounding. While many described technologies intended to promote hope or resilience, they provided limited evidence of how theory informed design or evaluation strategies. There is also little indication that the themes of hope by design, hope through design, and hope in designing, have substantively influenced the broader CCI landscape.

Snyder's Hope Theory, referenced in only two papers [9, 38], may be suited to CCI. The theory comprises three components: Goals ("What would I like to achieve?"), Pathway Thinking ("How can I achieve these goals?"), and Agency Thinking (the motivation and belief in one's capacity to reach the goals). Despite criticisms of this model [57], CCI work is often goal-driven, addressing issues such as bullying [15] or mental health [18].

An assumption of Hope Theory is that human behaviour is goal-directed [50]. Goals have long been central to interaction design from Norman's action model [34] to more contemporary frameworks [65]. However, goals themselves are complex phenomena: they may manifest as self-statements or as vivid mental images, and they vary across temporal frames ranging from immediate to long-term. Snyder also proposed two types of goals: approach goals and avoidance goals. Distinguishing between these may be particularly important within design practice. For instance, designers may wish to support avoidance goals such as preventing children from experiencing bullying [15], or approach goals such as enhancing children's wellbeing [38]. Understanding the nature of these goals may therefore help inform more nuanced and effective design interventions.

Pathways and agency form crucial components of Hope Theory. Children must envision routes to goals and perceive them as attainable. Agency, the motivational component of hope, must be sustainable and requires a genuine intention to act. In this context, technology can serve as a facilitator of that movement towards their goal. Thus, it is essential to establish goals that are attainable, age-appropriate, and developmentally meaningful. Temporal factors may also matter for children; their understanding of future time differs from that of adults, influencing how they formulate and pursue goals [1].

Resilience shapes goal pursuit. If the value of a goal is appraised as insufficient to justify continued effort, goal pursuit is likely to be abandoned. Also repeated failure can diminish hope, underscoring the need to design technologies that mitigate or buffer such experiences. For example, asking young children to "end environmental problems" would constitute a goal so unrealistic that it becomes discouraging rather than motivating. However, they may be able to understand the concept and contribute to issues that impact their lives [36].

Although Snyder's model is a useful foundation, it is a generic. We propose the H4D (hope for design) model (see Figure 3) as a conceptual tool to support the design and evaluation of hope-related technologies and design sessions that inspire hope and, to guide future research. We conjecture that an adaptation of Snyder's model [50] could support the CCI community in critically reflecting on research that clearly positions hope within the context of hope by design, hope through design, and hope in designing.

Hope-centred design must also account for external influences beyond children's control. In the reviewed papers, external influences may have included school policies shaping bullying interventions [15], government policies affecting marginalised youth [33], and unequal access to materials or connectivity shaping participation in repair and sustainability activities [9]. Because these factors cannot be designed away, they must be made visible in both design and evaluation: what appears as "low agency" may be an artefact of restricted opportunity rather than individual motivation. Thus we reinterpret Snyder's "surprise events" as structural and contextual influences that can enable or constrain goal pursuit, referring to these as external influences.

The first phase of hope-centred design is a structured reflection on children's lived context: how values, culture, and beliefs shape what counts as a desirable future, and how goals emerge as individual and collective aspirations. This aligns with perspectives framing hope as socially situated [46]. Many design problems are inherently collective, such as climate action, sustainability, and wellbeing [5] and thus "hopeful futures" must be defined in ways that are meaningful to children within their communities, not simply imposed as adult-designed outcomes. Aligning problem framing with children's values is therefore not only a matter of good participatory practice, but also a precondition for legitimate and motivating goal formation.

Goal formation requires pathway and agency thinking: children must imagine routes and see themselves as causal agents within those routes [47, 53]. This matters as many of the challenges children care about are "global" in scope (e.g., climate change), yet children's capacity to act is often local, incremental, and mediated by adults and institutions [13]. Our model therefore foregrounds goal calibration: while children cannot "solve" global issues, they can pursue locally meaningful, time-bounded goals (such as monitoring and improving school air quality) where agency is experientially plausible and progress can be evidenced (e.g., [21]). Designing goals with appropriate temporal scope is important, as distant futures can be cognitively and motivationally difficult to sustain [58]. Goals should therefore be framed with near-term milestones that keep the future imaginable and attainable.

By translating Hope Theory into the framings of hope by design, hope through design, and hope in designing, we identify three interrelated components essential to CCI practice: design, technology, and evaluation. Within the design component, we propose three interdependent design commitments that foster the creation

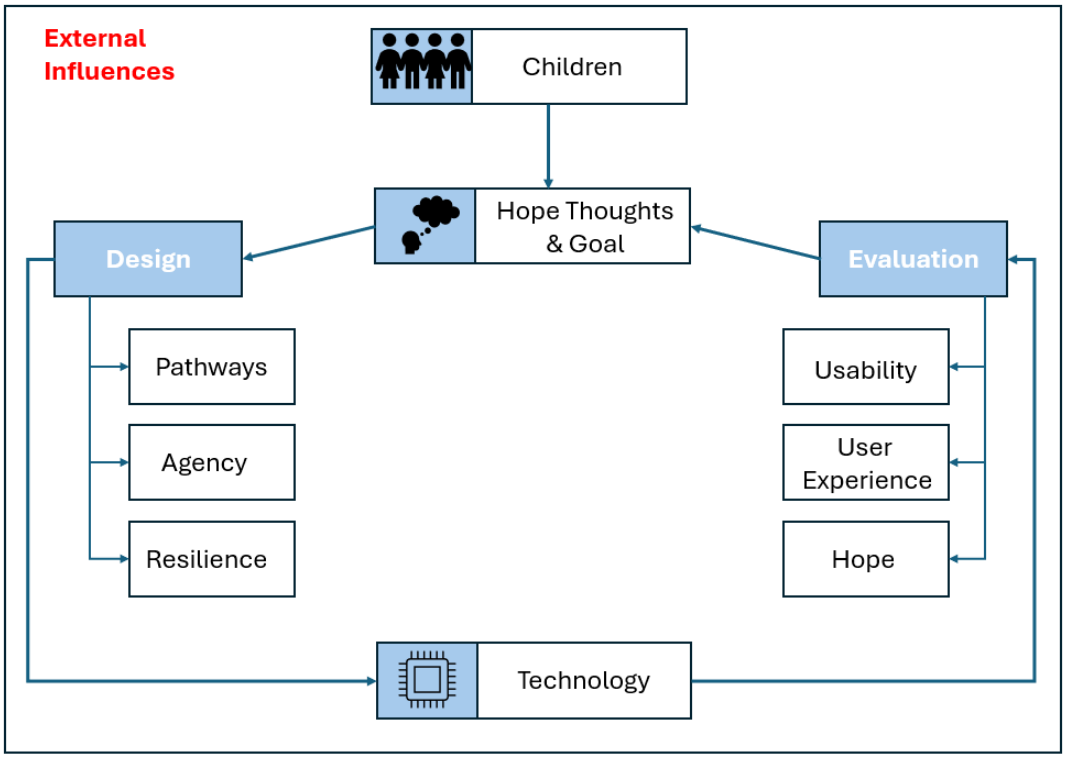


Figure 3: Hope Model for Interaction Design and Children (H4D Model)

of artefacts (technology) or cultivate hopeful aspiration through participation in the design process: (1) pathway support, (2) agency support, and (3) resilience support.

First, children need opportunities to develop an understanding of pathway support, recognising that multiple pathways toward a goal may be required rather than a single "correct" route, as demonstrated in bullying-focused interventions [15]. Second, *agency support* involves motivational scaffolding that provides indicators of progress, meaningful choices, social recognition, and opportunities for children to initiate action. This is essential because agency sustains effort over time. Third, children must understand resilience or coping strategies either as an outcome of the design process or as a feature in the artefact, to respond constructively to inevitable disruptions. When setbacks occur, systems should help them re-route, reinterpret failure, and re-engage without eroding self-efficacy. This is particularly important because repeated failure can diminish hope; designing for recovery becomes a core requirement [50].

Technology serves as the artefact with which children will interact following the design phase. Such technologies may take various forms, as discussed in section 4.2, including web-based applications, augmented reality (AR), and virtual reality (VR) systems. Access, however, can be constrained by external factors such as school budgets or internet quality. Determining the efficacy of technology in supporting hope through design therefore requires systematic, contextually sensitive evaluation.

Finally, while CCI has a strong tradition of methods for evaluating usability and child experience (e.g., Fun Toolkit [41], MemoLine [62], laddering [66]), there is limited guidance for evaluating hope-related outcomes. Instruments such as the Children's Hope Scale [52]) measure trait hope, but CCI interventions aim to influence state or situated hope within a specific project or community context. Drawing inspiration from the PLU-Model [30] which incorporates usability, user experience, and learning, we adapted this model by substituting learning with hope as the focal dimension. We argue for mixed-method evaluation that combines (a) established child-centred usability tools, (b) child-centred UX tools (c) adapted hope measures (trait/state), alongside longitudinal methods to capture hope trajectories rather than single-session impressions.

As highlighted in the HopeFix paper [9], establishing whether a technology effectively supports hope may be challenging when evaluations are conducted within a single session with a small number of participants. Short-term assessments make it difficult to determine whether the scaffolding of goal setting, pathways thinking, and agency can be sustained over time. Consequently, longitudinal evaluation is likely required to understand whether these hope-related outcomes persist beyond the immediate interaction. This is especially important when working in sensitive application areas with vulnerable users, to ensure that these children see real benefits from their involvement in design, creation and use of technology artefacts. The adaptation of tools such as the MemoLine [62] to elicit hope-relevant constructs (goals, pathways, perceived agency, re-engagement after setbacks) over time may offer ways to

evaluate technology designed to foster hope or resilience. We hope that this will also support the inclusion of hope and resilience in more typical design research application areas.

The H4D model presented here does not offer direct guidance on how to design for hope; however, it helps align hope-related research within the CCI community with the theoretical foundations of Snyder's model. For those seeking to empower children through PD or design-based practices, the three elements of Snyder's model (goal setting, pathways thinking, and agency) must be treated as required outcomes, alongside resilience. These elements should be intentionally incorporated into technology to foster hope through interaction. For evaluation, it is essential to understand the extent to which children are able to achieve their goals. Accordingly, incorporating measures of hope alongside traditional usability and user-experience assessments is desirable. Notably, the papers identified offered little compelling evidence that the technologies examined effectively fostered hope. Although alternative theoretical perspectives on hope exist, Snyder's framework provides a strong foundation for conceptualizing hope within CCI.

6 Conclusion

This paper set out to clarify how hope can be more systematically understood, designed for, and evaluated by reviewing the IDC conference publications published up to 2025. A search of the ACM DL revealed a small corpus of just six papers that met the inclusion criteria. As evidenced by this review, few IDC studies provide compelling evidence that technologies or CCI design practice genuinely scaffold the required elements of hope. Moreover, theoretical engagement across the reviewed literature was limited, with only two papers explicitly drawing on Snyder's Hope model. As hope is increasingly recognised as a vital psychological resource for children navigating uncertain futures, CCI has a unique opportunity and perhaps a responsibility to create technologies or design practices that cultivate the cognitive and emotional tools children need to imagine and pursue more hopeful futures.

Drawing on Snyder's theory of hope, which conceptualizes hope as a dynamic interplay between pathways thinking, agency, and goal setting, we articulated how these components offer a robust foundation for CCI research and practice. Translating Hope Theory into the framings of *hope by design*, *hope through design*, and *hope in designing* offers a productive lens for rethinking how CCI might intentionally cultivate hopeful thinking in children. This paper contributes a new H4D model to align CCI design practices by adapting Synder's model. We identify goal setting as the core component: design, technology, and evaluation as essential for embedding hope in practice.

Future work is required to operationalize this model into concrete methods, techniques, and processes that can foster hope in children. In particular, greater alignment between CCI design practices and the cognitive architecture of hope is needed, ensuring that future research not only aspires to support children in developing a hopeful mindset, but does so through theoretically grounded, evidence-based research. In addition, future research could explore the use of hope in more typical design-research application areas with children, extending beyond sensitive contexts involving vulnerable populations.

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