



# What Makes Me?

Core Capacities for Living and Learning

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Correspondence should be addressed to:

UNICEF Office of Research – Innocenti  
Via degli Alfani, 58  
50121 Florence, Italy  
Tel: (+39) 055 20 330  
Fax: (+39) 055 2033 220  
[florence@unicef.org](mailto:florence@unicef.org)  
[www.unicef-irc.org](http://www.unicef-irc.org)  
twitter: @UNICEFInnocenti  
[facebook.com/UnicefInnocenti](https://www.facebook.com/UnicefInnocenti)

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## Core Capacities for Living and Learning

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# Foreword and acknowledgements

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This report, *What Makes Me? Core Capacities for Living and Learning in Childhood*, explores how 'core capacities' – or cornerstones of more familiar concepts, such as *life skills* and *competences* – develop over the early part of the life course, and how they contribute to children's personal well-being and development.

The report synthesizes the work of the *Measuring What Matters* project, and nine detailed working papers – covering the core capacities of 'Discerning patterns', 'Embodying', 'Empathizing', 'Inquiring', 'Listening', 'Observing', 'Reflecting', 'Relaxing' and 'Sensing' – that individually review the empirical evidence on each core capacity in the academic literature. Each working paper assesses the contribution of the core capacities and the perspectives from which they are applied – mental, physical, emotional and spiritual – to children's well-being and development, and the practice and policies applied by adults working with children in relation to each core capacity.

The purpose of the work is to assess how core capacities can improve the lives of children, and to understand the ways in which education systems and broader social systems can protect and promote these capacities. This project builds on the existing evidence base to understand better how children's personal attributes (age and gender), and the world around the child, can promote the use of core capacities for the benefit of child well-being and to improve policies and practices for child development. The aim of this work is to use this learning to contribute practical steps to improve the living and learning conditions for children globally – not just in school, not just at home, but in their daily lives, and as they grow into adulthood.

This report was written by Dominic Richardson, Marloes Vrolijk, Sabbiana Cunsolo (UNICEF Office of Research – Innocenti), and Victor Cebotari

(Strategic Advisor – Academic Affairs, University of Luxembourg, formerly UNICEF Office of Research – Innocenti), drawing from studies jointly undertaken with Adriano Linzarini (formerly UNICEF Office of Research – Innocenti).

The project was coordinated at the UNICEF Office of Research – Innocenti, with overall direction facilitated by a steering committee made up of representatives from the Learning for Well-being Foundation (Daniel Kropf, Linda O'Toole), the Fetzer Institute (Xiaoan Li, Mohammed Mohammed), UNICEF (Friedrich Affolter, Matt Brossard) and Millennium School (Jeff Snipes). A research committee provided initial guidance at the inception meeting, and reviewed all draft papers, and this synthesis report. The research review group included: Friedrich Affolter (UNICEF, Syria), Paul Downes (Dublin City University, Ireland), Shanti George (Independent researcher and advisor, Netherlands), Mohammed Mohammed (the Fetzer Institute), Martyn Rawson (Waldorf Schools, Germany), Linda O'Toole (Learning for Well-being Foundation), Jenny Wade (Independent researcher and advisor, United States) and Erik Jan de Wilde (Independent researcher and advisor, Netherlands).

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# Executive summary

# Executive summary

The academic literature on skills development in childhood is rich and varied. Overall, it seeks to understand what should be in a child's 'toolkit for life'. Children who are well-equipped for life will be more able to meet the opportunities and challenges they face at home, at school and in the world at large.

For almost 20 years, the Learning for Well-being (L4WB) Framework has been one contribution to this literature, which proposes that through the application of the most innate human abilities – or 'core capacities' – children can better understand and interact with the world around them, for life and for learning, and realize their unique potential. Core capacities can be viewed as cornerstones of life skills – the most innate and basic human abilities, so easily taken for granted, that they are underutilized in efforts to promote child well-being and development. The nine core capacities in the Framework are: 'Discerning patterns', 'Embodying', 'Empathizing', 'Inquiring', 'Listening', 'Observing', 'Reflecting', 'Relaxing' and 'Sensing'.

The L4WB Framework also proposes that each core capacity can be expressed through mental, emotional and physical aspects, and within a broader spiritual dimension, and in this way, come together to form a 'holistic' and a child-centred view of abilities development embedded at the centre of a broader and dynamic socioecological framework (a living social system).

## What are core capacities?

A growing body of evidence suggests that successful performance in school, work and life needs to be supported by a wide range of skills, the development of which should be nurtured and expanded throughout childhood (Galloway et al., 2017).

Core capacities are an attempt to identify the foundations of human ability to relate with oneself, others and the environment, often the focus of the life-skills literature (e.g., negotiation skills, communication skills, problem-solving skills). By attempting to identify abilities that are 'elementary' (or non-divisible), the core capacities in the L4WB Framework offer a new way of conceptualizing skills development without seeking to replace existing life-skills models – complementing the same ambitions – while also offering a point of consensus across various life-skills models. The Framework also views these capacities as fundamentally human skills, which are held in varying degrees and expressed differently by each individual (children and adults), and holds that this uniqueness is valuable, and that public systems, including education systems, should both promote the development of these skills and protect these skills from being 'taught out' of children (see Section 3.2).

Importantly, these core capacities, from the various perspectives, do not promote economic, social or civic returns above one another, but rather seek to promote holistic child development and well-being.

## What does this report contribute?

The purpose of the *What Makes Me?* report is to assess what a comprehensive review of the existing literature can tell us about core capacities, using the L4WB Framework as the conceptual frame. The aim is to understand if such cornerstones of life skills can add value to concepts designed to promote child development, and related public policies, and further to identify what constitutes good practice for promotion and protection of these abilities.

The onset of COVID-19 has served to underline the need for evidence on the most effective and efficient ways for ensuring all children can fulfil their potential.

Social, economic and civic skills have been central to managing the public health needs related to COVID-19 and will be key to countries achieving strong economic recoveries, and avoiding future crises. Moreover, the risks to social services for children based on the costs of the crises, and the resulting growing social inequalities within and between countries, will result in demand for ways to optimize investments in child development – ways that complement goals outlined in the United Nations Convention on the Rights of the Child (UNCRC), and the Sustainable Development Goals.

With these new challenges in mind, and the opportunities this brings for reimagining child welfare, this study comes at the right time.

Finally, with reference to the UNCRC, this report contributes evidence towards the achievement of children's rights and outcomes largely overlooked in similar studies of children's abilities and skills development and well-being. Both children's 'evolving capacities', and 'children's spiritual well-being', are key parts of achieving multiple children's rights, as outlined in the UNCRC. The evolving capacities of the child are mentioned in both Article 5 and Article 14.1 in regard to children being able to exercise their own rights (Article 5), and their freedom of thought, conscience and religion (Article 14.1). Moreover, Articles 17, 23.3, 27 and 32 – concerning a child's right to access information, the social integration

of disabled children, an adequate standard of living, and protection from economic exploitation – recognize spiritual well-being as a goal of these rights alongside physical, mental and moral well-being, among others. Notably, the term 'life skills' is not mentioned in the UNCRC. In this report, the life-skills literature is used where relevant, and L4WB's core capacities are referred to as core capacities or abilities.

## A word on perspectives

As this work has reviewed the literature on core capacities in the L4WB Framework, it has sought to understand whether the evidence from the literature conceptualizes and operationalizes each capacity from a mental, physical, emotional or spiritual perspective. In the case of 'Listening' studies, for instance, the review records when children's listening skills were measured and tested in terms of cognition (mental), function (physical) or feeling (emotional), to understand the differences in how these skills were promoted or protected in practice, and how they affected the child. However, across all of the core capacities, studies which claimed that they capture a spiritual perspective (a sense of connection to all things – indivisible from the other perspectives) were few and far between. Why this is the case requires some reflection.

Both in public policy and in academia regarding human development, spirituality and the spiritual perspective lack credibility and evidence compared with more proven concepts of mental, emotional and physical skills development. Nevertheless, billions of people worldwide – religious or otherwise – claim to be spiritual, and make life choices for themselves, and others, on this basis. Indeed, adult preferences for the teaching of religious qualities in schools remains high all over the world, competing with qualities such as tolerance, responsibility, unselfishness and a strong work ethic (see, for example, the European responses to the World Values Survey, Maksić and Pavlović, 2013).

In the L4WB Framework, the spiritual dimension is considered pervasive, and experienced as “a sense of connection to all things, including natural and manmade environments” (O’Toole, 2016). The spiritual perspective is not distinguishable from the mental, physical and emotional perspectives, but rather connecting these, to express a more holistic, human-centred view of life, and therefore a more holistic view of individuals’ abilities and life skills (see Section 1). In this work, and that of collaborating partners, the spiritual perspective is not synonymous with religiosity – but rather a sense of connectedness with all things. This definition aligns to that of Benson et al. (2012), which distinguishes spirituality as “a more active and engaged process in which some persons choose to shape and create a way of knowing and living that may or may not draw on religion” and as something which involves conscious choice to explore the “‘big questions’ about the meaning of life” (p. 454).

In each of the literature reviews undertaken for this project, and notwithstanding the challenges of accepted terminology and empirical accessibility (to be further discussed in Section 4), the spiritual perspective is treated in the same way as mental, physical and emotional perspectives insofar as the literature is allowed to speak for itself, and the quality of the operationalization, methodologies and interpretation of results in each study determines its inclusion in the summary analysis presented here.

### **The *Measuring What Matters* project and *What Makes Me?* report**

The purpose of the *Measuring What Matters* project has been to review what is known about each of the core capacities in the academic literature, and how the combined evidence can speak to improvements in the way children as unique individuals interact with the complex system of the world around them. The goal of this work is to inform real, positive and effective change in general education policies and practices, and more broadly in the policy portfolio for children, and adults who work with children. Through the recognition and strengthening of core capacities in childhood, the aim is to improve the rights, achievement and well-being of all children,

and in turn see benefits for social and human development.

To meet these aims, the *What Makes Me?* report addresses the following questions:

- What does the ‘core capacity’ perspective bring to understanding of child development, and how does this compare with previous efforts in related fields, such as life skills?
- What has been learnt about what the nine core capacities can achieve for children?
- How are core capacities developed over the life course, and what personal and social factors matter for this?
- How can those around children promote and protect the development of core capacities in practice?
- What can be learnt when considering the complexity of ‘unique child development’ and core capacities, as well as reimagining policies and systems for children in a post-COVID world?

The answers to these questions are drawn from nine individual working papers – separately published – that review quality-assured literature to assess: the extent of consensus on the definitions and operationalization of measured core capacities; their determinants and contributions to child development, including age-sensitivity; the interaction of core capacities and the perspectives from which they are expressed; how adults working with children may exemplify the capacities; the role of policies, practices and social environments in determining core capacities themselves; and the gaps in the evidence base.

## Why measuring core capacities matters

Core capacities can be considered cornerstones of life skills, and are such innate and basic human abilities that their utility is at risk of being overlooked in the efforts to promote child well-being and development. From the perspectives of advocates for improving child well-being, there are six key reasons as to why measuring core capacities is *Measuring What Matters*. These are:

- *Improved metrics for children:* For something to be valued and to be monitored, it should be measured. The L4WB Framework presents core capacities as cornerstones of life skills that are key for child development – part of a toolkit for life – and holds that these capacities are elementary, ‘process-oriented’ abilities, which together contribute to multiple composite abilities or life skills well-established in the literature and in practice. Since the early 2000s, the increasing use of child well-being metrics (literacy surveys, life-skills studies and child well-being comparisons) has contributed to better data for children, but the focus has primarily been on outcomes, and not the capacities used by children – and those working with children – as they live and learn (see Section 4.1). Previous child well-being and life-skills metrics have also stopped short of exploring the interplay, or prioritization, of key measures in their frameworks, and unique developmental trajectories of these measures – factors important for optimizing policy responses for children. The *Measuring What Matters* project intends to fill these gaps.
- *Improved outcomes for children:* With new data on ‘process-oriented’ capacities in childhood and for adults working with children, *Measuring What Matters* seeks to provide new and useful evidence for optimizing general welfare policies for children, education policies and practice, as well as family functioning. The process-oriented approach looks at how the individual achieves a result or objective naturally and uniquely for that individual (O’Toole, 2016). Altogether these

developments are designed to achieve one important goal: improved child well-being for *all* children, including outcomes important for children’s rights achievement, and social and human development (including in the Sustainable Development Goals).

- *Improved policies for children:* Despite the evidence that child poverty, ill-health and neglect – among many other factors – stifle a child’s ability to live well and learn well, the policies that would best address these needs are often under-resourced, suffer from unequal coverage and commonly come late in the life course (UNICEF Innocenti, 2020; Richardson et al., *forthcoming*). In the majority of countries, global spending on education makes up between \$6 and \$9 for every \$10 spent on children under 18 (Richardson et al., *forthcoming*). Moreover, as many as one in eight countries prior to COVID-19 spent more on debt servicing than they spent on child welfare policies in total (UNICEF, 2021). Effectiveness and efficiency in the child policy portfolio are needed to help money go further for children. Public policies are part of the L4WB Framework (see Section 1.4), and by seeking ways to optimize practices for child development outcomes, the *Measuring What Matters* project is a meaningful contribution to improving public policy for children more broadly.
- *Improved school practices for children:* Whether a country is high, middle or low income, when it comes to public policies for children, compulsory education takes the lion’s share of investment in children – and school is the main vehicle through which a country’s commitment to its children, and their future, is delivered. Where data are available, globally, almost every country is spending more on education than social protection, child protection or health, and this spending is often inadequate and comes late in the life course – around 11 to 14 years of age, in line with secondary school spending (Richardson et al., *forthcoming*). Optimizing education systems, therefore, is a priority for improving

child development and well-being – and in the wake of the COVID-19 pandemic, there have been calls to reimagine education systems. By identifying the benefits of core capacities, and assessing what practices in schools are most conducive to children’s development and utilization of these capacities, the *Measuring What Matters* project seeks to contribute to reimagining education systems globally.

- *Improvements in adult interactions and social conditions:* To understand more about what the L4WB Framework means for child development, the *Measuring What Matters* working papers record when studies show social and demographic differences in outcomes among children – and adults working with children – and the transmission of core capacities between the generations. A key aspect of this is children’s relationships with adults, and social circumstances, which can act as barriers or opportunities for the development of core capacities for children of different backgrounds.
  
- *Working towards education for holistic development:* The approach to core capacities adopted by the L4WB framework supports a holistic approach to child development. The *Measuring What Matters* project aims to contribute to fulfilling the promise of a holistic education as set out in the UNCRC (Articles 28 and 29).

# Key findings and recommendations

The literature supports the core elements of the L4WB Framework, including the utility of the nine core capacities, the perspectives of their application (mental, emotional, physical and spiritual), the inner diversity and unique potential of children, and their utilization of the core capacities. However, the interplay of the capacities, and attributes of the capacities (and whether subcategories might be applicable) uncovered in this work, may lead to further conceptual development. For instance:

- **Some capacities are gateway capacities:** Evidence suggests that ‘Listening’, ‘Sensing’ and ‘Observing’ are ways in which children access information for ‘processing’ as part of practising core capacities. These are distinct from other capacities, such as ‘Empathizing’, which require the aforementioned capacities to be well-developed in order for children to empathize effectively.

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- **Core capacities are not inherently positive or negative:** On a number of occasions, studies show that core capacities can contribute to both positive and negative outcomes for children. For instance, ‘Reflecting’ to the point of ruminating, or worrying, can result in a worsening of mental health. For ‘Inquiry’, types of curiosity relate to anxiety and not increased well-being. ‘Sensing’, ‘Observing’ or ‘Listening’ abilities can result in children being distracted to the point that it affects their personal health or education. In short, core capacities need to be applied in the right way for positive outcomes to be achieved.

- **Adults and children (need to) use core capacities differently:** The practical application of core capacities involves the child interacting with the world around them – this often means with other people, including adults. Adults need to apply their own capacities, complementary to children, to protect and promote child development in this area. For instance, adults need to be ‘Listening’ as children are ‘Inquiring’. Moreover, evidence suggests that how adults apply the core capacities can result in improved children’s outcomes of the same – there is a clear ‘role model’ effect for many of these capacities.

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- **Enabling environments matters for children:** Much of the literature shows an independent effect of the environment on the protection and promotion of core capacities. For instance, at home, ‘Inquiring’ is promoted in stimulating and in safe environments. At school, noisy or visually distracting spaces can result in poorer outcomes for certain children. At the community level, children experiencing racial discrimination, living in areas of high crime risk or living in post-conflict settings are all shown – with the extent depending on age – to be related to ‘Empathizing’.

■ **Personal and social attributes can matter:**

Evidence also shows that gender, family background, parental education and age play a significant role. The role played differs by core capacity. For instance, 'Embodying', 'Empathizing', 'Inquiring', 'Listening' and 'Reflecting' all improve over time with age. 'Discerning patterns' (self-regulation) and 'Observing' (sustained attention) are non-linear, with examples of slumps in the development of these capacities at different periods of the child's life course. 'Sensing', particularly related to imagination – or fluency in ideation – tends to decline as people age.

In terms of practical applications of the core capacities, the following recommendations are the most salient:

■ **Core capacities contribute to child development and beyond:**

Evidence across all papers shows how core capacities are essential prerequisites to child development in terms of cognitive development, mental health, physical health, prosocial behaviours and more. These basic human abilities are evident in children from the earliest ages, and need to be protected and promoted to significantly improve children's life chances, to maximize the potential of education systems globally and, in doing so, to expedite social, economic and human development goals.

■ **Parenting practices:** When parents practise the core capacities, acting as role models, this increases the likelihood of children developing those core capacities. Evidence suggests that parents can be trained to support children's development of core capacities, by applying their own 'Listening', 'Inquiring', 'Reflecting' and 'Empathizing' abilities, among others. Parenting programmes can play a role in supporting those in need of training. In terms of activities at home, parents can apply both active 'Inquiring' and 'Reflecting' with their children when reading, during play and while listening to music (among other activities), as part of promoting core capacities and child development.

■ **The home environment:** The ability of parents to promote and protect children's core capacity development is shown to be dependent on parental education and on home factors, such as time and resources available. Reading, play, listening to music, sensory stimulation, or simply the presence of parents or caregivers as children learn and play at home, are all shown to promote core capacities in children, and are all dependent on parents and caregivers having the materials, education, disposition and time to engage. Naturally, these factors can vary across households, and result in variable outcomes for children. Family-friendly policies are needed to enable parents to provide the best possible conditions for practising core capacities across the life course, starting from the prenatal period.

■ **When to work with children – age-related development of core capacities:**

All of the core capacities are present in children in the preschool years, with 'Inquiring' and 'Empathizing' shown in preverbal infancy, and 'Listening' in-utero, meaning that preschool services, including birth services, social protection and child protection interventions, should all – to varying degrees – be sensitized to their roles in the protection and promotion of these capacities. Age-related development shows that, in the majority of cases, capacities improve over the years, although in a non-linear fashion, with some plateau related to children's engagement with formal schooling and adolescence. Only fluency in ideation, and applied intuition, tend to decline during the course of childhood. The timing of intervention should be aligned to these trajectories, with sensitive periods during adolescence, and as children move between schools and grades, receiving particular attention (e.g., more intense support, or tailored interventions and practices).

- **How to work with children:** Evidence from the literature shows that modalities by which to practise core capacities with children can include more active and multisensory work – using drawing, role play, visuospatial and visuomotor learning, computer-assisted learning, active inquiry, simple listening and planned reflection (mindfulness), at both school and home, are all associated with improved outcomes, including when compared directly with pen and paper learning. Age-related factors – as noted above – do need to be considered, as a broader, more innovative range of learning modalities are applied as children grow in age.

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- **Where to work with children – enabling environments:** Outside the home environment, the availability and management of other spaces where children spend their time matter, and children’s engagement with nature should be promoted whenever feasible. Evidence suggests that access to natural environments – green spaces – can have a positive influence on children’s abilities and outcomes, such as working memory, learning outcomes, problem-solving, decision-making and creative thinking. School and classroom environments can also promote positive outcomes – school ‘attachment’ is seen to lower bullying rates in some contexts – but equally important for the core capacity discussion is that over-stimulation of visual or auditory conditions in classrooms, which can negatively influence learning outcomes, be addressed in school and classroom design.
- **Policies to support parents:** Policies and interventions to address inequalities in the home are key to addressing unequal outcomes for children within, and between, countries. At the national level, social protection, family-friendly policies, child protection, nurse–family parentships and parenting programmes all have a role to play and should be managed accordingly. Such policies can promote safe environments for children and reduce the risks of deprivation of resources and time needed to practise and promote core capacities. To achieve the best outcomes for all children, parenting programmes that help parents learn and apply their own core capacities, to mitigate the disadvantaged experienced by children of parents with a lower level of education, are also needed.

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- **Policies to support practitioners:** All practitioners who engage directly with children, from the earliest ages, need to be fully resourced and trained to ensure they can promote and protect children’s development of these basic human abilities, and the practitioners themselves should be willing to engage their own core capacities in that process. Evidence suggests that waiting until the child is of school age, and relying on teachers alone, is a suboptimal approach. In the most advanced economies and welfare systems, this will not require fundamental changes to policies, but rather adaptations to implementation and practice. In developing economies, these practices can be rolled out in line with new policies and programmes. The school, as an important space for children, needs to be a conducive environment for effective multisensory learning, innovation and inquiry – to achieve this, flexibility needs to be built into curricula, and schooling regulations and reporting wherever necessary. This may also require a reduction in low-stakes testing, and new forms of teacher training.

- **Lessons for researchers:** The working papers uncovered 260 studies that met inclusion criteria, while some core capacities were supported with more recent evidence and some age groups of children were overlooked. Notwithstanding all of the learning that was possible from the reviews undertaken as part of this project, advancements in data collection – particularly that which includes all of the core capacities, effectively operationalizes the spiritual dimension and covers all age groups – would answer pressing questions on the complementarities between core capacities by age (for policy prioritization) and the promotion and role of spiritual well-being. Preferably, data advancement would comprise a longitudinal approach (accelerated birth-cohort study), linked to administrative data that can provide contextual information on living systems around the child. Only a few studies that were assessed had adopted a comparative view across different cultural settings, and there was an over-representation of studies from Europe and the United States.

### The structure of this report

The report is structured as follows: Section 1 describes the L4WB Framework and briefly compares it to existing life-skills frameworks. Section 2 reviews the core capacities, one at a time, to see how they link to well-being outcomes, what we can learn about age-related development, and links to the other core capacities. Section 2 also summarizes interlinkages between the core capacities and the perspectives commonly taken in each field of study. Section 3 draws on the evidence related to factors that contribute to the development of core capacities, including parenting, practice (pedagogy and school conditions) and policy options. Section 4 reviews conceptual developments, research gaps and limitations identified in the study. Section 5 concludes.

# **Framing core capacities in broader child development and well-being**

# 1. Framing core capacities in broader child development and well-being

The Learning for Well-being (L4WB) Framework is described in this section and briefly compared to existing life-skills frameworks.

## 1.1 The L4WB Framework and core capacities

Based on decades of exploration and practice with individuals and groups, nine core capacities were identified by the Learning for Well-being Foundation, these are: Relaxing; Observing; Listening; Inquiring; Reflecting; Sensing; Empathizing; Embodying; and Discerning patterns (Gordon and O'Toole, 2015; O'Toole, 2014, 2016).

The L4WB Framework considers core capacities as distinct cornerstones of life skills and competences. The differences between them include a process-orientation and a focus on natural and individualized preferences explored through practice, as explained below (O'Toole, 2016, pp. 18–19):

**In general, the skills, competences, and personal traits considered critical for 21st century learners focus on desired outcomes. Core capacities focus on the process of supporting those outcomes. For example, much of the research on Habits of Mind is based on characteristics observed in people who have been identified as performing effectively in a particular field, in that sense, the research stems from a particular image of the individual. It is 'outcome oriented' in the sense that it prescribes the development of particular character traits (such as resilience) in order to make an individual**

**more X or more Y (more effective or better performers, as examples). Using a process orientation, the ways through which someone becomes more resilient, or optimizes one's learning, are not universal. A process-oriented approach looks at HOW the individual achieves X or Y, in a way that is natural for that individual. It is this approach that the core capacities support.**

Further, core capacities describe simple actions that occur naturally in a wide variety of situations. Adults and children work with these practices every day, but their use and expression can be refined, strengthened and deepened. In this context, the term "development" in the extract above implies neither deficiency nor incremental progress; instead, "development is seen as unfolding or expanding capacities that are already present, but which are impacted by one's actions as well as through enabling environments or conditions" (Learning for Well-being Foundation, 2019, p. 6).

The premises undergirding the Learning for Well-being Foundation's understanding of core capacities include:

1. Core capacities reflect natural and inherent human qualities which are present throughout life, and in all environments in which humans function.
2. They describe simple actions that occur in a wide variety of situations, so that enhancing these capacities is a natural and direct way for developing complex competences and life skills.

3. Core capacities can be cultivated and supported; adults and children work with these practices every day, but their use and expression can be refined, strengthened, and deepened, particularly through creating enriching environments.

4. Each capacity can be understood through physical, emotional, mental, and spiritual perspectives, and in viewing them in this way, the capacities, life skills and competences are understood, researched, and practiced holistically, rather than privileging a particular way.

5. People express core capacities differently and rely on some capacities more than others, which encourages an individualized, strength-based and process orientation to the core capacities and the key competences which can be developed.

6. Core capacities are dynamically interdependent, functioning in relationship with one another.

(Learning for Well-being Foundation, 2019, p. 1)

As can be seen from the premises above, the core capacities are seen as cornerstones of more familiar concepts such as life skills and competences. The L4WB Framework as a whole is not tested in this synthesis report; the focus lies instead on garnering the empirical evidence to assess the cogency and the ability to generalize the core capacities one at a time. Overall, this is a first attempt to map the existing theoretical and empirical literature about the nine core capacities.

## 1.2 Core capacities and life skills

While the Learning for Well-being Foundation differentiates core capacities from life skills, the life-skills literature can be informative for mapping the relevant literature on the development of core capacities in children and might reveal a bigger evidence base. UNICEF has defined life skills as “psychosocial abilities for adaptive and positive behaviour that enable individuals to deal effectively with the demands and challenges of everyday life” (UNICEF, 2003). Various frameworks are identified that show significant overlap with the L4WB theory on core capacities for well-being.

For instance, a recent framework for the European key competence Learning to Learn linked to social and personal development included the competence to “support well-being” as a compound competence within its conceptual model (Caena et al., 2019, p. 31). In 2017, UNICEF’s Middle East and North Africa (MENA) Life Skills and Citizenship Education (LSCE) initiative developed a conceptual and programmatic framework on life-skills and citizenship education. Similarities include the LSCE premise that life skills are part of a “lifelong learning cycle” that can be developed from an early age onwards (UNICEF MENA Regional Office, 2017, p. 5). Moreover, the various skills proposed by LSCE are believed to be developed through a multiple pathways and systems approach from “formal education, to informal settings to the workplace” (UNICEF MENA Regional Office, 2017, p. 3). A further relevant source for comparing various frameworks, including emotional and social learning frameworks, is a resource developed by the Ecological Approaches to Social Emotional Learning (EASEL) Laboratory of the Harvard Graduate School of Education on “navigating the complex field of social and emotional learning” (Harvard Graduate School of Education, n.d.).

Due to some possible similarities between the life-skills literature and the approach to core capacities posited by the L4WB Framework, the search term “life skill” was applied in the literature searches underlying this study. This is reasonable considering that it seems to be the most common term used in empirical studies in this field. The terminology of core capacities is still novel, and for the purpose of

the paper it would not be beneficial to apply “core capacity” searches rather than “life skill” searches. This was confirmed by the explicit “core capacity” searches conducted in the working paper on

‘Reflecting’, which only gave few and limited results especially compared with the “life skill” searches for that paper. For a full list of the core capacities, definitions and search terms, see *Table 1*.

Table 1: Core capacities, definitions and additional keywords

Core capacities	Simple definition	Additional keywords
Discerning patterns	Capacity to perceive what is interconnected, recognizing interdependency and the relationship of the parts to the whole	Discerning patterns, discernment, systems thinking, strategic self-regulation, conformity, working memory, understanding patterns, pattern recognition, complex thinking and complex information
Embodying	Capacity to relate to the body as a source of knowing, nurturing, stimulating and expanding our multiple senses	Sensory awareness, sensory stimulation, sensory expansion, sensory integration and sensory enrichment
Empathizing	Capacity to know (see and feel) with and through others, active and deliberate resonance with their thoughts, feelings and experiences	Empathy, compassion, sympathy and connection
Inquiring	Capacity to seek what can expand knowledge and actions, tracking, asking, and uncovering an experience with openness and curiosity	Inquiry and asking questions
Listening	Capacity to tune in to what surrounds, connecting to words, sounds, spaces in oneself, others and the environment	Active listening
Observing	Capacity to place attention, widely and closely, keen, engaged and consistent noticing	Noticing, observation, concentration, focusing attention, paying attention, detecting and becoming aware of
Reflecting	Capacity to explore other views, pondering, looking back, projecting forward and offering feedback	Self-reflection and metacognition
Relaxing	Capacity to ease tensions in thoughts, feelings and body, opening to physical, emotional, mental ease	Relaxation, mindfulness, meditation, no/lack of stress, being calm, anti-stressed, tense and unwind
Sensing	Capacity to engage with what is not visible, acknowledging and expanding non-rational ways of knowing	Subtle sensing, imagination, intuition and resonance

Note: Core capacities are presented in alphabetical order. Terms were expanded using ‘\*’ in the searches. See working papers for full details.

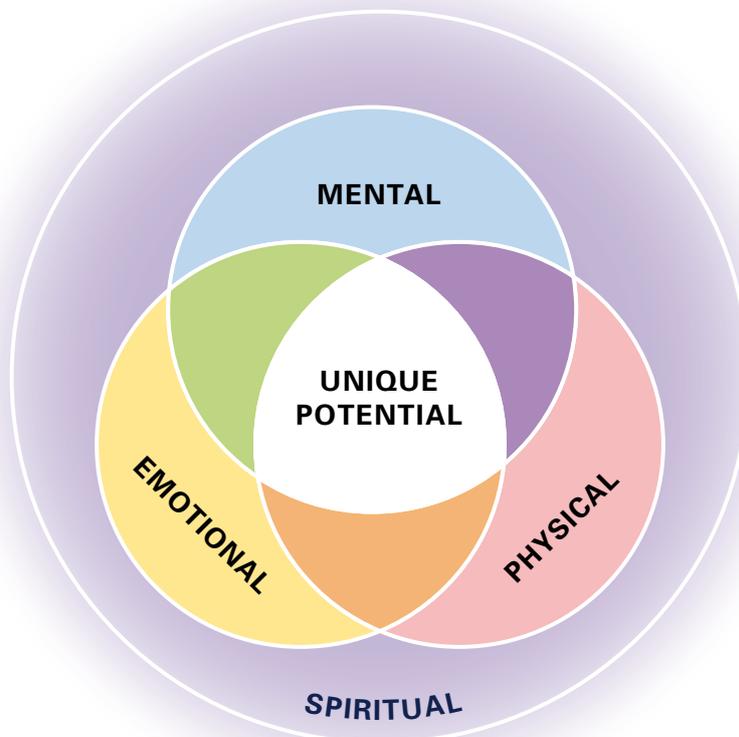
### 1.3 Three aspects and the spiritual dimension

The L4WB Framework defines well-being as “realizing one’s unique potential through physical, emotional, mental, and spiritual development in relation to self, others, and the environment”. Acknowledging and attending to core capacities allows this development, and supports well-being. (O’Toole, 2016, p. 16). *Figure 1* is a visual representation of this definition of well-being. At the centre is unique potential, the centralizing impulse which provides purpose, meaning and direction to your life.

Seen as the organizing principles of a particular individual, unique potential suggests that every person is born with the potential to be more fully and deeply her/himself.

The Learning for Well-being Foundation proposes that “each capacity can be understood through physical, emotional, mental and spiritual perspectives” (Learning for Well-being Foundation, 2019). These four perspectives are represented by three aspects (mental, emotional and physical) with the spiritual dimension experienced through “a sense of connection to all things, including the natural and manmade environments” (O’Toole, 2016, p. 18). The spiritual dimension is considered as pervasive and is therefore indivisible; it both embraces and imbues the threefold nature of life (as expressed through the mental, emotional and physical aspects). *Figure 1* provides a visual representation of the L4WB Framework.

Figure 1: Learning for Well-being ontological framework



The Framework suggests that mental, emotional and physical aspects can be noticed in the way core capacities are experienced, and that together with the recognition of a spiritual dimension, they form a holistic, human-centred view on capacities.

These elements were translated into four perspectives and used as a theoretical framework for this study. A categorical matrix is applied to the studies identified in each working paper to understand how these four perspectives are applied in the literature. *Table 2* is the same matrix combined with L4WB definitions for 'Listening' (as an example) that specifically aided the placing of the studies in the matrix for that working paper.

This table also includes definitions of the different perspectives (mental, emotional, physical and spiritual).

Within the mental, emotional and physical aspects, each core capacity can be understood in terms of its 'content' or 'what' it is, its 'process' or 'how' it is applied, and in its 'intention', or 'why' it is. It is in the intention or 'why' that people seek to learn the meaning of things, and the connections between mental, emotional and physical aspects are drawn. Studies in the reviews that seek to define a capacity in terms of connectedness and intention are classified as taking a spiritual perspective.

Table 2: Matrix of four perspectives: The example of 'Listening'

Perspective	<i>content</i> 'what'	<i>process</i> 'how'	<i>intention</i> 'why'
<b>MENTAL</b>	<i>A mental perspective</i> refers to "our cognitive and rational processes" and the functions of "envisioning, planning and valuing". <sup>1</sup>	"A <i>mental</i> expression of listening is associated with listening for information, facts, and thoughts". <sup>2</sup>	<b>SPIRITUAL</b>  "At a <i>spiritual</i> level, listening is experienced as universal connection and flow". <sup>3</sup>
<b>EMOTIONAL</b>	<i>An emotional perspective</i> refers both to "our intrapersonal functions—our inner feelings, motivations and our interpersonal functioning—[and] our interactions with others". <sup>4</sup>	"An <i>emotional</i> perspective on listening is associated with opening and connecting with emotional content, felt intention, the flow of communication". <sup>5</sup>	
<b>PHYSICAL</b>	<i>A physical perspective</i> refers to "the physical senses, to our bodies, and to the material and natural environments". <sup>6</sup>	"A <i>physical</i> expression of listening is associated with sensing the context and environment. It is about listening for the action needed in this moment". <sup>7</sup>	

1 O'Toole, 2016, p. 17

2 Learning for Well-being Foundation, 2019, p. 5

3 Learning for Well-being Foundation, 2019, p. 5

4 O'Toole, 2016, p. 17

5 Learning for Well-being Foundation, 2019, p. 5

6 O'Toole, 2016, p. 17

7 Learning for Well-being Foundation, 2019, p. 5

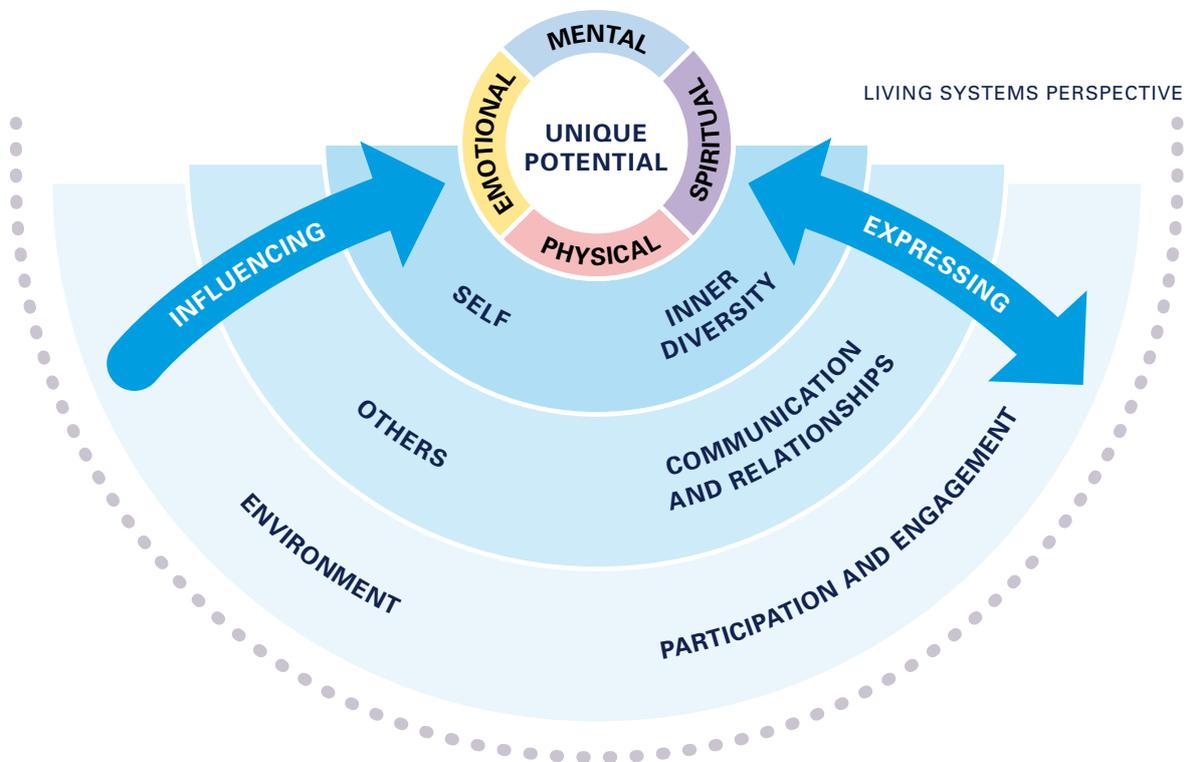
### 1.4 A living systems perspective

The model below (see Figure 2) has been designed by Gordon and O’Toole (2015). It visualizes the child at the centre of a living systems perspective with a unique potential made up of core capacities expressed through mental, emotional, physical and spiritual perspectives. This model is not dissimilar to Bronfenbrenner’s (1979) ecological model, which places the child at the centre of the living system of family, school, community, nation and the world. A similar model has recently been produced for UNICEF’s Report Card 16 (UNICEF Office of Research – Innocenti, 2020). In each of these cases, the model seeks to show how a child and the system around them are co-reliant, whereby various stakeholders are important for building a child-friendly system. Unlike the Bronfenbrenner or UNICEF models, however, Gordon and O’Toole’s

model includes an area around the child that relates to ‘self’ or ‘inner diversity’. This is in line with the L4WB Framework, which views each child as having unique potential, and recognizes the child’s development as a complex system, in its own right. Several studies, across different core capacities, support the inner diversity position (see Section 3).

The L4WB Framework serves as an evidence-informed conceptual model for collating and reviewing the literature on core capacities, and their application in public areas of work and practice. The following sections will return to this conceptual framework as the evidence from the literature is summarized. Section 4 will revisit the conceptual framework itself, providing some thoughts on its further utility, including – as relevant – ways to strengthen the L4WB Framework for future research purposes.

Figure 2: The Learning for Well-being Framework as an ecological model



Source: Gordon and O’Toole, 2015.

# **The literature on core capacities and child well-being and development**

## 2. The literature on core capacities and child well-being and development

This section reviews each of the nine core capacities to see how they link to well-being outcomes, and how they relate to child development across the life cycle and to other core capacities.

The review of the literature uncovered two main types of studies. One type of study presented evidence on the effects of core capacities on child development, on child well-being, on other core capacities, and on the same core capacities during the life course. The second type of study focused on parenting, pedagogy and school conditions that contribute to the practice of the core capacity and associated development outcomes.

The literature also included evidence on the relation between core capacities and various attributes and social conditions, such as children's age, gender, socioeconomic status, parental gender, disability, gifted children, and different ethnic or cultural groups.

The review covered 260 studies, of which 98 per cent were published in or after 2000, and 82 per cent in or after 2010. Tables with full lists of references for the nine core capacities can be found in the individual working papers. For links to these papers, see Annex 2.



# Discerning patterns

## 2.1 'Discerning patterns' and child development

'Discerning patterns' refers to the capacity to perceive what is interconnected, recognizing interdependency and the relationships of the parts to the whole. In the literature review, searches included discerning patterns, discernment, systems thinking, strategic thinking, self-regulation, conformity, working memory, understanding patterns, pattern recognition, complex thinking and complex information.

The literature review was able to categorize all studies into three fields, which related to systems thinking, working memory and self-regulation. Systems thinking can be defined as "the ability to understand the multi-level structure of "numerous components, their dynamic and nonlinear relationships" (Brandstädter et al., 2012, p. 2148). Working memory refers to the "capacity to store and manipulate information over brief periods of time" (Alloway et al., 2006, p. 1698) and is a prerequisite to 'Discerning patterns'. 'Discerning patterns' also entails the understanding of complex social systems, which leads to the focus on self-regulation.

The review uncovered 21 papers that passed quality assurance steps (see Box 1). The average publication date of the 'Discerning patterns' papers was 2012 (ranging from 2006 to 2019). Out of the 21 papers, 6 papers were theoretical and 15 papers included empirical data. The average age range was 6 to 9 years old (see Annex Table 1). The 'Discerning patterns' review provided limited comparative evidence, and many of the empirical studies involved limited samples (only two studies were nationally representative), were case studies or non-randomized trials. A limitation of this working paper was the multifaceted construct of 'Discerning patterns'.

## What does 'Discerning patterns' achieve for children?

When considering children's well-being outcomes, no studies looked at systems or strategic thinking to improve life outcomes. However, three longitudinal studies linked working memory to learning outcomes, and showed that working memory at the age of 6 was associated with learning outcomes, but not with IQ test results at the age of 11 (Alloway and Alloway, 2010). The review also showed that the memory and executive functioning (i.e., a composite set of abilities involved in goal-directed thinking and decision-making) at the age of 4 facilitated the achievement of education outcomes at the age of 7 (Bull et al., 2008). What is more, the preschool visuospatial short-term memory and executive functioning skills were also predictors of the educational attainments of children when they reached school age (Alloway et al., 2006).

In terms of self-regulation, the literature review found links to better academic performance, and increased physical, mental, social and emotional health (Haslam et al., 2019). In a study involving 142 children aged 7 to 9 in the United States, Eisenberg et al. (2000) concluded that emotionality and self-regulation predicted social functioning. A study by von Suchodoletz et al. (2013) considered behavioural self-regulation and academic skills in Germany and Iceland and found that higher behavioural self-regulation was related to higher academic skills, with teachers rating girls' performance higher than boys' performance.

Finally, Rimm-Kaufman et al. (2009) worked with children aged 4 to 6 years in the United States and found that children's self-regulation in the classroom, tested early in the academic year, predicted the teacher's report of more behavioural self-control, more cognitive self-control and better work habits during the school year.

### Development by age and demographic differences

Most of the reviewed studies on ‘Discerning patterns’ did not have a clear life-course perspective. Specifically, the evidence included mostly children in their middle childhood (6 to 11 years old), and early adolescence (11 to 13 years old). Only a few studies had a longitudinal perspective on children’s ‘Discerning patterns’.

The evidence on systems and strategic thinking showed that this capacity can be developed during elementary school, and earlier in a child’s life. A study by Brocas and Carrillo (2018) found that the strategic thinking among four- and five-year-olds in the United States improved with age. Furthermore, the same authors found that logical reasoning was applied more easily by the children than anticipatory reasoning. Using the Dictator Game (on altruism), the Ultimatum Game (on fairness and inequality-aversion) and the Marshmallow Task (on delayed gratification), Lombardi et al. (2017) found a significant relationship between age and strategic decision-making measured as ‘prospective thinking’. A study by Assaraf and Orion (2010) also found advanced systems-thinking skills, measured as the ability to organize the earth’s water system in a framework, among Israeli children aged 8 and 9 years.

Finch (2019) found that children’s working memory improved significantly when they were attending kindergarten and in the first year of elementary school. However, the same study found that the working memory of children fell during the summer break. The results repeated in the second grade, showing again a decline during the summer break. Overall, children’s working memory grew faster in earlier years of schooling, and effects were stronger for children from families with a lower socioeconomic status. In a longitudinal study involving 700 children aged 4 and 5 years, Gathercole et al. (2004) found that all components of the working memory had appeared in children by the age of 6, and developed strongly through early adolescence. In another study, the capacity of children’s social working memory progressively increased with age, especially for children aged between 4 and 5 years (He et al., 2019).

A review of evidence by Eisenberg et al. (2010) showed that the effortful emotion-related self-regulatory processes developed more quickly in the early years of life, and slowed down during adulthood. Evidence has shown that aspects of self-regulation develop early in childhood, and that children demonstrate individual differences within moral emotions and moral conduct (Kochanska and Aksan, 2006). A study on children aged 4 has found conforming behaviours in peer groups, insofar as children recognize patterns of social order among peers and conform to them (Haun and Tomasello, 2011). The authors followed up with some of the children over years to show that children’s original ideas do not change, but would conform to the majority opinion in public life. A similar example of behavioural imitation and conformity was seen in a South Korean study on attitudes of bullying perpetration among children aged 13 and 14 years (Cho and Chung, 2011). Notably, a study showed that self-regulation (the activation control measure of effortful control, specifically) did not result in a linear development with age but, similar to other capacities, demonstrated a temporary dip with an increase in age (Brocas and Carrillo, 2018).

### Linking ‘Discerning patterns’ to other core capacities

‘Discerning patterns’ was related to ‘Observing’ in three studies through proxies of executive attention and attention control inherent in the working-memory capacity (Alloway et al., 2006; Gathercole et al., 2004; Finch, 2019). Studies of self-regulation showed overlaps with other core capacities, including ‘Reflecting’ and ‘Observing’ through reflective functioning and metacognition strategies (Haslam et al., 2019). Constructs within self-regulation such as effortful control, which again includes attention control, showed links to the core capacity of ‘Observing’, as well (Atherton et al., 2019). ‘Discerning pattern’ skills in childhood were associated with the development of the same capacity later in life (Assaraf and Orion, 2010). Furthermore, ‘Discerning patterns’ was linked to children’s capacity to self-regulate, peer pressure, and ‘Empathizing’ and ‘Sensing’ through intuition or anticipatory reasoning (Brocas and Carrillo, 2018; Haun and Tomasello, 2011; Lombardi et al., 2017).



# Embodying

## 2.2 'Embodying' and child development

'Embodying' (previously 'Enriching sensory awareness') refers to the capacity to relate to the body as a source of knowing, nurturing, stimulating and expanding our multiple senses. In the literature review searches, keywords included sensory awareness, sensory stimulation, sensory expansion, sensory integration and sensory enrichment (including expanded terms).

The literature review was able to categorize all studies into four fields, which related to 'Embodying' through sensory processing: multisensory, visual, auditory and physical senses. Sensory processing relates to the definition of 'Embodying' as a core capacity within the L4WB Framework. 'Embodying' is a broad notion related to the way humans perceive, distinguish and focus on the world through their senses. It is strongly associated with the scientific concept of sensory processing, which is the capacity of the nervous system to perceive, process and react to sensory information (Jorquera-Cabrera et al., 2017).

The review uncovered 30 papers that passed quality assurance steps. The average publication date was 2013 (ranging from 2003 to 2018). Out of 30 papers, 14 papers were reviews or theoretical perspectives and 16 papers included empirical data. The average age range among children was 6 to 9 years. Theoretical and review studies were more common than neurological and psychological studies, which were both included in the literature, as were randomized control trials and mixed methods studies.

## What does 'Embodying' achieve for children?

Sensory processing skills enable children to engage with the world and interact adaptively with the environment (Dunn, 2007). Evidence from a literature review consistently associated auditory and visual processing with school performance in reading (Dunn et al., 2016). These results were supported by a Dutch study that linked auditory and visual processing at age 5 with reading and spelling in first grade (Boets et al., 2008). Moreover, preschool children exposed to multisensory stimulation (e.g., a tablet with text, voices and animated pictures) and multimedia platforms were shown to outperform their peers accessing monomedia (e.g., a book with text and fixed images) in learning performance and cognitive training. Shamir and Shlafer (2011) demonstrated this effectiveness with an experimental multisensory e-book for preschool learners in Israel. Sensory processing also matters from the perspective of classroom settings, both positively and negatively. A UK study found that seven combined physical parameters, namely light, temperature, air-quality, ownership, flexibility, complexity and colour, accounted for 16 per cent of the variance in children's academic progression (Barrett et al., 2015).

Visual sensing studies reported mixed results. Stern-Ellran et al. (2016) observed a greater number of disruptive behaviours among preschool children in Israel (28 months of age), when they played on a colourful surface compared with a plain white one. In the United States, two randomly assigned groups of six-year-olds had science lessons in a classroom either highly decorated or without wall decorations, with the latter group performing better (Fisher et al., 2014). Furthermore, Tanner (2008) reported that children who are exposed to more natural light during teaching hours have a better school performance compared with children studying in an artificial-light environment.

Auditory sensing studies reported that music-enriched instruction of eight-year-old children with learning and social difficulties had indeed improved their language skills (Kraus et al., 2014). In Australia, a study found that children aged 2 to 3 years who are involved in music activities at home had a better vocabulary, and improved numeracy and social skills, as well as greater attentional and emotional regulation outcomes when aged 4 to 5 years (Williams et al., 2015). Furthermore, classrooms that were adapted for hearing-impaired students have shown an increased academic achievement for children with hearing difficulties (Cheryan et al., 2014).

Reviews of physical sensing studies have found that physical activity is beneficial for cognitive and brain health in childhood (Sibley and Etnier, 2003; Khan and Hillman, 2014). Physical exercise and physical condition were also related to language skills in pre-adolescents and to the level of intelligence (i.e., logical scores and visuospatial scores) in adolescents (Gomes da Silva and Arida, 2015). Moreover, an eight-week creative dance intervention for preschool children living in low socioeconomic-status families had a significant, positive impact on children's social and behavioural outcomes (teacher- and parent-rated) when compared with children in an attention-control intervention (Lobo and Winsler, 2006). In Pakistan, a study explored the relationship between sensory stimulation and physical and psychomotor development among children 3 years old and younger, and found that a lower sensory stimulation of children in rural households was associated with decreased psychomotor development and being underweight, *even after* controlling for undernutrition, socioeconomic status and type of neighbourhood (Avan et al., 2014).

### Development by age and demographic differences

The evidence above shows that sensory processing in children as young as 2 or 3 years old can result in positive or negative learning outcomes. However, the evidence on children's development trajectories is reflected in only two studies in the reviewed literature.

To add to the early years study by Boets et al. (2008) above, a review of longitudinal studies by François et al. (2015) found that French children had significant increases in speech segmentation skills following musical training starting at the age of 8. Furthermore, evidence from the United States showed that musical training in high school students (aged 14 years at pre-test) induces brain changes over time, allowing for a better distinction of speech sounds presented in a background noise, and these improvements perpetuated into adulthood (Zendel and Alain, 2013, as cited in François et al., 2015). When addressing auditory processing of languages, evidence also showed a correlation between age of second-language acquisition and definitive language proficiency (Berken et al., 2017).

Regarding cross-cultural factors, a review of studies concluded that there are no significant differences in the sensory processing of children living in Israel, South Africa, Australia and the United States (Dunn et al., 2016).

### Linking 'Embodying' to other core capacities

As an essential function for interacting with the environment, sensory processing is perhaps necessary for all other core capacities. Specifically, the capacities of 'Listening', 'Observing', 'Relaxing', 'Inquiring' and 'Empathizing' are likely to associate with sensory awareness among children. Since sensory processing has positive impacts on executive functioning (i.e., a composite set of abilities involved in goal-directed thinking and decision-making), it does also relate to 'Reflecting' and 'Discerning patterns'. Generalization of the broad associations, however, awaits confirmation and future empirical testing.



# Empathizing

## 2.3 'Empathizing' and child development

'Empathizing' refers to the core capacity to know (see and feel) with and through others, the active and deliberate resonance with one's thoughts and feelings. In the literature review, keyword searches included the terms (and expanded terms of) empathy, compassion, sympathy and connection.

The review of the literature categorized all studies under the broader term for empathy, while distinguishing the area of cognitive empathy from emotional or affective empathy (Cunsolo, et al., 2021a). Cognitive empathy consists of the capacity to understand what another person is thinking (Boele, et al., 2019; Decety et al., 2017).

Perspective-taking is one component of cognitive empathy and is defined as the process by which an individual views a situation from another person's point of view (Ştefan and Avram, 2019; Hirn et al., 2019; van Lissa et al., 2014). Affective or emotional empathy links to concepts of compassion and sympathy and consists of the capacity to feel the same emotion as another person (Spinrad and Gal, 2018).

The review uncovered 34 papers that passed quality assurance steps. The average publication date of reviewed studies was 2014. Of the 34 studies included in this review, 9 focused explicitly on theoretical issues, 8 were systematic/literature reviews and 21 were empirical studies (some combined theory and review). The range of children's ages in the average study ran from age 7 to age 10.

## What does 'Empathizing' achieve for children?

Children's levels of empathy significantly affect their social functioning, such as prosocial behaviours, bullying, and quality of relationships with parents and peers. McDonald and Messinger (2010) reviewed different empirical studies on the development of empathy of children aged from birth to 3 years and found that empathy development led to more positive, prosocial and altruistic behaviours, cooperative behaviours and meaningful relationships. In Italy, one study found positive associations when looking at empathy and anti-social behaviour, including the relation between empathy and defending actions against bullying (Longobardi et al., 2020). In the Republic of Korea, a study among middle school students showed that maternal and peer attachment mediated cognitive empathy links to bullying behaviours (You et al., 2015). Similarly, in the United States, evidence obtained in a review of middle school students revealed that cognitive empathy fell over the course of the school year, and bullying incidents *increased* as empathy decreased (Williford et al., 2016).

A review of the empathy and bullying literature by van Noorden et al. (2015) found that victimization was associated with cognitive empathy, defending action was positively associated with both cognitive and affective empathy, and there were mixed results for studies on by-standing behaviours, which could hypothetically be driven by either negative conforming behaviour, or concerns for the victim. In the case of cyberbullying, Zych et al. (2019) reviewed 24 studies and found that cyberbullying among children was related to low empathy levels by its perpetrators.

Beyond prosocial and anti-social behaviours, Hirn et al. (2019) studied the relationship of empathy and social competence in 14- to 17-year-old girls in Germany, and found positive correlations between the two elements. Furthermore, in Turkey, Imece and Cansever (2019) found that empathy and problem-solving were positively associated in 10-year-olds.

### Box 1: Methods of literature review, and quality assurance

Each of the working papers underlying this synthesis report has reviewed the literature using structured searches and quality assurance steps. The methods for the literature search were presented and agreed at the project's inception meeting with members of the project's advisory committee. The literature review was designed to take a systematic approach informed by best practices, such as those emphasized in the studies by Torgerson et al. (2012) and Siddaway et al. (2018).

The keywords for the literature search were agreed among the research team, and the search retained only studies in English. Specific steps were outlined for each literature review to ensure that each author undertook the same approach to capturing a representative body of up-to-date evidence on core capacities that related to children and adults working with children. The search steps included:

1. Selecting a date-range of published studies: This step ensured the inclusion of the most recent literature, to capture the most recent developments in the study of each core capacity. The earliest time-point for all searches was the year 2000.
2. Selecting search engines and databases: These were the wide-reaching academic search engines, and journal databases, such as Google Scholar, JSTOR, etc.
3. Selecting key search terms by target core capacity: The keywords were defined by the research team and agreed with the project's advisory committee. The keywords selected for each core capacity are found in *Table 1*.
4. Using keywords to refine the pool of studies: In the case of a long list of studies, the search was refined to identify the most relevant empirical studies, and to fill the gaps in evidence in the review.
5. Following up on citations in articles: Where existing literature was found to be highly relevant, or where studies contained literature sections referencing other evaluations or reviews, citations were followed up to enrich the list of reviewed studies.
6. Using follow-up searches to fill the gaps: In cases when initial keywords did not provide sufficient evidence through obtained studies, additional searches were performed to include additional keywords, such as those that related to a spiritual perspective.

Once a list of references was obtained, a quality assurance step was used to select studies for the review. To determine whether a paper was of sufficient quality for review, the research team used the following criteria:

1. Conceptually coherent: Do the data used to analyse the core capacity effectively operationalize the concepts of interest? Is the evidence directly related to the measurement of the core capacity or does it measure the capacity via a proxy concept? Does the narrative behind the empirical test make sense?
2. Methodologically valid: Does the author use an appropriate method to test associations between the core capacity and the outcomes?
3. Scientifically valid: Are the results of statistical/empirical tests fully (in terms of information being reported – i.e., probability statistics, sample sizes, etc.) and correctly interpreted?

Studies that met all three quality assurance standards were retained for the review.

### Development by age and demographic differences

Evidence has shown that the development of empathy in children depends both on biological and innate factors (such as neural development or individual temperament), and on socialization factors (relationships with caring adults and peers). Studies tended to focus on the early and middle-childhood age range.

Literature on empathy and children is consistent with the idea that empathy is a capacity that can be found in children from the earliest stages of life, and that it develops according to biological and social factors (Cuff et al., 2014). For instance, a longitudinal study of 158 children, with observations collected at 14 and 20 months, found that the second year of life is a period of developmental change in empathy behaviours (Robinson, 1994). A review by McDonald and Messinger (2010) listed a number of factors that contribute to the development of empathy in children's first three years of life, namely brain development, individual temperament and experience of peer and parental relationships, including imitation behaviours. A study that investigated the influence of age, gender and intelligence on cognitive and emotional empathy in children aged 7–17 years also found that age positively affected cognitive empathy, measured as a "perspective taking" skill, while gender and intelligence did not have any significant effects on emotional empathy and only a small effect on cognitive empathy (Schwenck et al., 2014).

In a study of capacities in post-conflict contexts, Taylor et al. (2019) studied children aged 6–11 years in Northern Ireland and showed that children with higher empathy skills also had more positive attitudes towards communities located across religious divides. However, these effects were not replicated for older children, aged 14–15 years, in the same study. Another study by van Zonneveld et al. (2017) looked at empathy deficits in children with a designated risk of higher criminal behaviour and found that they had a lower affective empathy, but there were no differences in these children's social attention and cognitive empathy.

### Linking 'Empathizing' to other core capacities

There was limited evidence on complementarity of 'Empathizing' with other core capacities. In only three studies where links could be inferred, 'Empathizing' was found to relate to 'Observing', measured through proxies of attention, social attention and observation (Iacoboni, 2009; van Zonneveld et al., 2017; Rizzolatti and Craighero, 2004). 'Empathizing' was also linked to 'Discerning patterns', measured with such proxies as imitation and learning of empathy (Horsthemke, 2015), and to 'Reflecting', measured as theory of mind (Xavier et al., 2013).



# Inquiring

## 2.4 'Inquiring' and child development

'Inquiring' refers to the capacity to seek what can expand knowledge and actions, tracking, asking and uncovering an experience with openness and curiosity. In the full literature review, searches included the terms 'inquiry' and 'asking questions', and their expanded terms. In the literature, 'inquiry' is an adaptable term, and studies conceptualize it in different ways (Capps et al., 2012), distinguishing a process of active inquiry to include hypothesizing, gathering data, observing and updating (Kachergis et al., 2017), from simply asking questions (Mills and Landrum, 2016, p. 1), which in turn can be further distinguished as between hypothesis-scanning questions and constraint-seeking questions (Kachergis et al. 2017).

The review of 'Inquiring' covered more papers than the other reviews, at 42 in total. The review included 32 empirical studies. The average range of children's ages across all studies was 5 to 9. There is a very clear gap within the empirical data for 'Inquiring' in the family and in communities, which instead generally focused upon preschool children. No empirical studies examined the development of 'Inquiring' across the entirety of childhood or in a longitudinal manner.

## What does 'Inquiring' achieve for children?

Various studies included in this review referred back to Chouinard's (2007) collection of studies that explored the development of question-asking as a mechanism for cognitive development (Kurkul and Corriveau, 2018; Ronfard et al., 2018). A study by van Schijndel et al. (2018) investigated whether individual differences in children's curiosity related to inquiry-based learning. The results showed that curiosity in science education was positively associated with learning outcomes. The researchers concluded that more curious children spend more time reflecting in order to bridge knowledge gaps (van Schijndel et al., 2018).

The study by Kashdan et al. (2018) found that curiosity in people who enjoy exploration or who 'prefer to know' improves well-being, whereas for others curiosity can increase stress. Along with Gallagher and Lopez's (2007) study, which found that it is "the combination of exploration and absorption tendencies" that drive positive mental health, it follows that certain types of inquiry can be positively related to well-being, while other types of curiosity might not be. However, when working with children, Marian and Jackson (2017, p. 225) proposed that inquiry-based learning, linked to the understanding of a child's position in a living system (their contexts), could benefit social and emotional well-being in children. Similarly, a review study by Pistorova and Slutsky (2018), which focused upon young learners, argued that engaging in play naturally develops inquiry.

One study resulting from the spirituality search linked spiritual development among youth with questioning to discover meaning (Benson et al., 2012). Of the international non-representative sample, many youth engaged at a high (42 per cent) or medium (46 per cent) level in discovering meaning.

## Development by age and demographic differences

A literature review of studies on 'Inquiring' by Ronfard et al. (2018) concluded that the ability to ask questions develops with age. This is supported by the *Measuring What Matters* working paper, as various studies showed that the capacity for 'Inquiring' increases with age (see, for instance, Mills et al., 2011, in Vrolijk et al., 2021a). However, Vrolijk et al. (2021a) uncovered more information about modalities of inquiry in very young children, and age-related development of different types of questions. For instance, a study by Chouinard (2007, pp. 12–13) focused on preverbal children and how they relay information through gestures and vocalizations. The ability of very young children to communicate their ignorance and ask for information was explored in a more recent study, which found that indeed a very young child can look towards an available adult to "convey ignorance via nonverbal gestures (flips/shrugs), and increasingly produce verbal acknowledgments of ignorance ('I don't know')" (Harris et al., 2017, p. 7884).

A study with preschoolers aged 2, 3 and 4 years, focused upon what children genuinely want to know when they ask "What is it?", and showed that children were interested in the function of the unfamiliar item rather than just its name (Kemler Nelson et al., 2004). In a study exploring genuine and 'test' questions, very young children differentiated questions testing their knowledge from genuine questions and thus the "two-year-olds understand something of the communicated intentions behind test questions" (Grosse and Tomasello, 2012, p. 192). Another study explored whether children learnt from listening to somebody else's questions in a guess-what-is-in-the-box experiment. Generally, preschool children could learn from overhearing answers to questions asked by others, even when not instructed to do so and being occupied with other tasks (Mills et al., 2012).

A study by Ruggeri and Lombrozo (2015) found a developmental shift when comparing questions from young children, older children and young adults in order to solve a problem. The younger children used more hypothesis-scanning questions

(which ask to test a hypothesis directly), whereas older children and especially young adults used constraint-seeking questions, which reduce the options in the hypothesis. Although inquiry strategies changed, it was revealed that age did not heavily influence solving the problem successfully (Ruggeri and Lombrozo, 2015, p. 213).

In terms of age-related ability to ask certain types of questions, Mills et al. (2010) showed that "preschool-aged children can use questions as a tool to solve problems, and they can also direct their questions to the appropriate experts to do so" (p. 558). This ability develops dramatically with age and experience. Further studies showed that increasing age and the ability to distinguish between types of informants helped with problem-solving; however, asking enough questions influenced success even more (Mills et al., 2011). The study by Mills et al. (2011) was followed by a study showing that the number of constraint-seeking questions necessary to solve a problem accurately increased from age 4 to 6 years (Legare et al., 2013). Drumm and Jackson (2017) explored the question-asking ability of middle school, high school and young adult college students in Midwestern North American schools and colleges, and found that for all age groups conceptual questions took longer to ask than perceptual questions.

Social factors also affect 'Inquiring'. For instance, in the context of 'Inquiring' in the Czech Republic's schools, one study found that boys were slightly more willing to question out loud compared with girls (Havigerová and Juklová, 2011). Various studies concluded that the capacity of 'Inquiring' is influenced by individual differences based on child ability (van Dijk et al., 2016), curiosity (van Schijndel et al., 2018), access to prior knowledge (Ibáñez Molinero and García-Madruga, 2011) and how many questions children tend to ask (Mills et al., 2011; Mills and Landrum, 2016). Despite this, individual differences are rarely explored in the literature, such as possible sex differences, cultural differences or socioeconomic differences.

### Linking 'Inquiring' to other core capacities

'Observing', 'Listening', 'Reflecting' and 'Discerning patterns' are integral to the successful functioning of 'Inquiring' strategies. Studies into the inquiry behaviour of young children show that active inquiry goes hand-in-hand with the receptive core capacities of 'Listening' and 'Observing' (e.g., Harris et al., 2017; Mills et al., 2012). The evidence concerning children's ability to look for information was included in some of the reviewed literature (Fitneva et al., 2013; Klemm and Neuhaus, 2017).

'Reflecting' and 'Discerning patterns' are not explicitly included in the active inquiry literature, but reflecting was one of the skills practised by highly curious children who learnt more from inquiry tasks compared with their less curious peers (van Schijndel et al., 2018), and constraint inquiry infers the discernment of patterns. 'Sensing' is another possible link, as in one study curiosity is defined as "a desire to acquire new information and knowledge and new sensory experience that motivates exploratory behaviour" (Litman and Spielberger, 2003, p. 75, as cited in Reio et al., 2006, p. 2).



# Listening

## 2.5 'Listening' and child development

'Listening' refers to the capacity to tune in to what surrounds, connecting to words, sounds and spaces in oneself, others and the environment. In the full literature review, keyword searches included listening and active listening.

The review uncovered 31 papers (27 empirical studies) from an initial screening of 167 abstracts. The average publication date was 2015, later than any other core capacity with the exception of 'Reflecting' (with an average publication date of 2015 as well). An additional review and screening of 160 studies for references aligned to the spiritual dimension resulted in no additional studies for the review. The average range of children's ages was 7 to 10 years.

Relevant streams of literature included listening to music and positive effects on child well-being, children's extensive listening in schools and the effects of undesirable listening environments. The majority of studies focused on children aged 6 to 10 years, while very few studies included children in infancy and toddlerhood. Within the evidence base of 'Listening' studies were those that considered the children's cognitive processes related to listening, the children's relationships with others and how these influenced listening, and the children's listening environments. While gender and age differences were included in the literature, cultural differences were generally not studied.

### What does 'Listening' achieve for children?

'Listening' improves early reading and later reading comprehension, self-esteem, learning outcomes and concentration. Furthermore, listening is associated with various mental health outcomes, including coping, happiness and relaxing – particularly in the 'listening to music' literature (also see 'auditory sensing' in Section 2.2).

In the literature, Kim's (2015) study found that listening comprehension and word reading in five- and six-year-olds in the Republic of Korea explained 91 per cent variance in reading comprehension, and completely mediated the language and cognitive skills to reading

comprehension relationship. A study among 10- and 11-year-olds by Tragant Mestres et al. (2019) has found positive effects of reading-while-listening compared with reading-only – namely higher vocabulary gains, but no enhanced reading or listening comprehension. However, as was found in the 'Embodying' literature, listening experiences for learning may not be wholly positive, and auditory sensitivity can result in worsening well-being (through annoyance, distraction), lower school performance, and can negatively affect school social relationships (see, for instance, Connolly et al., 2013; Klatt et al., 2010).

In support of the positive effects of listening, Jalongo (2010) reported on various studies that linked listening comprehension and academic achievement, as well as listening and socio-emotional development. The review also reported a link between listening and the earliest origins of empathy, in which infants can hear each other cry (Jalongo, 2010, p. 5). Moreover, listening, and telling and retelling life stories, support the construction of a child's autobiographical memory, which is associated with socio-emotional growth.

Turning to listening to music, a Finnish study on musical relaxation by Saarikallio et al. (2017, p. 386) showed that, for adolescents, listening to music can strengthen an existing neutral or positive mood, serving as a "resource for positive emotionality". Similarly, in adolescence, self-determined music-listening predicted higher subjective well-being (Morinville et al., 2013), active music engagement (including music listening or making), and positively affected self-esteem (Mak and Fancourt, 2019). In one review of the literature, using music for coping in adolescence was, however, sometimes found to be detrimental when used as part of disengaging or avoidance strategies (Miranda, 2019).

Evidence that music-listening and improved well-being is a cross-cultural phenomenon is supported by a comparative study on how music-listening and associated rituals contributed to youth well-being in families (in Kenya and the Philippines) and in peer groups (in Kenya, the Philippines, Germany and New Zealand) (Boer and Abubakar, 2014).

Children who experience listening to reading in the family setting can show higher levels of well-being. For instance, mothers reading to children resulted in children showing more 'interest and engagement', which in turn contributed to children's literacy development (Hutton et al., 2017, p. 2).

### Development by age and demographic differences

In one review of literature, listening comprehension was defined as "the young child's ability to understand what he or she hears" (Jalongo, 2010, p. 4). Evidence suggested that hearing acuity commences prior to birth and develops while still in the womb (p. 3). The listening trajectory for newborn children consisted of auditory awareness, auditory discrimination and auditory recognition. Early listening experiences are considered building blocks for literacy at a later stage, with young children's receptive vocabulary existing at a very young age and being more extensive than their expressive vocabulary.

Connolly et al. (2013) found that children as young as 6 can judge the difference between a good and poor listening environment. Furthermore, a study by Lovett et al. (2012) focused on the development of spatial listening skills of 56 children without hearing loss/impairment aged between 1.5 and 8 years in England. Spatial listening skills included localizing sources of sound and perceiving speech in noise. Performance improved with age in all tests except for the Movement Tracking Test, for which performance was high for all ages. For the Left-Right Discrimination, the Localization and the Toy Discrimination tests, performance improved with increasing age (Lovett et al., 2012). Finally, Donnot et al. (2014) studied auditory attention, and demonstrated that children aged 7 to 8 years can shift their attention to identify auditory emotional stimuli.

### Linking 'Listening' to other core capacities

'Listening' as a physical, emotional and mental practice relates to all of the other core capacities, as it represents a key modality for processing the world around us, including individuals and environments.

Listening mentally is connected in the literature to 'Inquiring', 'Observing', 'Reflecting' and 'Discerning patterns'. Listening emotionally is connected to 'Relaxation', 'Empathy', 'Sensing' and 'Embodying'.

Listening physically is a prerequisite to all other perspectives of listening, and it links directly to all those perspectives. However, the literature review of listening provided direct links for only five of the core capacities – with the exception of 'Discerning patterns', 'Embodying', 'Sensing' and 'Observing' (although in each case the separate reviews included references to listening, for instance, "observation is defined as the act of careful watching and listening" (Cunsolo et al., 2021b, p. 10)). In the same context, the review of 'Observing' literature contained sensory characteristics of the 'Listening' capacity (p. 20).



# Observing

## 2.6 'Observing' and child development

'Observing' refers to the capacity to place attention, widely and closely, to be keen and engaged, and to be consistent in noticing. In the literature review, searches for keywords included noticing, observation, concentration, focusing attention, paying attention, detecting, becoming aware of – and expanded forms of these terms. Observation is defined as the act of careful watching and listening, the activity of paying close attention to someone or something in order to get information and a statement about something you have noticed. It is a rigorous form of monitoring and integrating what scientists are seeing, with what they already know and what they think might be true (Paul, 2012). A study by Cooley and Morris (1990) mentioned that attention is considered the foundation of most cognitive and neuropsychological functions, even though the developmental neuropsychological literature has made few efforts to study various components of attention.

The review uncovered 27 papers. The average publication year of 2007 is older, on average, than the average publication dates of other reviews. The average range of children's age was between 7 and 11 years. Almost all of the reviewed studies looked at age-related factors, with only five studies looking at the practice of 'Observing'. There were no studies uncovered by the review that looked at 'Observing' as a core capacity among adults. Similarly, there were no studies that specifically unpacked sex/gender differences or cultural traits, even though children involved in the reviewed studies came from diverse cultural backgrounds.

### What does 'Observing' achieve for children?

Results showed that links exist between children's levels of observation or attention and their cognitive skills, such as working memory and executive attention (Cunsolo et al., 2021b). The same study revealed that the capacity of observing was also associated with cognitive flexibility, goal-setting, as well as visuospatial awareness. A study by Joyce et al. (2018) found that attention-focusing

at the age of 4 was a predictor of the executive attention later in childhood, at the age of 8. The reviewed evidence showed that there are individual differences in the development of executive attention and its rapid development during early and middle childhood.

### Development by age and demographic differences

The age-related development of 'Observing' and attention is complex, with non-linear pathways and complex executive functions developing later in a child's life. Such findings can inform teaching practices, age-related development interventions and the creative methods of observing (Fox and Lee, 2013; Vinter and Perruchet, 2002; Tomkins and Tunnicliffe, 2001).

For evidence of non-linear age-related development, a review of the literature by Ridderinkhof and Van der Stelt (2000) found that the development of attentional selection can be found in early childhood, but the performance of these processes tends to improve as children grow and become adolescents. In a study among children aged 4 to 11 in the United States, some nine years later, Johnston (2009) found similar results. In Australia, Betts et al. (2006, p.217) showed that sustained attention has developed fastest among children who were between the ages of 5/6 and 8/9 years, and then plateaued between the ages of 8/9 and 11/12 years.

A review study by Anderson (2002) showed how more complex skills of observing developed later in life. For instance, the 'attentional control' emerges in infancy and further develops in early childhood, whereas 'cognitive flexibility', 'goal-setting' and 'information-processing' started to develop during early adolescence. Similarly, a study by Klenberg et al. (2001) found that inhibition, attention and executive functions, although linked, had developed separately, and at different stages of childhood. The same study argued that inhibitory functions in children develop prior to selective attention, which the authors argued is a more complex cognitive function.

Observation as affected by age has also emerged in children's abilities to shift attention based on cues. Evidence from Burling and Yoshida (2017) showed that older children in preschool education have an increased ability to shift attention between cues (using 'highlighting') when learning multiple cues.

### Linking 'Observing' to other core capacities

Observation has been studied from a broader perspective, as a component of other skills and capacities such as 'Reflecting' (critical thinking), creative learning through drawing, language learning and scientific learning processes ('Sensing' and 'Inquiring'). Among these capacities, the interconnection between 'Observing' on one hand and 'Inquiring', 'Sensing' (creativity) and 'Discerning patterns' on the other, was found in two articles (Fox and Lee, 2013; Klemm and Neuhaus, 2017). Furthermore, the link between 'Observing' and 'previous knowledge' that influenced the observation competency was found in the study by Burling and Yoshida (2017), but only in relation to adults. Finally, Joyce et al. (2018) found that attention-focusing in four-year-olds is a predictor of executive attention later in childhood, at the age of 8.



# Reflecting

## 2.7 'Reflecting' and child development

'Reflecting' refers to the capacity to explore other views, to ponder, to look back, to project forward and to offer feedback. In the literature review, keyword searches included self-reflection, metacognition and expanded terms. Overall, the majority of the studies selected from the systematic searches focused primarily on metacognition, yet four studies included a conceptualization centred around self-reflection, and six studies defined metacognition using the terms reflection and/or thinking about thinking.

The review uncovered 29 papers that passed quality assurance steps. The average publication year was 2015, meaning that the literature is more recent than for other papers (except for 'Listening'). The average range of children's ages was 7 to 10 years. Nine papers looked exclusively at children in the early childhood period (around the age of 6, or younger), and seven papers focused mainly on children in later childhood (aged 12 and older). Eight studies were review studies, including a neuro-imaging review study, and the majority were empirical observational studies.

Metacognition skills were found in very young children. Various studies emphasized the importance of the social context and significant adults, such as caregivers and teachers, in children's lives for the development of reflection. The results for the relationship between 'Reflecting' and well-being were diverse, in that some studies found negative effects of reflecting on well-being while others found positive effects. A summary of these effects is presented next.

### What does 'Reflecting' achieve for children?

The review of the literature showed that 'Reflecting' was found to improve the working memory, cognition and generosity while at the same time reduce negative self-reflection and depression (Vroljik et al., 2021b). However, the same review suggested that maladaptive reflecting can be counterproductive for child well-being.

A study by Dent and Koenka (2016) looked at the relationship between self-regulated learning and academic achievement, with metacognitive processes, and specifically planning, and found that these processes have a strong correlation with academic performance. The same study suggested that the timing of metacognition can be more influential than the frequency for academic outcomes.

Another study, by Faedda et al. (2017), looked at the relationship between maladaptive metacognitive patterns of thinking and headaches and migraines, and found that metacognition and mindfulness can be preventative factors for these conditions. A study on adolescents aged 13–16 years in the United States found that there was a positive link between the positivity of personal narratives during reflection and well-being (Bohanek and Fivush, 2010).

It is when reflecting on negative emotions that challenges can arise, although the distinction is made between worrying and processing. Research by Pena and Losada (2017) found that self-rumination leads to higher test anxiety while self-reflection does not. A study on adolescents by Burwell and Shirk (2007) conceptually understood rumination as both brooding and self-reflection and found that, while rumination is linked to depression, self-reflection was not in later childhood (12- to 16-year-olds). In a Danish context, Esbjørn et al. (2016, p. 202) concluded that mothers' metacognition was responsible for anxiety in children, although it was not entirely clear as to which kinds of metacognition in mothers affected the worries and anxiety in children.

### Development by age and demographic differences

Several studies explored children's metacognitive abilities by age – with children as young as 2 years old presenting core metacognitive abilities. Sex differences in metacognition were also found.

In line with the L4WB Framework, Louca-Papaleontiou (2019) confirmed that preschool children have metacognitive awareness, at a time when previous theoretical frameworks would suggest otherwise. Based on the evidence, the author proposed to look at metacognition as a “core system”. Studies referred to how other flexible and explicit capacities are based upon metacognition as part of the core system on which flexible and explicit capacities build later in childhood (Louca-Papaleontiou, 2019). Moreover, Geurten and Bastin (2019) designed an empirical study to test the existence of this implicit core metacognition in children, and found evidence of this in children as young as 2.5 years.

In Taiwan, a study on children aged 4–7 years found a metacognitive ability among most children when they recounted stories after these stories were read aloud to them, with older children making more accurate revisions (Hsieh et al., 2013). More uniquely, the same study showed similarities in children's metacognitive development across cultures, after findings from studies on children from Western cultures were replicated in Taiwan. In a small-scale study, Lewis (2017) looked at how Video Stimulated Reflective Dialogue (VSRD) can support children's metacognitive development between the ages of 4 and 7 years, and found that metacognition can be observed in children of this age range.

Regarding gender differences, Bohanek and Fivush (2010) found that, for reflecting practices in adolescence, girls narrated both positive and negative personal experiences in more emotional ways than boys. Also, girls included more cognitive processing words indicative of self-reflection (Bohanek and Fivush, 2010, p. 368). For boys, on the other hand, a deeper level of reflection was linked to higher well-being (Bohanek and Fivush, 2010). A study by Gharial et al. (2017, p. 260)

looked at sex differences in metacognition and intelligence among rural adolescents in Punjab, India, and found that although average cognition was not different, gender differences were visible in subcomponents of metacognition. Furthermore, Burwell and Shirk (2007, p. 60) studied the effects of rumination on depression, and found that girls scored higher on reflection compared with boys, but levels of brooding were similar when comparing boys and girls.

### Linking 'Reflecting' to other core capacities

'Reflecting' is associated with self-awareness as the source of self-conscious emotions, including empathy (Lewis, 2017). 'Reflecting' is also linked to a core system of metacognition that would be essential for empathy as well (Goupil and Kouider, 2019). Moreover, self-reflection is related to the Theory of Mind, which means reflecting on somebody else's thoughts, and having a similar approach to empathy (Louca-Papaleontiou, 2019).



# Relaxing

## 2.8 'Relaxing' and child development

'Relaxing' refers to the capacity to ease tensions in thoughts, feelings and body, and opening to physical, emotional and mental ease. In the literature review, keyword searches included relaxation, mindfulness, meditation, no/lack of stress, being calm, anti-stressed, tense, unwind, and related expanded terms. The search involving the exact word relaxing did not produce many studies relevant for the review. However, additional keywords such as mindfulness and meditation resulted in a larger number of relevant studies.

The difference between mindfulness and relaxation is important to be mentioned, so as to help distinguish between the effects of practices in the two streams of work. Evidence suggested that within adults (Sevinc et al., 2018) and children (Marusak et al., 2018), mindfulness meditation and the relaxation function work through different neural mechanisms, with the former related to a dynamic resting-state, and not a static resting-state, in children.

The review uncovered 35 papers that passed quality assurance steps, with an average publication year of 2014, although all ranged from 2002 to 2018. The vast majority of studies focused on children in middle to late childhood, with the average range of children's ages being 9 to 12 years; this is an older child population compared with other core capacity reviews. Most studies covered an age range of 2 to 3 years, although the comparative study on spirituality by Benson et al. (2012) included children and youths between the ages of 12 and 25 years.

### What does 'Relaxing' achieve for children?

Several studies reviewed relaxing interventions. In a systematic review of impact evaluations, Treurnicht Naylor et al. (2011) studied the effects of music on paediatric healthcare, in particular music therapy and its relaxing effects for coping with pain in chronically ill children aged 1–17 years, and found music to have positive effects on child psychological health, on coping behaviours, and on behaviour problems associated with grief and distress.

A study by Srilekha et al. (2013) looked at muscle relaxation interventions on boys aged 9–12 years in Bangladesh and India, and found reduced anxiety, which contributed to the development of attention and improved well-being. Similarly, relaxation training had significant effects on relaxation skills and reducing test anxiety in elementary schools in United States (Gilbert and Orlick, 2002; Larson et al., 2010). Similarly, in Germany, relaxation training had short-term benefits on children's enhanced calmness, and on physical well-being (Lohaus and Klein-Hessling, 2003).

Turning to mindfulness-based interventions (MBIs), development of this practice in the preschool years was found to be associated with improved attention regulation and open curiosity (Bishop et al., 2004). Similarly, a 12-week MBI (Kindness Curriculum) intervention in the United States was linked to improved physical health outcomes and less selfish behaviour in children (Flook et al., 2015).

In the UK, Emerson et al. (2017) conducted an evaluation of a four-week programme of mindfulness-based classroom activities in primary schools and found no significant changes in the well-being of six- to seven-year-olds. However, the same study found that sustained attention and inhibition significantly increased over time among the same group of children. Furthermore, Flook et al. (2010) evaluated an eight-week school-based mindful awareness programme in the United States, and found that the programme improved behavioural regulation, metacognition and overall global executive control among seven- to nine-year-olds with weaker executive functions. Another evaluation of an eight-week training programme for children in the same age group in England associated the programme with significant gains in children's emotional well-being and in metacognition skills (Vickery and Dorjee, 2016, p. 8).

In a systematic review of MBIs in relation to the attention and executive function of children aged 7–12, Mak et al. (2019) found positive effects in 5 out of the 13 reviewed interventions. Similarly, in Australia, one study found that a mindfulness intervention with children aged 14–15 years led to improvements in children's time spent outdoors

(Huppert and Johnson, 2010). At the same time, a study by Johnson et al. (2017) found no significant effects on anxiety and well-being outcomes of an MBI intervention in Australian high schools.

In a meta-analysis of the efficacy of using MBIs for improving the mental health and well-being of an older cohort of youth (8–17-year-olds), Dunning et al. (2018) found significant positive effects of interventions on children’s outcomes, including executive functioning, attention, depression, anxiety/stress and risky behaviours. Decreased depressive symptoms were also seen in Lau and Hue’s (2011) findings for an MBI intervention with 14–16-year-olds with low academic performance in Hong Kong.

An impact evaluation by Semple et al. (2010) analysed a mindfulness-based cognitive therapy for children (MBCT-C) in the United States, and found significant improvements in the social–emotional resiliency among children, which lasted three months after the intervention. Similarly, Quach et al. (2016) evaluated interventions of mindfulness meditation and hatha yoga on the working memory capacity of children aged between 12 and 17 years in the United States, and found improvements in the self-reported measures of working memory among participating children who were part of the mindfulness intervention, and not the hatha yoga group.

### Development by age and demographic differences

A selection of articles found that attention and emotional regulation can develop in childhood and can be retained during adolescence and during the transition into adulthood (Roeser and Eccles, 2015; Flook et al., 2015; Greenberg and Harris, 2012; Zelazo and Lyons, 2012; Davidson et al., 2012). In particular, Greenberg and Harris (2012) reached these conclusions through evidence emerging from contemplative practices, including yoga and various meditation practices, in both clinical facilities and schools. This research established the feasibility and the benefits of these practices among children, but few trials of meditation-based interventions with children were conducted, leading to a call for more rigorous empirical evidence of the efficacy of such practices for children.

In the literature presented above, there were no examples of interventions that delivered successful mindfulness programmes in the preschool years, during primary school or later in secondary school. However, where an analysis of age was included in reviewed studies, the age effects were not significant (Flook et al., 2015). In two studies looking at gender effects, one showed that gender is not significant (Flook et al., 2015), while the other found significant but marginal increase in the self-control abilities of boys, and reduced anxiety among girls aged 9–11 years (Parker et al., 2014).

### Linking ‘Relaxing’ to other core capacities

Effects of ‘Relaxing’ on ‘Observing’ were found in six studies through findings linked to increased attention. Furthermore, effects on ‘Reflecting’ were found in six other studies through findings linked to cognitive control, self-regulation and personal growth. Moreover, ‘Relaxing’ practices were found to be associated with the development of ‘Empathizing’ in two studies, through increased prosocial behaviour and compassion for others. Nevertheless, as with other core capacities, more evidence is needed to ascertain further the links between ‘Relaxing’ and other capacities among children.



# Sensing

## 2.9 Subtle ‘Sensing’ and child development

‘Sensing’ refers to the capacity to engage with what is not visible, acknowledging and expanding non-rational ways of knowing. In the full literature review, keyword searches included subtle sensing, intuition and resonance (and expanded terms thereof). The searches involving the exact terms subtle sensing and resonance did not produce studies relevant for the scope of this review. Using the proxy keyword intuition was instead helpful to retain enough studies. Intuition can be defined as hunches or feelings generally not expressible in words that influence thought with little conscious awareness of processing (Brock, 2015). The review uncovered 11 papers that passed quality assurance steps for the search term intuition, which is a smaller evidence base compared with the other working papers. The studies reviewed dated back to 2001, the most recent studies being published in 2018. The studies included six empirical studies with an average range of children’s ages of 6–10 years, although some of the reviews covered children from early infancy.

Earlier, this working paper included the search terms creativity and imagination, resulting in 40 studies. The L4WB Framework defines subtle sensing broadly, but a more narrow definition solely focusing on the capacity of subtle sensing itself was applied in the final version of this paper. While subtle sensing may be used for creativity and imagination, it is not the same. Some argue for including an extra, separate core capacity involving creativity, play and imagination. The ‘Inquiring’ working paper offered a similar challenge where creativity, curiosity and play appeared to be related constructs to inquiring. According to Gordon and O’Toole (2015), a holistic approach to child learning allowed children to develop core capacities realizing child well-being and supporting creativity.

### What does subtle ‘Sensing’ achieve for children?

Research has shown that learners possess intuitive knowledge about the physical world before starting education. Examples included intuitive knowledge about physical rules, but also more abstract

knowledge (Brock, 2015). Various studies were identified that explored intuition in mathematics, with some studies stressing the importance of intuitive mathematical abilities (Giofrè et al., 2014; Ganor-Stern, 2016), while others revealed that intuitive mathematical understanding formed a barrier to answering mathematical problems correctly (Borst et al., 2012; Obersteiner et al., 2015). Other studies connected children’s intuitive capacities in the field of morality (Dahl and Killen, 2018; van de Vondervoort and Hamlin, 2016). Due to a lack of consensus, the importance of intuition in morality at different stages of life remains unclear.

### Development by age and demographic differences

According to a model from Baylor (2001), the development of intuition follows a U-shaped progression as children grow, where the level of available intuition within a given subject area (e.g., mathematics) starts at a relatively high level, decreases to a minimum and later increases with the level of expertise (i.e., the amount of knowledge accumulated). Furthermore, a large literature has revealed the existence of multiple patterns of discontinuity. These patterns included moments of progress and moments of regress, which are often called jumps and slumps (steep and temporary decreases in performance), especially during childhood and adolescence.

Evidence on age-related development of intuition and its application of mathematical approximation from India and the United States during the early years, not only suggested that intuition has utility in maths teaching (Dillon et al., 2017; Szkudlarek and Brannon, 2018), and that teachers can teach children to use their intuition in mathematical approximation from the preschool period onwards, but also that they should promote ‘Reflecting’ (i.e., inhibit their immediate-response tendency) before they respond to a given task (Borst et al., 2012; Obersteiner et al., 2015).

### Linking subtle ‘Sensing’ to other core capacities

More evidence is needed to confirm the hypothesis of interlinks between subtle ‘Sensing’ and other capacities among children.

## 2.10 Interlinks between core capacities

If the outcomes from, and methods for, developing core capacities are to be taken up by families and practitioners working with children, the most efficient way of protecting or promoting these capacities is through a good understanding of the complementarity and interlinkages between them. Indications of complementarity should help answer such key questions as: ‘What to do first?’, ‘In combination with what?’ and ‘To what extent is a given core capacity a necessary prerequisite to building or sustaining other core capacities?’

Figure 3 summarizes the evidence from the nine *Measuring What Matters* working papers to show objective interlinkages identified in the empirical literature. The left-hand column represents the core capacity that is significant in determining another core capacity. Dark grey squares represent identified interlinkages in the empirical literature; light grey squares represent suggested associations that are still awaiting empirical confirmation.

Figure 3: The empirical literature on ‘Listening’, ‘Observing’ and ‘Reflecting’ is most closely linked to other core capacities

Core capacity paper > Interlinkage with v	Discerning patterns	Embodying	Empathizing	Inquiring	Listening	Observing	Reflecting	Relaxing	Sensing
Discerning patterns	X								
Embodying		X							
Empathizing			X						
Inquiring				X					
Listening					X				
Observing						X			
Reflecting							X		
Relaxing								X	
Sensing									X

Note: Dark grey squares represent identified interlinkages in the empirical literature; mid-grey squares represent suggested associations that are still awaiting empirical confirmation; and light grey squares note where evidence or suggested associations for interlinkages was not found.

Source: Authors’ review of the *Measuring What Matters* working paper series.

The shaded squares in *Figure 3* do not distinguish between when the core capacities are developed in sequence (e.g., when ‘Relaxing’ determines later development of ‘Observing’), or when core capacities are applied in combination to improve outcomes (e.g., ‘Relaxing’ determines the quantity or quality of ‘Observing’). The differences between these two conditions are important in understanding the sequencing and complementarity in the development and application of a core capacity. Evidence has suggested that more detailed work on sequencing and complementarity across multiple core capacities is needed.

For instance, across various studies, complex links between the core capacities can be found – take, for example, ‘Observing’. A study by Xavier et al. (2013) found visuospatial abilities to be a determinant of the development of ‘Empathizing’. At the same time, Alloway et al. (2006) found that visuospatial resources in children have influenced the working memory and executive functions linked to ‘Discerning patterns’. In the ‘Embodying’ review, Gomes da Silva and Arida (2015) found that children’s physical condition is related to visuospatial scores.

Within studies, the complexity of the core capacity links can also be seen. One study by Kim (2016), who considered both direct and mediated effects of skills on listening comprehension, showed this complexity. Kim (2016), studying 201 first-grade students in the Republic of Korea, found that 85 per cent of variance in listening comprehension was explained by working memory (‘Discerning patterns’), grammatical knowledge, inference (‘Sensing’) and Theory of Mind (‘Reflecting’), attention (‘Observing’), and vocabulary, and that comprehension monitoring indirectly predicted listening comprehension.

Finally, the evidence introduced further complexities in the interlinkage of core capacities – that is, in the balance or trade-off of the abilities, by individuals, and when interacting: for instance, individually, when children should listen less, and speak more, in order to be more effective inquirers (Jalongo, 2010); and between children and adults, too, for instance, when teachers listen

more and speak less in inquiry-based education to improve children’s language and vocabulary development opportunities (Wasik et al., 2006). Similar complementarities between capacities, for effective human interaction, are seen in other studies, too. For instance, Kim (2016) noted that to engage with somebody else’s ‘Reflecting’, listening skills are needed.

What is clear from the series of reviews is that, although the core capacities are distinguishable in the literature, a much deeper reflection on complementarity and sequencing is needed to inform comprehensive efforts to protect and promote these capacities effectively and efficiently. For this effort, longitudinal data are needed to study the development of all of the capacities, in children and adults working with children, over time. To date, such longitudinal evidence is not available.

## **2.11 Mental, emotional and physical perspectives, and the spiritual dimension**

The ‘Discerning patterns’ capacity demonstrates clear mental and cognitive characteristics, such as working-memory skills, attention control and systems thinking – and so most studies fit in the mental perspective (see *Table 3*). Studies under the emotional dimension were related to relationships (conformity) and self-regulation characteristics (emotion-related self-regulation). At the same time, the physical perspective is rarely seen in the literature. Seven studies covered at least two perspectives (commonly shared with emotional dimensions). No results were found for the spiritual perspective of ‘Discerning patterns’, but one study included the three mental, emotional and physical perspectives, which examined children’s self-regulation and their adaptive behaviours in the classroom, and focused on children’s ability to “manage their emotions, focus their attention, and inhibit some behaviours while activating others” (Rimm-Kaufman et al., 2009, p. 959).

Table 3: Summary of perspectives for each core capacity

Core capacities	Perspectives							
	Mental content "what"	Mental process "how"	Emotional content "what"	Emotional process "how"	Physical content "what"	Physical process "how"	Spiritual intention "why"	Studies not placed
Discerning patterns	0	15	0	11	0	7	0	1
Embodying	1	8	0	2	3	27	0	1
Empathizing	4	7	4	20	0	4	0	2
Inquiring	4	15	3	10	2	7	2	2
Listening	0	16	1	12	0	6	0	0
Observing	4	8	0	2	3	6	0	8
Reflecting	8	7	3	10	1	2	0	2
Relaxing	1	16	0	8	0	16	1	11
Sensing	5	3	11	0	0	1	0	1
<b>Total</b>	<b>27</b>	<b>95</b>	<b>22</b>	<b>75</b>	<b>9</b>	<b>76</b>	<b>3</b>	<b>28</b>

Note: Number refers to number of studies. "Studies not placed" refers to studies that couldn't be classified in the perspectives.

The physical perspective dominated the studies of 'Embodying'. Although the mapped literature on enriching sensory processing did not directly reference any of the four perspectives (mental, emotional, physical or spiritual), sensory processing abilities seem strongly associated with the mental, emotional and physical aspects of development from birth to adulthood. No empirical evidence on the spiritual perspectives of 'Embodying' as a core capacity were found.

The 'Empathizing' capacity most often demonstrated emotional characteristics (feeling, sympathy, sensitivity, compassion, connection with another) and cognitive characteristics (thinking, understanding, imagining, perspective-taking), which are grouped within the emotional and mental categories respectively. Only four studies were linked to the physical domain by exploring the role of biological or environmental factors in influencing the 'Empathizing' capacity. Eight articles were categorized in more than one dimension, and no studies on 'Empathizing' were classified as having a spiritual perspective.

For 'Inquiring', most studies fell within the mental (19) and emotional (13) categories. Unlike the majority of core capacities, there is link with 'Inquiring', or question-asking, and the spiritual perspective (through questioning and searching for meaning). Of reviewed studies, two studies focused on the purpose or intention of inquiring (Hedges and Cooper, 2015; Kemler Nelson et al., 2004). However, no explicit links in the initial empirical or theoretical literature have been found that link inquiry with spirituality. One empirical study looked at existential questioning in the conceptualization of spiritual development, and its development as an individual active process and a universal "core developmental phenomenon" (Benson et al., 2012, p. 466).

The various studies included in the 'Listening' review fell in the mental process category (16 studies), followed by the emotional process category (13 studies) and the physical process category (6 studies). No empirical evidence on the spiritual perspectives of 'Listening' as a core capacity were found.

‘Observing’ demonstrated clear sensory characteristics (listening and experiencing) that can be placed under the physical dimension, as well as cognitive characteristics (thinking, reasoning, envisioning, analysing, prioritizing), which are grouped within the mental category. The emotional dimension was rarely supported by the literature identified in this review, while evidence for the spiritual dimension was not found at all. Two articles were categorized in more than one dimension, namely mental and physical.

For ‘Reflecting’, the vast majority of studies looked at mental and emotional perspectives, and there was no study that looked at ‘Reflecting’ from a spiritual perspective for children. For the core capacity of ‘Reflecting’ the literature on adult samples can be insightful. For instance, an empirical study included ‘Reflecting’ in a sample of adults (McClintock et al., 2016).

The ‘Relaxing’ working paper provided evidence based on sensory characteristics (listening, experiencing, breathing), which was categorized under the physical dimension, as well as cognitive characteristics (thinking control, envisioning, attention), which were grouped within the mental category. The emotional dimension was less

prevalent in the literature identified in this review, and expressed mostly as emotional calmness. The spiritual dimension was seen in one study (Benson et al., 2012). The study focused on spirituality among youth, in which mindfulness was set as one component of the spiritual paradigm proposed by the authors.

Subtle ‘Sensing’, and its proxies, possessed clear cognitive features (thinking, reasoning, envisioning) that were grouped in the mental perspective. Subtle ‘Sensing’ proxies also related to sensory characteristics (listening, experiencing, drawing), which reflected a physical perspective. Instead, the emotional dimension was present in studies that mostly incorporated how relationships with teachers and their pedagogical attitudes and strategies influenced creativity. No studies were identified or could be classified in the spiritual dimension.

Table 4 summarizes the placement of all core capacity studies in the matrix. Overall, the social and physical perspectives were defined broadly following the L4WB Framework definitions, including some topics that were not immediately aligned to the L4WB definitions. For example, studies on relationships were categorized as

Table 4: All studies for all core capacities in the matrix of four perspectives

Perspective	Content 'what'	Process 'how'	Intention 'why'
MENTAL	27	95	SPIRITUAL 3
EMOTIONAL	22	75	
PHYSICAL	9	76	

Note: Number refers to number of studies. 28 studies were not included in the matrix.

emotional, and studies on the relationship between the environment and the core capacity were categorized as physical. However, not all relationships need to be emotional and the physical environment does not necessarily suggest that the individual experiences of the core capacity are physical. Therefore, the definitions of emotional and physical perspectives may be further clarified to include experiences such as engagement with the broader environment, and the practical aspects of relationship-building.

### **Content, process or intention?**

Across all but one of the core capacity studies, the 'process' category (or 'how') was the most common way of understanding the perspective. For most core capacity papers, the process or 'how' studies made up over 60 per cent of those classified. The lowest percentage of papers in the process or 'how' category were in the review of the subtle 'Sensing' capacity, where 4 out of 11 studies were recorded that way. The highest rate was seen in 'Discerning patterns', where all studies were categorized as process studies. Overall, the categorization of the majority of studies related to core capacities matched the definition in the L4WB Framework, which states that the nine core capacities are indivisible, 'process-oriented' abilities.

### **Further research on the spiritual dimension?**

The reviews of five core capacities did not cover spirituality, nor assess the core capacity from the mental, emotional and physical perspectives holistically. However, the evidence points to good reasons to look at studies that can fill the gap across the four dimensions. First, many of the reviews included studies that covered a combination of two perspectives, in that they distinguished clearly the mental from the emotional and from the physical, and in doing so provided a justification for the concept of 'perspectives' in the expression of core capacities. Second, core capacities like 'Listening', 'Observing', 'Embodying', 'Empathizing' and 'Reflecting' can result in contemplative experiences related to a sense of connection with all things, and as such represent a spiritual process as defined in the L4WB Framework.

Although challenging, efforts to categorize and observe core capacities from a spiritual perspective could be an area of scientific investigation, particularly when considering the esoteric nature of spirituality, humanity and human development. Moreover, recent progress in the analysis of well-being through measurements of life satisfaction, happiness (eudaimonia), human development, and the connectedness with communities, societies and the environment, implies also the understanding of spirituality as an innate human experience. Some of the working papers demonstrated that various studies on spirituality focused on adult experiences or discussed spirituality generally and not related to specific core capacities. While these studies had to be rejected from the individual working papers, they can be helpful for responding to gaps in knowledge.

**What role  
for parenting,  
practice  
and policy options  
in the nurturing  
of core capacities?**

# 3. What role for parenting, practice and policy options in the nurturing of core capacities?

This section summarizes the main evidence related to factors that contribute to the understanding of core capacities across the nine working papers. Various reviews revealed that children's relationships with other children and significant adults played clear roles for the capacities (e.g., 'Inquiring', 'Listening' and 'Empathizing').

## 3.1 How parents can help children cultivate core capacities

The following subsection summarizes the evidence from the reviews on the conditions of the home environment, parents' own expression of core capacities, and actions or practices by parents that support the protection and promotion of core capacities in children.

### The home environment

Studies presenting evidence on the associations between the home environment and children's core capacities help us understand the promotion of metacognition, inquiry and attention-control among children. A study by Thompson and Foster (2014) found that parental education, and specifically the ability of parents to use metacognitive language to encourage children's reflection on a problem, was positively associated with metacognitive abilities among preschool children. In fact, a low level of education was a strong negative predictor for metacognitive questions to young children (Thompson and Foster, 2014, p. 15). Similarly, Kurkul and Corriveau (2018) found that while adults in low- and middle-income families, when compared with adults in families with a better socioeconomic status, received a

similar number of questions from children, they tended to give less informative answers to the children's inquiries. This evidence suggested that the home environment affects the extent to which children rely on inquiry and information for their development, even when there is no inherent difference in the ability to inquire among children from different socioeconomic backgrounds.

Two studies looked at how children's family conditions affected 'Observing' (attention) and self-regulation ('Discerning patterns') in adolescents. One study in Europe found that early-life factors such as low birth weight and a breastfeeding time of fewer than three months associated negatively with the attention capacity in adolescent boys, but not in girls (Esteban-Cornejo et al., 2018). A longitudinal study in the United States found that the attention-control and self-regulation among youths of Mexican origin decreased over the years when they lived in a home environment characterized by parental hostility, when engaging in relationships with deviant peers, and when going to schools with higher levels of violence and ethnic discrimination (Atherton et al., 2019). At the same time, the same study emphasized that the effortful control declined in adolescents less quickly when parents were engaged in the monitoring of children's behaviour.

Finally, a study in Pakistan found that the sensory stimulation in early childhood is positively associated with children's health (reduced stunting) and educational outcomes (cognitive development), but the effects are not the same for children in rural and urban locations (Avan et al., 2014).

## Intergenerational transmission of core capacities

A number of studies identified ways in which core capacities among parents are transferred to children. Most commonly, the literature on the intergenerational transfer focused on two core capacities, namely 'Empathizing' and 'Discerning patterns'. The expression of a core capacity by a parent or caregiver can lead to the development of other core capacities in children. The example of empathy is telling, in that children acquire this capacity from parents through imitation, and develop other capacities in the process, such as 'Observing' and 'Discerning patterns', among others (Iacoboni, 2009). Empathy can also directly engender empathy, but gender differences were observed in the process when male and female caregivers, and boys and girls were observed (Richaud de Minzi, 2013). A longitudinal study from the United States by Wagers and Kiel (2019) found that maternal warmth was positively associated with greater volumes of empathy in two-year-olds who possessed high levels of inhibitions. Furthermore, evidence from Stern et al. (2014) found that higher levels of parental empathy associated positively with children's attachment and security-perception, and negatively with parental attachment-avoidance. The latter result was replicated by Ştefan and Avram (2019), and Boele et al. (2019), who reported a strong positive association between the quality of parent-child relationship and empathy in adolescents. Finally, a longitudinal study by van Lissa et al. (2014) found that perspective-taking in mothers resulted in perspective-taking in their adolescent girls over a four-year period of observations.

When considering the relation between child outcomes and metacognition, evidence from Denmark shows that maternal metacognition is associated with anxiety and lower levels of relaxation in children (Esbjörn et al., 2016, p. 202).

## Parenting practices

The quality of the parent-child relationship, and parenting behaviour more broadly, may affect child development. A study by Kiel and Kalomiris (2015) found bidirectional associations between children's emotional regulation and parenting behaviour, in that each can potentially influence the other. Parental presence and engagement with the child are two such behaviours that matter. A study by Robson (2016, p. 185) on the influence of adult presence on children's self-regulation and metacognition pinpointed that "[w]hile the data show that adult presence and absence were both supportive, children were often significantly more likely to show evidence of self-regulation and metacognition when adults were absent." Research by Cooke et al. (2017, p. 561) defined parental reflective functioning as the "capacity to reason about their own and their children's behaviours by taking into consideration intentional mental states". The same study showed that, although mothers were more reflective than fathers, fathers' parenting self-efficacy, and perceptions of family functioning, were associated more with the quality of parent-child relationships (Cooke et al., 2017, p. 570).

A common practice at home is when parents read to children. Using magnetic resonance imaging (MRI) scans, Hutton et al. (2017, p. 474) found that children with more stimulating home-reading environments and shared-reading exposure were more likely to activate brain areas that support "mental imagery and semantic processing". Romeo et al. (2018) undertook similar tests, and found that both parents and children benefit from the talk during storytelling (reflecting while listening), which leads to an increase in children's brain activity. Another MRI study by Abrams et al. (2016) looked at neural circuits underlying mother's voice-perception in children in the United States with a mean age of 10.2 years old, and found that children's brains were more active when they heard the mother's voice compared with when they heard other female voices. Altogether, evidence has suggested that reading, listening and conversation during storytelling results in child brain activation, subtle 'Sensing' and 'Listening' comprehension.

Early pretend play and creative tasks for children are linked to empathy (Xavier et al., 2013). Research by Salmon (2016) also noted that metacognitive thinking can be stimulated during young children's play to promote deeper understanding and learning during childhood. Moreover, physical activity programmes at home were found to benefit metacognitive and executive functions and skills in children and adolescents (Álvarez-Bueno et al., 2017).

Music and dance within families have been shown to promote core capacities. A study by Lobo and Winsler (2006) reported that creative dancing, when compared with an attention intervention, has improved social and behavioural outcomes of preschool children in families with a low socioeconomic status. Furthermore, the shared home music activities with toddlers (learning and social skills) and preschoolers (attention and emotional regulation) were found to benefit child well-being (Williams et al., 2015). Research by Boer and Abubakar (2014) found similar evidence, in that music-listening in families and in peer groups resulted in family cohesion and improved emotional well-being.

Finally, parenting practices may benefit from training activities. Evidence indicated that home environments can have positive effects on children's inquiring capacity when caregivers receive simple training on inquiry guidance interventions (Vandermaas-Peeler et al., 2019). The same study showed that parents who are exposed to inquiry guidance instruction have positively influenced the way in which they elicit complex reasoning in preschoolers, and have improved the home learning environment for children.

Many of the examples of parenting practices that include play, music-listening and training could also be applied in schools, and be considered when designing good practices for practitioners who work with children.

### 3.2 The role of professionals and practitioners working with children

The L4WB Framework notes that core capacities function in relationship to each other. With this in mind, a sequence order for utilizing core capacities can be rationalized for practical purposes. For example, to reflect, one must observe, and discern patterns in the observed phenomena. Similarly, awareness is triggered by sensing and listening, and leads to observation. These relationships will do well to be addressed by future research (see Sections 2.10 and 4.2), and this study provides evidence on the complementarity and sequencing of core capacities that justifies further exploration. Moreover, such a process indicates the need to review further the evidence on the age-related development of core capacities, and what factors are conducive to the process (or inhibit it).

What can be learnt for professionals and practitioners working with children is presented next.

#### Interrelation of the core capacities, and what to promote first

*Table 5* summarizes the evidence on the age-related patterns that was found in the review of the core capacity literature. From right to left, it covers key covariates: age of first development as reported in the literature, the trajectory of development by age, and the evidence on non-linear age-related slumps in development. In addition, *Table 5* presents the evidence on the complementarity among core capacities in reviewed studies (see also *Figure 3*), inputted into the final right-hand column. *Table 4* can be used to recommend approaches to sequenced and complementary promotion of core capacities, based on the best available evidence to date. *Table 5* also shows:

- Factors such as sex/gender differences and children's individual characteristics related to various core capacities. Other conditions, such as the school environment, influenced one core capacity (subtle 'Sensing'). In studies that took a cross-country approach, location (country) was not a significant factor ('Embodying').

- Recent evidence demonstrated a lower first age of development for various core capacities than was previously thought (especially for 'Inquiring' and 'Reflecting'). The majority of the core capacities are already developing during infancy or toddlerhood (children until 35 months), falling within Ronfard et al.'s (2018) first stage of early child development.
- The emergent pattern of the development trajectory for most core capacities is that the core capacity ability strengthens with age during childhood. In three working papers, studies were identified that showed a slump in developing core capacities ('Discerning patterns', 'Observing', subtle 'Sensing').
- Especially 'gateway' capacities demonstrated complementarity with other core capacities. For instance, in the 'Listening' working paper, interlinkages were shown with evidence to four core capacities and inferred for two core capacities. Likewise, interlinkages with 'Observing' were supported with evidence in four core capacity working papers and inferred in two core capacity working papers.

### Where to work with children

Aligned to the understanding of the living-system perspective, there is evidence relating to the space in which children live and learn, and how these environments influence the protection and promotion of core capacities. These spaces include natural environments, school spaces and classrooms (the home environment was covered in Section 3.1).

Recent research has also explored how different kinds of outdoor environments influence the development of children's abilities, such as working memory, learning, problem-solving, decision-making and creative thinking. Flouri et al. (2018), for instance, showed that children living in urban areas with a high amount of green spaces performed better on spatial working memory, and no matter if they lived in a deprived or non-deprived neighbourhood. Tanner (2008) reported that exposure to more natural light (i.e., daylight)

compared with artificial light during teaching hours increased student performance. Zamani (2016) studied how natural, mixed and manufactured outdoor playground settings influenced children's play behaviour, to show that natural and mixed zones offered a more diverse spectrum of cognitive play, and were more supportive of different learning styles due to accessible loose material in these zones, which stimulated creativity through the creation of imaginary objects and pretend play.

The school and classroom environments are also important for the overall development of children's capacities. In the Republic of Korea, middle school boys who had greater attachment to the school environment exhibited fewer bullying behaviours (You et al., 2015). Evidence from 'Embodying' literature, particularly around visual and auditory sensing, has also showed that physical characteristics of classrooms have influenced the academic performance and school experience of children, particularly in the areas of visual and auditory distractions (Vrolijk et al., 2021a; Klatte et al., 2010; and Rudner et al., 2018). Notably, children as young as 6 can judge the difference between good and poor listening environments (Connolly et al., 2013).

Moreover, children with learning and physical disabilities often found environmental distractions harder to cope with, and benefited from classrooms' improved acoustics to increase the academic achievement of children (Cheryan et al., 2014). Finally, not introduced above, was the finding by Barrett et al. (2015) that the individualization of the classroom environment has raised children's self-esteem.

From the 'Discerning patterns' studies, classroom quality and effective classroom-management may also influence the self-regulation skills among preschoolers (Rimm-Kaufman et al., 2009). Seating arrangements in classrooms matter, too. Students sitting in a semi-circle, when compared with a row-and-column setup, were more active in their inquiring – although in both arrangements there were specific zones of action in which children were seated who asked questions (Marx et al., 2000).

Table 5: Evidence on age-related development, trajectories and non-linear development

Core capacities	Significant and non-significant (ns) factors	First age of development	Trajectory	Slump?	Complementary core capacities
Discerning patterns	..	Working memory, ages 4 to 5; strategic thinking, ages 4 to 5; self-regulation, age 4	Strategic thinking increases with age; self-regulation increases with age	Self-regulation: non-linear (age-related slump)	Supported: Observing, Reflecting Inferred: Empathizing, subtle Sensing
Embodying	Cross-country studies (ns)	Sensory processing, ages 2 to 3; music, age 8	Music, from age 8, stable over the life course		Inferred: Discerning patterns, Empathizing, Inquiring, Listening, Observing, Reflecting, Relaxing
Empathizing	High risk of crime: lower emotional empathy, cognitive empathy (ns); biology, temperament	Empathizing, birth to 3 years	Perspective-taking (cognitive empathy) increases with age from birth to 17; affective empathy (post-conflict) falls with age		Supported: Observing Inferred: Discerning patterns, Reflecting
Inquiring	Child ability, curiosity	Inquiring, birth to 1 year (preverbal); function inquiry, ages 2 to 4; meaningful inquiry, age 2	Improves with age, dramatically for problem-solving; young hypothesis-seeking, older constraint-seeking (which increases from ages 4 to 6)		Supported: Listening, Observing Inferred: Discerning patterns, Embodying, Reflecting, subtle Sensing
Listening	Younger children: overestimate hearing abilities	In utero; spatial listening, age 1.5; children aged 7 and 8 react to auditory stimuli based on emotion	Spatial listening improves with age (ages 1.5 to 8)		Supported: Empathizing, Inquiring, Reflecting, Relaxing Inferred: Empathizing, Inquiring, Reflecting, Relaxing
Observing	Non-linear, based on complexity	Preschoolers: can shift attention based on cues, and this improves with age	Non-linear and more complex functions develop later; attentional control, emerges in infancy, and develops in early childhood	Sustained attention: grows to age 7, plateaus until around 12	Supported: Discerning patterns, Inquiring, Reflecting, subtle Sensing
Reflecting	Gender/sex (metacognition)	Age 2	Increases with age; development mapped between the ages of 4 and 7		Supported: Discerning patterns, Empathizing, Relaxing
Relaxing	Mindfulness	Relaxation: early childhood; mindfulness, preschool years	Relaxation: developed in early childhood, maintained through adolescence, and into adulthood		Supported: Empathizing, Observing, Reflecting
Sensing	School conditions, adolescent inhibitors	Intuition from preschool onwards; divergent thinking at age 2	Fluency in ideation – non-linear: increased ages 5 to 8, plateaued at 10, then falls in adulthood	Intuition, U-shaped; divergent thinking, slumps at around ages 6 to 7 and 9 to 10 – and later adolescence	None

## How to work with children

This section of the report draws evidence from the reviews on how practitioners have worked with children, and which practices are most promising for the promotion and protection of core capacities.

First, based on the review of literature reviews, modalities of communicated learning could be experimented with when it comes to children. For example, evidence from the United States and France on children's use of drawing for recording observations is one promising practice to follow up in the classroom environment (Fox and Lee, 2013; Vinter and Perruchet, 2002). In both cases, more accuracy in the learning process was seen among children. In Germany, Brandstädter et al. (2012) applied computer-assisted concept-mapping to analyse systems thinking, which when highly directed by teachers, improved learning outcomes of children when compared with pencil and paper concept-mapping. Further studies promoted multisensory modalities (Sibley and Etnier, 2003), including evidence from the 'Embodying' literature review, which showed that visuospatial and visuomotor integration are related to academic achievement independently from IQ, socioeconomic status and sex (Linzarini et al., 2021). The use of these capacities can be a core feature of all academic programmes that seek to break cycles of socioeconomic disadvantage.

A number of specially designed programmes to promote core capacity development in children were found in the reviews. Examples for empathy included Schonert-Reichl et al.'s (2012) evaluation of *Roots of Empathy*, a programme created by Mary Gordon, which teaches children how to take care of an infant, and resulted in an increase in children's prosocial behaviour and social-emotional skills. The Peace Education Program, trialled in elementary schools in Turkey, also improved the empathy levels in children (Sagkal et al., 2012).

For an inquiry-based teaching approach to student-learning, a meta-analysis by Furtak et al. (2012, p. 324) found a positive effect of the inquiry-based teaching approach on student-learning with "a particularly large effect of students engaging in the epistemic domain of inquiry and the procedural,

epistemic and social domains combined". These findings were supported by a later study of gifted students (Eysink et al., 2015), and the counter-claim that *unguided inquiry* learning in science education is not effective (Lazonder and Kamp, 2012).

The evidence that show parental reading that incorporates active inquiry from children can stimulate children's brain activation, suggests that interactional inquiry in schools can also be an effective channel for improving children's outcomes. (Keifert and Stevens, 2018). Indeed, studies have found a positive effect of teacher-child relationships on behavioural engagement in early childhood education in Belgium (Cadima et al., 2015). In Ireland, there was evidence of an unwillingness from a minority of students to tell teachers about their problems with schoolwork (Downes et al., 2006). There was further evidence in the literature that teachers might effectively listen more to stimulate more inquiry from students. This is notwithstanding teachers' perceived perceptions of divergent inquiry as being disruptive and as a barrier to learning, which has also been noted elsewhere in the literature.

Metacognition, or 'Reflecting', can be included as a discipline in classroom teaching, as evidence showed that it can be a positive tool for self-regulation, comprehension and mental health among students (when not ruminating). Some authors argued that metacognitive skills are a necessary condition for promoting effective self-regulated learning (Dörr and Perels, 2019; Louca-Papaleontiou, 2019). In a study on social interaction in partnered learning among children aged 5 to 7 years, Larkin (2009, p. 156) found that children with collaborative leadership styles showed "more complex social metacognitive profiles", including paired reflection.

Caregiving practices can influence children's capacities when carers are perceived as the role model. A study by Horsthemke (2015) concluded that empathy can be learnt from parents and teachers through imitation of social behaviours, which includes respectfulness, sympathy and sensitiveness. The imitation of empathy by children, using significant adults in children's lives

as role models, was also found in the work by Iacoboni (2009).

Finally, as a word of caution, practitioners working with children may have to watch out for some of the negative applications of core capacities. Earlier in the report, possibly negative well-being outcomes were discussed for 'Reflecting' (rumination), 'Inquiring' (curiosity out of anxiety), and 'Sensing', 'Observing' and 'Listening' (distraction). Moreover, evidence from young children's use of intuition in mathematics-learning was found to be valuable for approximation, but not for accuracy (Borst et al., 2012). Therefore, an appropriate use of intuition, also in relation to 'Reflecting', should be trained and managed. Similarly, a focus on 'Observing' and 'Discerning patterns' in learning requires a careful metacognition and reflection through training and management. For instance, the risk of children using highlighting-bias (or the recalling of patterns or images to assume rules or answers) is more likely to occur in children with more attuned levels of observation, and working memory (Burling and Yoshida, 2017). Practitioners can learn from these risks, while acknowledging – although not inherently positive or negative – the value of core capacities, in order to provide guidance on best practices for the learning process.

### Preparing the practitioners

A key tenet of the L4WB Framework is that, in order to promote and protect core capacities in others, individuals (in this case, practitioners working with children) can themselves exemplify these capacities. Although a key dimension in the L4WB Framework, the evidence on the intergenerational transmission of capacities (see Section 3.1), and the interplay of capacities seen in the subsection above, gives merit to this approach.

When it comes to promoting 'Relaxing' and 'Reflecting' capacities in adults working with children, evidence from Garner et al. (2018) showed that training in breathing-awareness, meditation and social-emotional learning has led to improvements in the emotional competences of teachers, especially in those with preschool teaching experience. In a review of the *Cultivating*

*Awareness and Resilience in Education (CARE)* programme, it was found that the training improved the well-being, efficacy and mindfulness traits of teachers (Jennings et al., 2013). Similarly, the *Stress Management and Relaxation Techniques (SMART)* programme was found to improve mindfulness, focused attention, working memory and self-compassion, and to reduce occupational stress and burnout (Jennings et al., 2013).

Through mindfulness practices, teachers can build high levels of social and emotional competences and improve their dialectical, non-judgemental and self-regulating qualities (Grant, 2017). These competences in teachers may serve as examples for children, which can subsequently enhance children's well-being and the overall education environment (Bliss, 2017; Albrecht, 2018; Sisk, 2017). For teachers and physicians, a further benefit from mindfulness training is enhanced empathy and reduced burnout (Siegel, 2014).

Designed to improve philosophical collaborative inquiry approaches by teachers, Nichols et al. (2015) tested a professional development programme and found that it positively influenced students' questioning and verbal inquiry behaviours, and these traits lasted over time. Another inquiry training programme for teachers, in an Irish primary-school setting, has positively affected children's experience of scientific inquiry, and their understanding of the relevant concepts (Murphy et al., 2019).

Building on the evidence of brain activation in children, training programmes for teachers of young children have resulted in the increase in children's language and vocabulary development during book-reading (Wasik et al., 2006). Initially, the teachers were reluctant to ask the children questions, and this aspect had been also addressed by the training.

### 3.3 Policies and contexts

Policies and contexts need to be adapted to promote and integrate core capacities based on the evidence related to teaching practices, school conditions and family functioning, including parenting practices.

#### Policies to support parents and communities

Family functioning, parenting and the living conditions of children are not independent from each other, nor of the economy, local community and society more broadly (UNICEF Innocenti, 2020). What is evident from the studies across the nine core capacity reviews is that factors related to parenting conditions, housing conditions, violence at home and in the community, poverty, parental education, neighbourhood conditions (green spaces) and risks of criminality are all closely associated with the ability of caregivers and children to promote the development of core capacities.

Based on the available evidence to date, the following recommendations are made to promote actions that will enable families and children to best support the development of core capacities:

- Maintain and promote green and natural spaces in all community areas, which will ensure the children's access to green areas and natural light, as part of a varied 'living' environment.
- Support the provision of safe spaces for children. This implies the absence of violence, in all its forms, at home, in schools and communities, and eliminating all forms of prejudice and discrimination.
- Offer support to parents and caregivers, through lifelong learning opportunities, focused on guidance and ways to support good-quality relationships with children, and linking these opportunities to the development of core capacities in children.
- Recognize the interconnectedness of core capacities with child development, poverty, mental health, physical health and education outcomes, among others, and integrate these associations into a child and family policy portfolio. Accounting for children's well-being in relation to core capacities will strengthen families, and maximize the life chances of children, which in turn will optimize public investment in human and social development at national and international levels.
- Ensure that the public investment in children accounts for the age-related development of core capacities during childhood. The investment in children must match the evidence and practice, which should be regularly assessed and reviewed in the light of pioneering research and empirical evidence.

### Policies to support practitioners

For practitioners working with children, public policies can both enable and constrain the most promising practices for optimizing child development. From the perspective of core capacities, a number of steps can be considered to help practitioners promote and protect these developments:

- Gather and reflect on the evidence that highlights core capacity development across the life cycle, and starting at an early age. Following on from that, it is important to assess if public policy and practice are adequately supported (funded and structured) to promote and protect the infrastructure for children’s core capacity development (including early childcare centres, nurse–family partnerships, parental leave policies, health centres and schools).
- Support schools and teachers to promote core capacities as part of the curriculum and of broader social–emotional learning. It is important to plan this investment on the basis of priority learning goals by the age of the child, and evidence of complementary outcomes (e.g., listening and reading comprehension in the preschool period).
- Recognize the need for practitioners familiar with the teaching and work on core capacities. Facilitate training of practitioners by drawing from a myriad of promising practices in order to equip them with the necessary abilities to be role models for children and better to promote core capacities.
- Turn off ‘factory settings’, and support schools to build facilities that stimulate learning and the development of core capacities. Include flexible guidelines on classroom layout, adapt acoustics, allow for flexibility in seating arrangements during teaching and learning, let in natural light and fresh air when possible, and improve other learning settings as necessary. Encourage school systems to recognize and focus on the unique learning potential of each child.
- Encourage innovation and new modalities of teaching and learning. Reassess the traditional teaching across disciplines, so as to allow for inclusion of innovative teaching practices and tools, such as computer-based, auditory and visuospatial methods, drawing, group-work and nature-based learning, to name a few. Allow time for reflection and mindfulness practice in teaching settings, and sustain these interventions across all educational cycles.

# **The future for core capacities: evidence and action?**

## 4. The future for core capacities: Evidence and action?

So where now for core capacities, and how does the work to date inform a new vision for child development, or reimagining education? And what more do we need in terms of evidence and research – what have been the limitations of this study, and what remains untested? This section highlights a prospective reconceptualization, and challenges with new data and methods that provide food for thought as to the next steps in the development of the L4WB Framework and *Measuring What Matters*.

### 4.1 A necessary new vision for child development: Complex systems within systems

As noted elsewhere in this study, many of the tenets of the core capacities, and of the L4WB Framework, have been upheld by this review of the literature, and as such the Framework has offered a promising route for further research, for reimagining education, and for contributing broader social goals for human and spiritual development. However, there are a few key highlights of the Framework that seem most relevant, following this review.

#### Children are complex systems, in complex systems

The Bronfenbrenner socioecological model is a regular go-to for analysis of children's lives and well-being (Bronfenbrenner, 1979) – the main attractions of the model are the recognition, in a simple diagram, of the complexities of the world of the child, both near and far, while situating children in contexts rather than being abstracted from system contexts. Although it may be implicit, what is missing from the model, however, is a closer look at the child in the centre, and an appreciation of the complexity of the child's innate capacities in their own right. An acknowledgement is needed of the child's own dynamic and unique existence, and of the complexities of their innate capacities and attributes, which intersect with the complex living system in which they are centred. This is present in Bronfenbrenner's early work to some degree, through his conception of experience, and requires focus on each individual's capacity for experience (Downes, 2020). It is notable that Bronfenbrenner's (1979) ecological systems theory explicitly acknowledged the significance of experience as a key dimension for psychology.

The evidence of the nine literature reviews of core capacities has shown complex innate features of the core capacities, their interplay, the variability of development by age, as well as the unique potential of each capacity. Whether studies cover the practice of listening (Kim, 2016), social regulation (Haun and Tomasello, 2011), emotional regulation (Kochanska and Aksan, 2006) or more, the evidence has recognized the unique nature of each child in terms of development and potential. In effect, this evidence calls for children to be seen as complex systems and placed at the centre of the complex environments in which they live and

develop. The reconceptualization of the child's place in the system, if operationalized in future studies, will offer new perspectives on evidence for child development and policy.

### Reimagining education in a post-COVID-19 world

Any study in a post-COVID-19 world must reflect on the implications of the pandemic, and subsequent financial crises; on the meaningfulness of studies undertaken prior to COVID-19; and on recommendations for policy at a time of global reflection. In the majority of cases, the studies reviewed here were experimental, seeking to understand what can be achieved for children, and not estimating or generalizing conditions that may no longer be replicable. With this in mind, the findings reported here are broadly COVID-resistant.

Nevertheless, policy recommendations are affected. Public expenditure, and government borrowing, across the globe have been severely affected by the need to respond to COVID-19 (Richardson et al., 2020; UNICEF, 2021), which may mean policymakers are reluctant to invest in new approaches. Equally, calls to reimagine a world post COVID-19, with such great upheaval for school children worldwide, is a real opportunity to reimagine education.

Among the calls for more digital learning, changes to the ways assessments are taken and examinations are delivered, and reflections on the merits of standardized school systems and standardized assessments, a redoubling of efforts to promote social and emotional learning would be timely. Among these changes, core capacities can gain much-needed traction.

## 4.2 What more do we need to know? Implications for practice and research

A number of limitations, and gaps in the evidence, have to be considered prior to reviewing the implications for further research (links to the full list of working papers, with their own limitations sections, can be found in Annex 2).

Specific limitations include variability in search-hits by original core capacity terms, and the variable reliance on synonyms, which on occasion led to the risk of conceptual overlap (as was the case for 'Observing' and 'Reflecting', for instance). These conceptual choices were related to the conceptualizations of core capacities that were often initially broad. Theoretical links to suggested core capacities could be strengthened by specifying and narrowing-down initial definitions. Primarily spiritual perspectives were defined broadly. Another possibility is to study core capacities generally and see which core capacities result from the searches, rather than explicitly searching for pre-suggested core capacities. By taking this holistic approach, through a general search, core capacities can be further understood in relation to each other, and possible further suggested core capacities that resulted from some papers could be identified (e.g., such as additional core capacities sparked by 'Inquiring' and 'Sensing' reviews).

Further limitations include methodological limitations (including differences in the applied methodologies, and small sample sizes). These limitations effected causal inference and validity of some studies, and the review consistency of some core capacities.

The main gap in the literature included a variable coverage of child development studies. For example, the reviews of 'Relaxing' and 'Empathizing' capacities included few measurements of children's learning outcomes, such as student achievement. The limitation was the same for coverage of studies of intervention training programmes by core capacity, and coverage of studies from different disciplines (e.g., psychology and neuroscience, where 'Empathizing' and 'Observing' were less well represented).

Across all papers, coverage of sociodemographic conditions, including sex and socioeconomic status of children, and evidence of age-related development and trajectories, were affected by a lack of longitudinal studies. Thus, the review was unable to capture fully the time-changing components in the development of core capacities across childhood, to when children transition into adulthood.

Finally, comparative studies, or studies using national samples, or controlling for culture or ethnic background of children, were few and far between. This limited the external validity of the review, leading to an over-representation of Western perspectives, and a focus on English-language studies.

### Implications for further research

Future analysis of the *Measuring What Matters* project will include a 'phase 2', which will focus on primary data collection to operationalize the L4WB Framework empirically and to address limitations, such as the age-related development of core capacities, the interaction between the core capacities, and better integration of core capacities in the four perspectives of well-being.

The review has uncovered a need to assess and measure core capacities, and a critical need for longitudinal evidence in varied cultural and educational contexts. Longitudinal data will enable a better understanding of the portfolio of core capacities, and how capacities are able to meet a child's unique potential across the childhood. The benefits of a longitudinal study, in a nationally representative context, would allow for a time perspective and the use of national, specific factors that can integrate perspectives at community, school, family and child levels. Such an effort can also link to traditional measures of child well-being – aligned to policy and human development goals – to maximize the influence on public policy, and to assess further the counter-intuitive, sometimes negative, effects of core capacities on children's well-being. Another perspective that is largely missing is children's perspectives from their lived-experiences and own voices.

One final recommendation, which would benefit studies in this field, is to develop innovative methodologies for operationalizing and studying the development of core capacities from a spiritual perspective. Quantitative data and deductive evaluations will struggle to capture expressions of oneness, or connectedness, objectively, as much as they will with 'intention' or 'transcendence'. In order to create a common language', operationalization as a process can be used to find and measure transparent and falsifiable constructs. A rigorous meta-scientific approach to existing quantitative instrumentation in the field of spirituality, coupled with qualitative approaches, would do well to address this need.

# Summary messages

## 5. Summary messages

The review of evidence on core capacities and child development provides support for the distinct selection and analysis of each of the nine core capacities within the L4WB Framework. Indeed, the evidence suggests that each core capacity has the potential to embed reflections of mental, physical and emotional perspectives. The literature now focuses mainly on mental and physical perspectives, except in the case of 'Empathizing', for which studies with emotional expressions are most common.

The *Measuring What Matters* reviews also show direct associations between core capacities and child development/well-being. Furthermore, the studies unveiled that core capacities work together, and complement each other when explaining traits of child development. Finally, evidence shows that characteristics such as the age of the child, personal attributes, family and school backgrounds matter to varying degrees across the set of nine capacities. With this information, parents, practitioners and policymakers are better equipped to promote the knowledge and action of core capacities among children in various stages of childhood.

Yet, despite all of the evidence, the reviewed studies must be read as examples of what is possible to learn about core capacities in different contexts. To this end, the results need to be carefully interpreted in the framework of each context and setting (the living system), with the recognition that each child is unique (inner diversity) and may develop core capacities to different extents, in their own time.

This knowledge notwithstanding, there is a need for more research to address the gaps mentioned in this study. The field of study will benefit from better data and measurements that capture the complexity of children's worlds in relation to core capacities. With evidence, the design of policy actions that integrate the core capacities will likely benefit both the children themselves and the world around them.

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# Annexes

# Annex 1: Review papers and key statistics

Annex Table 1: Studies, dates, age coverage and sample sizes for each core capacity

Core capacities	No. of Studies	Average year	Average age youngest (SD)	Average age oldest (SD)	Average age range (years)	Average sample size (SD)
Discerning patterns	21	2012	6 (3)	9 (4)	3	970 (2824)
Embodying	30	2013	6 (4)	9 (4)	3	923 (1401)
Empathizing	34	2014	7 (4)	10 (5)	3	259 (171)
Inquiring	42	2014	5 (4)	9 (5)	3	121 (123)
Listening	31	2015	7 (4)	10 (4)	3	659 (1335)
Observing	27	2007	7 (3)	11 (3)	4	122 (126)
Reflecting	29	2015	7 (4)	10 (6)	2	191 (311)
Relaxing	35	2014	9 (4)	12 (4)	2	446 (1482)
Sensing	11	2014	6 (3)	10 (3)	4	381 (573)
<b>All studies</b>	<b>260</b>	<b>2013</b>	<b>7 (1)</b>	<b>10 (1)</b>	<b>3</b>	<b>452 (328)</b>

Note: (SD) = standard deviation. Where longitudinal studies are reported, the samples represent the numbers at Time 1.

## **Annex 2: Links to core capacity working papers**

for every child, answers

UNICEF Office of Research – Innocenti  
Via degli Alfani, 58  
50121 Florence  
ITALY

Tel: (+39) 055 20330  
Fax: (+39) 055 2033220  
[florence@unicef.org](mailto:florence@unicef.org)  
[www.unicef-irc.org](http://www.unicef-irc.org)  
twitter: @UNICEFInnocenti  
[facebook.com/UnicefInnocenti](https://facebook.com/UnicefInnocenti)

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