Understanding brain development online course

Evidence brief

The development and delivery of this online course was funded by the Thriving Queensland Kids Partnership (TQKP) as part of their 'Brain Builders Initiative'. TQKP received philanthropic funding from the Paul Ramsay Foundation, the John Villiers Trust, Hand Heart Pocket, the Bryan Foundation, and the Tim Fairfax Family Foundation.

TQKP partnered with the Queensland Brain Institute (QBI) at The University of Queensland to ensure an evidence-based, rigorous approach to support knowledge translation from science to practice. The QBI project team worked closely with TQKP and Emerging Minds on this project, to ensure that the evidence base underpinning these modules is current and rigorous.

Four key phases were undertaken in the identification, development, and translation of scientific knowledge for these modules:

- consultation and conceptualisation
- core message selection
- rapid evidence reviews; and
- expert panel reviews.

Consultation and conceptualisation

The conceptualisation and focus of these course modules, including the TQKP strategic plan and work program, were informed through consultation and co-design with a range of stakeholders. Engagements included a series of workshops with the TQKP Stronger Workforces working group. This group represents a range of stakeholders in various positions across the diverse sectors who interact with children and families. The TQKP Stronger Workforces working group identified the priority need, gap, and opportunity that informed the development of these course modules.

Broad stakeholder consultation was also undertaken via an online survey, to provide input on module development and potential practice examples. This survey was distributed to members of the 'brain trust' (a collaboration of key stakeholders across government, academia, industry, and philanthropy). This survey also provided an opportunity for stakeholders to share research evidence and other resources with the project team for consideration.

Core message selection

In response to consultation, a broad scan of international resources focused on implementation of neuro-informed policy and practice was performed. Resources were identified, documented, and disseminated across key contributors. Drawing from expertise across Emerging Minds, TQKP and the QBI, key core messages for inclusion in course modules were identified. Selection of these core messages was informed by the following principles: (1) reflects core intent of the program; (2) reflects broad neuroscience concepts; (3) focuses on relationships as central to early brain development; (4) is likely to resonate across broad sectors; and (5) builds core understanding of neuroscience that can be applied to practice.

Rapid evidence reviews

QBI undertook rapid reviews of each concept area to identify key content. Searchers applied the following inclusion criteria: (1) peer-reviewed systematic and narrative reviews only, published in Quartile 1 journals[1] within the last two years[2]; (2) defined and/or described the neurological process or concept of interest; and (3) focused primarily on those reviewing research with children and adolescents (although all age groups and clinical populations were considered). Papers were excluded if they: (1) reported on a single study (unless recent reviews have not been undertaken); (2) were published more than five years ago (unless seminal in field/more recent reviews have not been undertaken); (3) exclusively focused on specific clinical populations; or (4) relied solely on animal studies without application in human populations.

Research papers were identified through the following databases: PubMed, PsycINFO, EMBASE, and SCOPUS. Detailed search strategies for each key concept were translated into search terms for each database and filtered to include only peer-reviewed review articles published after 2021.

A total of 726 articles were identified through initial scanning (see Figure 1). Selection of studies for inclusion was conducted using Covidence software and documented. A review author independently examined the title and abstract of all records identified via electronic searches. Full-text versions of relevant studies were obtained and examined in detail to determine if they met the predetermined criteria.

Information from all included papers was summarised and translated into evidence briefs using introductory scientific language. Content from these evidence briefs was used by Emerging Minds in the development of the course modules.

Expert panel reviews

An expert review panel, including researchers, practitioners, and parents with lived experience, was established to review content and provide feedback across concept mapping and storyboard stages of development. Review panels included those with expertise in:

- neuroscience
- developmental science
- neuropsychology
- sociology
- education
- molecular biology
- dietetics and nutrition sciences
- social work
- disability
- family court
- clinical psychology
- neurodiversity
- early childhood education
- applied behavioural economics
- developmental and educational psychology.

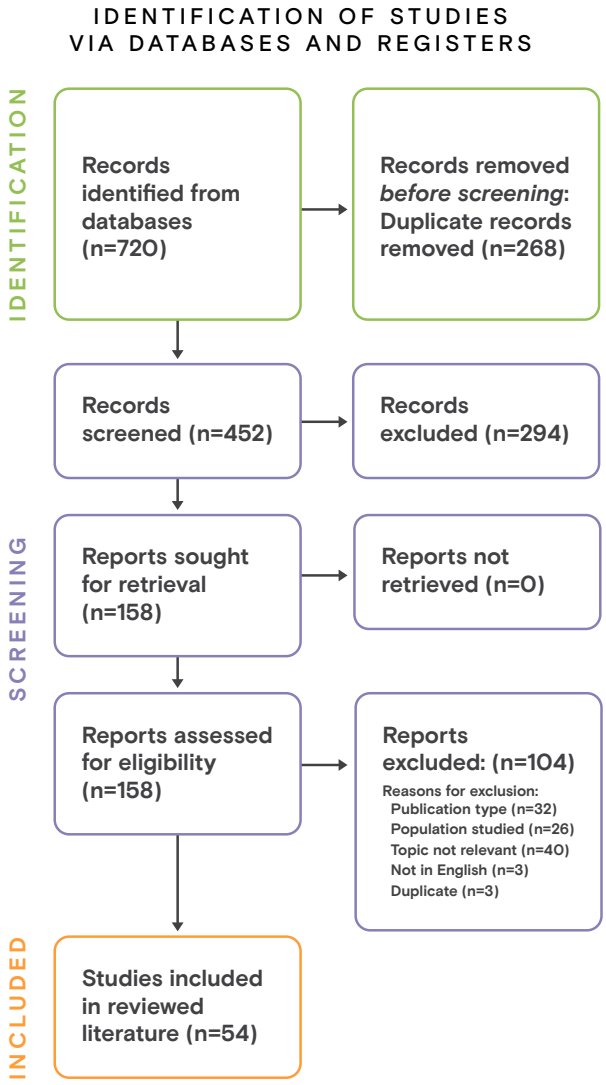

Figure 1: PRISMA diagram. Note: This represents the main literature search and only details the primary searches conducted. Additional searches abiding by inclusion and exclusion criteria were conducted in isolated databases for specific topics that required additional research support (e.g. sleep development and learning, social emotional and language development, play). These are not represented in this diagram.

[1] Q2 articles were accepted if identified as seminal in field or if publications in Q1 could not be identified.
[2] with option to extend to three, then four, to five years (max) if required.

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