

**A Neuroscience Approach; using Storytelling and Play
Therapy clients to develop Self-Regulation**

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Abstract

It is time for adults to disseminate the heavily-studied topic of neuroeducation to children, in order to revolutionise the method and stage in which self-regulation is explored and developed. This study has focussed on children engaging in play therapy; aged between seven and eleven years.

The aim of the research was to examine whether storytelling helps play therapy clients self-regulate. Four participants took part in the study, accessing a block of twelve play therapy sessions. Any changes to their self-regulation development were measured using pre and post qualitative, (some) quantitative data from the participant, the parent and the referrer. The researcher's session notes were included as part of the analysis. The findings of the study show that the introduction of neuroscience, via storytelling in play therapy sessions, has credibility and is an approach that suits those clients that have particular credentials.

Student's Declaration

I declare that this dissertation is my own work and has not been submitted towards any other professional qualification.

A handwritten signature in brown ink on a light beige background, reading "S Lewis".

Samantha Lewis

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1 Introduction

This research study has focussed on the development of self-regulation in children between the ages of seven to eleven years, through play therapy and the introduction of neuroscience via storytelling. Although Bergen and Woodin (2017) express ‘exponential growth in understanding of the brain’s function and development’, this focuses on the learning and practice of adults supporting children, rather than direct input to children. This research study investigates the benefits of delivering neuroscience directly to children in this age group.

Landreth (2012) shares the first recordings of play as a therapeutic approach by Sigmund Freud (Freud. 1959). According to McMahon (2009) play therapy has become a well-established therapeutic approach. Play therapy is predominantly a non-directive therapeutic approach (Landreth. 2012). Play is a natural form of development and communication that enables children to explore their experiences and their world through symbolic and fantasy play (Landreth. 2012). Play removes the need for verbal communication and Landreth (2012) suggests play as a form of communication that is the equivalent of verbalisation to adults.

The theory behind play therapy is underpinned by Axline’s Principles (Axline. 1993). It provides a therapeutic modality to enable a child to make sense of their world (Axline. 1993). As part of the therapeutic toolkit, a range of mediums (play equipment) including: small world, sand tray, role play, music, movement, art and crafts, clay, construction, masks, talking, therapeutic storytelling, creative visualisations, games, messy play, puppets and water. For the purposes of this study a model of the brain is included for all participants and for some, the story of “Tam’s Journey” (appendix eighteen) by Amanda Peddle (Peddle. 2019); half of the participant cohort accessed “Tam’s Journey”. A consistent therapy room and play

therapy toolkit were provided throughout the study for all participants. In play therapy, self-regulation development in children and young people is a frequent theme seen and sometimes it is an underlying theme too. The focus is often placed on observed presenting behaviours and there is a need to equip and develop children with the ability to regulate themselves so daily expectations are manageable (Waite and Ryan. 2020). The external behaviours are often witnessed by those around the child in school life, at home and in social contexts but the internal state – the dysregulation is not always recognised or acknowledged. A case where practitioners may benefit from looking at the roots rather than the leaves, to determine what is causing the external behaviour and can nurturing the roots (development) change the outcome (the leaves).

Self-regulation is a term that is frequently used and heard surrounding child development; the need to be able to self-regulate and manage emotional responses to situations is a constant requirement in everyday life for children, young people and into adulthood (Bergen and Woodin 2017). Pahigiannis and Glos (2020) suggest self-regulation has an impact upon health outcomes, positively and negatively depending on the experience. According to Pahigiannis and Glos (2020) self-regulation development starts from birth and is framed by life events. Treisman (2020) suggests that 'every interaction is an intervention,' each is a 'change agent' (Treisman. 2020) that can be 'trauma inducing' or 'trauma reducing' (Treisman. 2020) and is a seed for growth whether this be beneficial or detrimental to the person. According to Waite and Ryan (2020), for those children that have experienced traumatic life events, this can have 'profound effect on health in later life' (p.i) and their ability to development self-regulation capacity. This emphasises the importance of early intervention relating to self-regulation depending on experiences (Pahigiannis and Glos. 2020).

The need for self-regulation is great and is an underlying theme in referrals seen by the researcher. Shanker (2020) highlights the demands on children and the expectation for them to engage in education, however, Shanker (2020) also suggests this can only be achieved when their '*neurobiological and emotional states are supported*' (p.xiv) enabling *character development* (p.xiv) as well as learning (Shanker 2020).

Emotional dysregulation is a common factor in and throughout life and it can happen for all ages (Conkbayir. 2023). The ability to self-regulate can be particularly challenging whilst experiencing dysregulation and subsequently when seeking ways to manage their emotional responses. According to Conkbayir (2023), a lifetime of challenges, in all walks of life can be experienced if the inability to self-regulate is continual. In the United Kingdom, one in six children are experiencing mental health difficulties and therefore the need for emotional support is significant (Analytical Services, Population Health, Clinical Audit & Specialist Care Team. 2023).

This research study explores what self-regulation is, what it looks like and whether self-regulation can be developed and achieved by introducing children to neuroscience and for them to understand how the limbic system works. Baron et al (2020) suggests that make-believe play supports the skills of self-regulation, consequently the modality of play therapy and the toolkit mediums provide that opportunity for growth and studying the integration of play therapy and neuroscience through metaphor is valuable (Baron et al. 2020).

The theory surrounding the development of self-regulation has experienced significant investment from researchers but research surrounding the development of self-regulation through play therapy and neuroscience via storytelling is barely existent, a concept that is yet to be explored and scientifically analysed. Self-

regulation is interwoven with emotional health (Alexander et al. 2021) and a prominence placed on the importance of emotional health to scaffold happiness and wellbeing (Alexander et al. 2021), the demand for this research study focus is vital. The other subject areas (neuroscience, play therapy and storytelling) have been scientifically researched independently but not as an amalgamation of these fields. Play therapy and neuroscience delivered through therapeutic storytelling proposes an alternative model to develop self-regulation in clients.

This study focuses on children between the ages of seven and eleven, being as this age group are at the concrete operational stage and have the developmental schemas to apply logic, try out new, build upon their existing learning – the concrete operational stage, according to Piaget's Stages of Development (Piaget. 2000). During this concrete operational stage children understand the concept of order and a sense of right and wrong (Malerstein and Ahern. 1979); this theoretically can support self-regulation capacity.

The published book, "Tam's Journey" by Amanda Peddle (appendix eighteen) delves into the limbic system through a boy called Tam who is finding it difficult to manage his emotional responses (Peddle. 2019). Hetty the sloth introduces Tam to neuroscience and explains how the brain works (figure five). The story of "Tam's Journey" introduces the brain structure known as the amygdala to the reader. It is commonly thought to provide the core of the neural system that supports the body's safety/survival system and how it impacts on emotional and behavioural responses (Peddle. 2019). The fight, flight and freeze responses are explored; how they present in daily life. Conkbayir (2023) shares that Peddle (2019) does not focus on the labelling of emotions but recognising emotional responses. The story of "Tam's Journey" examines the amygdala using metaphor, enabling the reader to realise that the brain's survival system has not evolved from the time of cavemen but the

modern-day person (brain) is expected to use the same survival system to maintain physical and a sense of safety in what is now, a busy world (Peddle. 2019).

Play therapy is predominantly a non-directive therapeutic approach, although directive approaches are utilised depending on the needs of the client (Yasenik and Gardner. 2017). The play therapy dimensions model is designed to support clinical decision in relation to theoretical approaches (Yasenik and Gardner. 2017). Yasenik and Gardner (2017) show how the play therapy dimensions model is dissected into quadrants: active utilisation (non-directive consciousness), open discussion and exploration (directive consciousness), non-intrusive responding (non-directive unconsciousness) and co-facilitation (directive unconsciousness). This study investigates whether using a scheduled directive unconscious approach (co-facilitation) enhances the clinical treatment to support self-regulation.

1.1 Research Question

This research study scrutinised the question:

Can the delivery of neuroscience through storytelling help play therapy clients to self-regulate?

1.2 Aims and Objectives

The overall aim of this research was to explore whether play therapy and storytelling can collaborate to develop a therapeutic approach that delivers neuroscience through metaphor and assists the development of self-regulation.

The objectives were to:

- Measure a participant's self-regulation development
- Explore the impact of amalgamating play therapy and neuroscience through

storytelling to cultivate self-regulation in children.

2 Literature Review

2.1 Therapeutic Storytelling

In 'Using Story Telling as a Therapeutic Tool with Children' (Sunderland. 2017), Sunderland (2017) states that humans can be overwhelmed by their thoughts, feelings and experiences. They tend to 'bottle them up' and this can lead to 'leakage' in everyday life (Sunderland. 2017). Sunderland (2017) states that verbalisation is not the natural language for children but image and metaphor is; thus strengthening the value of therapeutic story and the purpose of the research study. Everyday language can be a barrier to a child's emotional state (Sunderland. 2017), leading to poor mental health and wellbeing. Taking into consideration the ongoing impact of the Covid-19 Pandemic, which in the United Kingdom started March 2020) children and young people have experienced significant changes in their daily routines – school, home and community (Analytical Services, Population Health, Clinical Audit & Specialist Care Team. 2023). According to Analytical Services, Population Health, Clinical Audit & Specialist Care Team (2023), one in six children in the United Kingdom (UK) currently have a probable mental health disorder. The need to emotionally support children is high. By utilising therapeutic story, allowing the child to explore their process in their own way and using my metaphor, this may lead to empowerment and learning. To successfully communicate with children, using the child's language is most fruitful (Sunderland. 2017).

The story, "Tam's Journey" is written by Amanda Peddle (appendix eighteen) and it has been selected for the study. There is very little literature that explores neuroeducation for children, particularly by using metaphor. The age group of the study's participants are at the concrete operational stage in their development

according to Piaget (2000), utilising already established preoperational skills from their earlier years, using words and symbols they have the building blocks to apply logical reasoning to new concepts (Piaget. 2000).

“Tam’s Journey” is based on a boy; Tam, who struggles to manage his emotional responses and regulate himself (Peddle. 2019). In the story, Hetty (the sloth) discovers a very cross Tam in the forest (appendix eighteen p.6-10). Hetty the sloth introduces Tam to neuroscience; to explain why he feels and responds in the way he does (appendix eighteen p. 12-26). Through visuals and explanation, Hetty introduces Tam to the amygdala and its purpose; to keep him safe (Peddle. 2019). Through the metaphor of Tam and Hetty; the reader learns (appendix eighteen p16-20), that Tam’s emotional responses are normal and that humans nowadays have the same emotional responses as the caveman (Peddle. 2019). Peddle (2019) suggests that the pressures of modern-day life far outweigh the caveman-era and that the “emergency system” (the amygdala) becomes confused (appendix eighteen p18). The story shows the reader how Tam’s coping mechanism is leaving him in a cycle of behaviours that he is unable to move on from (Sunderland. 2017). Through metaphor, the Amygdala - our safety system and its responses are introduced to the reader (Peddle. 2019). The visual of the brain, body and amygdala is the ‘admission ticket’ (Sunderland. 2017) Hetty uses to help Tam to understand his neurological responses and self-regulate (appendix eighteen). Bruner (1996) supports this, he suggests two motives for telling stories – making sense of something for yourself or conveying messages to others through metaphor.

2.2 Neuroscience

According to Hong and Christie (2016), Kay (2009) and Siegel (2012), experiential activity such as play enhances neurological function and the media of the relationship significantly develops brain function. Play is the main foci in this study.

All research participants have engaged in play regardless of whether they accessed “Tam’s Journey” as part of their treatment plan. Play provides a medium to develop self-regulation, social skills and mature a nervous system that is responsive to daily life challenges and experiences (Wheeler and Taylor. 2016).

Following on from the development of the brainstem (vital for involuntary bodily functions such as heart rate, sleep, breathing), the limbic system (figure five) is the next area for growth; the home of the amygdala (Nolvi et al. 2021). According to Nolvi et al (2021), the amygdala is naturally a disruptor to self-regulation as if it generates negative emotion during its quest to maintain safety, to the mind and body. Understanding the amygdala’s function, purpose and limited responses (fight, flight or freeze); enables the person to recognise and validate their physiological responses whilst developing the ability to self-regulate. It is known that self-regulation develops in early childhood (Nolvi et al. 2021) but life experiences and trauma can disrupt this capacity and the development. Play therapy clients are generally referred to a therapist due to an experience that has impacted upon their physical and emotional health (Play Therapy United Kingdom. 2023).

According to Youth in Mind (2012), the SDQ is globally used in developmental, genetic, social, clinical and educational research studies. The Strengths and Difficulties (SDQ) Questionnaire has been assigned as the research’s measuring tool given its capacity to measure emotional and physical phenotypes; self-regulation development (Deutz, Shi, Vossen, Huijding, Prinzie, Deković, van Baar and Woltering. 2018). According to Holtmann, Becker, Banaschewski, Rothenberger, and Roessner (2011), the SDQ captures the client’s presenting dysregulation with the aim to develop regulation. The SDQ will emphasise the participants’ self-regulation development prior to (appendices eight, nine and ten)

and following (appendices five, six and sixteen) the therapy (the study).

The amygdala could be likened to the body's surveillance system and is responsive to potential threats to the person via the body's senses; sight, smell, touch, taste and hear (Nolvi et al. 2021) and this is highlighted in "Tam's Journey" (appendix eighteen p20-21). Exposure to a (series of) traumatic event(s) can leave the amygdala in a constant state of alert, activating a continual state of survival and hypervigilance (Nolvi et al. 2021). Hawkins (2022) suggests that other complex scientific findings have been analysed and observed and over time, these complex structures have been made accessible and taught to children. Therefore it is reasonable to assume the understanding of parts of the brain and their function is possible for children too (figure five).

According to Stewart and Field (2016), shared that Cozolino (2010) believed that therapists own professional training surrounding the field of neuroscience, permits them to develop interventions that promote neuroplasticity, supporting the intention and purpose of this study – a neuroscience approach, using play therapy and storytelling to develop self-regulation in clients, utilising the therapist's knowledge and skillset.

2.3 Play Therapy

Play is an essential part of social and emotional development. It is one of the seven primary-process emotional systems that humans are born with (National Institute of Play. 2023). It serves as a basic motivational drive and informs the development of self-regulation (National Institute of Play. 2023). This research study explores the extent of self-regulation development and capacity in play therapy clients.

Play therapy sessions are primarily initiated utilising a non-directive approach, providing an environment for the client to take the lead and the therapist utilising a non-directive receptive method to facilitate the needs of the client. Accepting them as they are by developing a warm, friendly therapeutic relationship and providing a sense of permission to express themselves freely are the principles that underpin the practice and theory (Axline. 1993). Wheeler and Taylor (2016) suggest that the safety within a secure relationship frees up the child and encourages growth, development and flexibility to manage the world around them. Kestly (2014) uses the term “play sanctuary” to describe a safe and welcoming play therapy room. Ultimately, we cannot expect a child to process their thoughts, feelings and experiences in an environment that leaves them feeling quite the opposite – unsafe.

In accordance with the Play Therapy Dimensions Model (Yasenik and Gardner. 2017), a play therapist generally initiates a session in quadrant three – non-intrusive responding. Specifying that “Tam’s Journey”; a neuroscience story was read in set sessions for the study, lent itself to a directive, unconscious (co-facilitation quadrant) session initiation and this challenged the fundamental principles and structure of the play therapy model. In addition, the application of neuroscience in play therapy is in its infancy (Wheeler and Taylor. 2016), therefore an opportunity to revolutionise play therapy practice and approach.

2.4 Self-regulation

The expectation for a child to develop and establish self-regulation capacity is frequently observed in home, school and social settings. This is supported by Lai, Yung, Gomez and Siu (2019) who state ‘an individual needs to be able to adapt and respond appropriately to successfully interact with the environment’ (p.1-9) and in doing so, self-regulation is executed by adapting to the situation (Lai, Yung, Gomez and Siu. 2019). The relationship; the attachment between a child and their main

caregiver provides a sense of security for the child to explore the world before retreating to their secure base (Bowlby. 1988). This concept of parenting (Bowlby. 1988) was shaped by the 'pattern of attachment' and 'Strange Situation' work by Ainsworth et al (1978). According to Ainsworth et al (1978), the attachment between mother and child, father and child depends on how the child is treated with each of the parents. Shanker (2022) suggests that the secure attachment is instrumental in children exploring social situations and learning about how people think, act and regulate themselves. The warm and friendly therapeutic relationship developed between client and play therapist (Axline. 1993) provides the secure base and therefore the space to explore social behaviours and self-regulation.

When seeking to understand what self-regulation is, Nolvi, Tuulari et al (2021) state that self-regulation is a term used to incorporate a person's internal and external behaviours; encompassing the emotional, behavioural and cognitive functions. According to Shanker (2022), there is no recipe in managing behaviours because every child is unique. Shanker (2022) used the metaphor of Jacob's Ladder and Jacob's dream in the English Standard Version of the Holy Bible (English Standard Version: Holy Bible. 2001) as being in a constant state of flux – growth and regression, moving up and down. Using the metaphor of Jacob's Ladder (Genesis 28:12), Shanker (2022) states that children can access help to climb the ladder (Shanker. 2022) and this binds itself with (from a child's perspective) whether self-regulation develops when they understand the amygdala's role. The amygdala; the survival and safety system (figure five) situated in the limbic system (Conkbayir. 2023), plays a key role in self-regulation and can work as a disrupter; generating negative thinking (stresses) patterns (Nolvi, Tuulari et al. 2021). Understanding the amygdala's role and purpose equips children to manage their emotional responses and develop self-regulation capacity. This concept underpins the principle of this study.

Taking into consideration the perspective of Nolvi, Tuulari et al (2021) that self-regulation incorporates internal and external behaviours of an individual, Shanker (2020) recommends a five-step method that is designed to 'understand' a child's behaviour rather than a program for 'managing' their behaviour. It consists of: reframe, recognise, reduce, reflect and respond. This study shifts the focus from the adult leading to the child taking the lead (Axline. 1993). A child's capacity to recognise/identify their presenting needs and understand their neurological responses, leads to self-actualisation, in line with Maslow's Hierarchy of Needs (McLeod. 2018), resulting in self-regulation development.

Developing understanding of the self requires empathy, compassion and patience. The play therapy process provides the space for the child to explore themselves and recognises that the child 'knows' what they need; a holistic approach rather than focus on the external behaviours that are seen in daily life by others. According to Shanker (2020), there is no recipe in child development and not only because humans are all different but because the stresses around them are forever changing and therefore adaptability is required. The desire is not to strengthen a child's ability to endure stress but to develop their capacity to understand why something is stressful and/or causing dysregulation (Shanker. 2022). Through the amalgamation of storytelling and play therapy as a therapeutic approach, the study's aims were explored.

2.5 Tam's Journey

The story of "Tam's Journey" was delivered during the study. The author of "Tam's Journey" is Amanda Peddle and the creation and development of "Tam's Journey" is theoretically influenced and shaped by three psychologists (Peddle. 2022). The author analysed and entwined the psychologist theory; Kolb's Experiential Learning Cycle, Rogers' Person Centred Approach and Egan's Skilled Helper Model

framework to form the “Tam’s Journey” model (Peddle. 2022). According to Peddle (2022), Tam’s is ‘neuro-educational in design’ and a cross-disciplinary venture (see table one) incorporating cognitive neuroscience and developmental psychology (Trníková and Petlák. 2012). According to Peddle (2022), the psychologists studied to inform the supporting theory to “Tam’s Journey” are: David Kolb – Experiential Learning Cycle, Carl Rogers – Person-Centred Approach and Gerard Egan – Skilled Helper Model (Peddle. 2022).

2.5i David Kolb Theory

According to Peddle (2022), Kolb’s Experiential Learning Cycle (see table two) is based upon two levels: a four-stage cycle of learning and four separate learning styles (McLeod. 2019). Experiential learning whereby the learner ‘touches all four bases’ (Peddle. 2022). According to Kolb (2014), the experiential learning framework is widely recognised and validated for curriculum development, lifelong learning as well as instructional design. Physically reading the story of “Tam’s Journey” in play therapy sessions gives the client a ‘concrete experience’, an introduction to a new idea/experience and/or an opportunity to challenge old systems/experiences through metaphor (Peddle. 2022). Clients engaging with the literature and illustrations led to the ‘reflective observation’ where they considered their experiences and understanding (Peddle. 2022), using metaphor. Tam’s learning about the amygdala from Hetty the sloth, the positioning of the amygdala in the limbic system (figure five) and its role – to keep safe, survival (Peddle. 2019). The story is relatable and encourages the reader to reflect on Tam’s experience but also the reader’s own experiences of managing ‘big feelings’ (Peddle. 2022) and ‘give rise to a new idea, or a modification of an existing abstract concept – ‘Abstract Conceptualisation’ (Kolb. 2014) and applied by Peddle (2022). The ‘Active Utilisation’ stage in Kolb’s model is activated on page twenty-eight of the story,

whereby the reader is encouraged to draw and 'list the worries they have the most feelings about' Peddle (2019), explore their own experiences and learning.

Kolb's theoretical approach also lends itself to the theory behind the play therapy model; providing clients with a therapeutic space to explore, experience and experiment with concepts and situations that have challenged them in the past or that are a new concept to them.

2.5ii Carl Rogers Theory

Carl Rogers developed the Person-Centred Approach; a non-directive approach that animates the client to see the world through their own way, in their own unique way (Brodley. 2006). According to Peddle (2022), Rogers believed that clients within themselves, have vast resource for self-understanding and for altering their self-concepts, basic attitudes, and self-directed behaviour.

Three core conditions (see figure three) formed his model: congruence, empathy and unconditional positive regards (Rogers. 1980). Rogers (1980) maintained that the therapeutic relationship was crucial and authenticity (congruence) plays an essential part in clients' therapy. Not only does his thinking tie into the play therapy principles; (therapist) develops a warm and friendly relationship with the child (Axline. 1993) but also "Tam's Journey" and the consideration of how the story is explored/delivered in the study's play therapy sessions. Unconditional positive regard; accepting the client as they are (Axline. 1993) provides clients with the freedom to grow, maximise their potential and develop self-actualisation, which binds with human physiological needs - Maslow's Hierarchy of Needs (Maslow 2018) and the study's purpose. How the client chose to utilise the play therapy room was their choice, how they chose to explore the story, "Tam's Journey" was their choice. Considering the empathy core condition, Rogers (1959) stated, "The state of empathy, or being empathic, is to perceive the internal frame of reference of another

with accuracy and with the emotional components and meanings which pertain thereto as if one were the person, but without ever losing the “as if” condition” (p.184). The Axline Principle; the child’s feels are recognised in play by the therapist (Axline. 1993) amalgamates with Rogers’ viewpoint surrounding empathy. The person-centred, non-directive approach dovetails into Axline’s Principles that underpin the play therapy model (Axline. 1993). According to Peddle (2022), “Tam’s Journey” is a neuro-educational story resource that explores why feelings affect behaviour and helps to manage responses – self-regulation through the metaphor of Tam and Hetty.

2.5iii Gerard Egan Theory

According to Jenkins (2000) Egan’s framework - Skilled Helper Model is person-centred and is designed to empower people to manage their own problems and to fully use undeveloped opportunities to create long-lasting change (Peddle. 2022). It is an approach often used in coaching and is based upon three stages (see table four) of development: current scenario, preferred scenario and strategy: getting there. This interconnects with Axline Principle, ‘The therapist respects the child’s ability to solve problems for themselves (Axline. 1993) so supports the play therapy model as well as neuroscience through storytelling. Sunderland (2000) states that story can immediately communicate with children with greater impact rather than ‘everyday language’ which can create barriers to a child’s understanding and interpretation. Sunderland (2000) likens play to an ‘language of imagining’, a child’s natural language (Sunderland. 2000). Introducing neuroscience through storytelling empowers the child to recognise and manage their responses – developing self-regulation.

2.6 Cognitive Development

The study focuses on children between the ages of seven and eleven. In accordance with Piaget's stages of development. At this age children are at the concrete operational stage and therefore have the developmental capacity to take on board a concept using concrete objects. They are already secure in using words and images (symbols), the preoperational stage and can now employ these schemas to make sense of neuroscience through storytelling and play (Piaget, 2000). The underlying motivation advocates the importance of self-regulation and promotes mental health. On behalf of the National Health Service (NHS), Newlove-Delgado et al (2022) reported that '18% of children aged seven to sixteen years had a probable mental disorder', highlighting the urgent need for children's mental health services.

2.7 Summary

Taking into consideration the psychology of the three theorist's that support "Tam's Journey"; the work of Peddle (2022), integrating it with the play therapy model and the principles that underpin it (Axline. 1993), the study's approach has presented an exciting and innovative opportunity to try out new concepts; seek alternative outcomes, develop understanding of self-regulation through experiential learning and development. This has supported the examination of whether play therapy and storytelling could collaborate to explore and understand the neuroscience of self-regulation and whether storytelling enhances the learning process around neuroscience of self-regulation.

Reflecting on the detailed literature, the unification of play therapy and neuroscience through storytelling to develop self-regulation is a concept that has not been investigated heavily. The subject areas in the review have all been heavily researched but the collaboration of play therapy and storytelling to explore and

understand the neuroscience of self-regulation is lacking, and as such an innovative concept. Whilst play therapy is primarily a non-directive therapeutic approach, the study challenges this practice – a directive approach has been introduced, through the reading of “Tam’s Journey” (appendix eighteen); exploring the amygdala and the body’s responses through metaphor.

3 Methodology

This chapter describes and explores the employed methods in relation to the research study’s objectives, the procedures followed and the ethical considerations made surrounding the study. The participants will engage in a block of twelve play therapy sessions and will be separated into two sub-groups: those engaging in play therapy only and those accessing both play therapy and neuroscience storytelling via “Tam’s Journey”. The intention is to measure self-regulation development for the participants prior to and following the episode of therapy.

The sub-headings cover an overview of the methods and how they were used to facilitate the study. Participants; the age group and development stage of the participating clients is delved into. The analysis of and decision-making surrounding the selection of the Strengths and Difficulties Questionnaire (SDQ) as the employed quantitative measuring tool is specified. Personalised Hoped for Outcomes (HfO) were initiated and generated from the initial referral process, per participant. The HfO formed part of the qualitative data and subsequently part of the review process; the semi-structured review interviews. The therapist process diary supplemented the HfO; capturing progress, sessional activity and identifying therapeutic themes.

3.1 Study Design

A multiple exploratory case study was the exercised method for the inquiry; each case study was its own entity but together, the four case studies formed an

exploratory study (Thomas. 2017) using mixed methods; qualitative and quantitative.

3.1i Therapeutic Setting

The study took place in two mainstream primary school settings the researcher had previously delivered play therapy sessions within their already dedicated and established play therapy rooms.

3.1ii Therapeutic Approach

In accordance with the Play Therapy Dimensions Model (Yasenik and Gardner. 2017), the Tam participants' were initiated in the 'co-facilitation' quadrant for sessions one, five and nine – the dedicated sessions for "Tam's Journey" to be read. The rest of the Tam participants' session were initiated in 'non-intrusive responding' quadrant (Yasenik and Gardner. 2017). Beginning from a different approach, all sessions for the participants not engaging in Tam began in the 'non-intrusive responding' quadrant (Yasenik and Gardner. 2017). Landreth (2011) states 'the atmosphere in the playroom is of critical importance' (p125). It establishes the initial stages of the therapeutic relationship and supports a sense of permission so the child can freely express themselves (Axline. 1993). The session introduction included the routine, boundaries and safeguarding procedures of the therapy room, ensuring ethical practice was maintained.

3.2 Case Study Methodology

An exploratory case study method is utilised in the initial development stages in understanding programs and/or phenomenon, according to Chopard and Przybylski (2021). The use of this case study methodology has been applied for this study, four individual case studies were fulfilled to measure the impact of the program per

participant and regarding the intervention's overall 'evaluability' (Chopard and Przybylski. 2021).

The exploratory case study methodology has been applied to the study, it is an active learning method that is beneficial to a range of applied-learning styles (Orr and Weekley. 2019). According to Bell and Waters (2014), a systematic approach is required for case study researchers and no method is off-limits, however, observation and interviews are commonly used. Observation and interviews formed part of the study's findings and analysed data, measuring the participant's self-regulation development.

The exploratory case study method provided flexibility and scope to examine the impact of the study on each participant individually, maintaining focus on their own individual needs; reasons for referral, the personalised population hoped for outcomes and measuring their progress. Thomas (2017) refers to this as an 'in-depth' explorative research. The researcher collated and analysed the data for all four participants and collectively explored the outcomes. This is supported by Thomas (2017), who likens the case study method to an umbrella; looking at a range of activity, observing the finer details. The 'umbrella' (Thomas. 2017) provides a holistic overview of the participants' needs which produces reasonable research coverage and supplies the feed of dual-data; qualitative and quantitative (Bell and Waters. 2014).

3.3 Research Design Overview

To explore the effectiveness of play therapy and neuroscience via storytelling to develop self-regulation, the research plan is constructed as following: the referral process by the referrer who coordinated with the parent/carer to gain parental consent. The researcher then communicated with the parent/carer to capture an

overview of the participant's general presentation at home; what is going well, what caused them concern and their hoped for outcomes. The researcher met with the participant to share the information sheet, answer queries and gain assent (appendix twelve) and the four participants' sessions were initiated. The two sub-groups (Tam and non-Tam) followed their own treatment plans; Tam participants accessing the play therapy room once a week for forty minutes, with "Tam's Journey" (appendix eighteen) delivered in sessions one, five and nine. Non-Tam participants accessed the therapy room weekly for forty minutes at their allotted time. Throughout the researcher kept a process diary to record session information and identify therapeutic themes. At session twelve, the research study came to an end. The review process was activated; the therapist communicating with the referrer, parent/carer and participant to capture their presentation at home, school and the participant's perspective of daily life. The analysis of data and outcomes then investigated by the researcher.

3.4 Referral Process

The participating school's identified 'gatekeeper' made the referrals and liaised between home, school and therapy. Similar to the parent/carer, they shared key information with the therapist so the child's presentation in school was captured.

'The referral process was made up of three components; the referral form, parental consent and the completion of SDQs that formed the entry data from the referrer, parent/carer and participant. The referral form captured the participant's detail such as name, age group, ethnicity, presenting needs and diagnoses, the reason for referral and hoped for outcomes (see appendix eleven). This was the initial participant overview for the researcher. The parental consent form (appendix thirteen) was their agreement for their child to take part in the study (Thomas, 2017). This was provided with the parent information form to introduce the study;

explaining the nature of the study, the potential benefits, the ethical and confidential procedures (Thomas. 2017). The SDQ informed and supplied entry (quantitative) data (appendices eight, nine and ten) in relation to the self-regulation capacity of each participant.

A criterion-referenced test; an assessment of a person's ability to meet a criterion regardless of another person's progress (Thomas. 2017) was formed from the hoped for outcomes. They created a personalised measure to the client's self-regulation development at the reviewing stage (after twelve sessions). A standardised hoped for outcome for the review was included, providing rigour to the research: 'Has the client's ability to regulate themselves developed since the start of the play therapy sessions?'

Following the completion of the referral process by the referrer and the parent/carer, the focus was placed onto the child (participant). Although the parent/carer is responsible for giving overall consent, each participant was given the option to opt in or out of the study. According to Ferrer-Albero and Díez-Domingo (2021), assent forms should be easy to read and understand, they should support decision making. An information sheet accompanied the assent form (see appendix twelve), the participant was actively encouraged to consider their participation and ask questions regarding the research study before their assent.

3.5 Semi-structured Review Interviews

The review interviews were carried out by the researcher, three interviews per participant formed part of the process; with the referrer, parent/carer and participant. Parent/carer and referrer interviews were carried out in writing by both parties, providing SDQ post-therapy data (appendices five and six) and review feedback (appendices one and three); written data from the 'primary sources' to avoid

tampering through summarisation (note-taking) by the researcher (Thomas. 2017). Completion of the participant review was carried out face-to-face and the participant completed their post-therapy SDQ (appendix sixteen) and review paperwork (appendix two); a direct, primary source approach (Thomas. 2017).

3.5i Review Interview Methods

The hoped for outcomes were the initial focus; reviewing the personalised outcomes populated by the referrer, parent/carer and participant at the initial referral stage (appendix seven). Five possible responses were employed to the research: Worse, Same, Little better, Mostly better and Much better (see appendices one, two and three). The five responses align with Fortuna; the clinical management system for Play Therapy United Kingdom (PTUK) members' governance (Play Therapy United Kingdom. 2023).

The three review questions (see appendices one, two and three) were designed to be invariable, simple and concise for the three reviewing parties for each participant, providing rigour. They were: how are they at home/school? What is going well at school/home? What is causing you concern? The qualitative data is constructed from three viewpoints – participant (client), parent and referrer; an interpretivism approach. All parties inputting their observations of the participant's self-regulation development and progress, acknowledging the participant's internal and external perspective and the external perspective of the referrer and parent (Thomas. 2017) by maintaining the focal point but each with their own slant on the outcomes, depending on the participant's presentation but also with their own interpretation and maintaining the primary source (Thomas. 2017). Each participant was read their hoped for outcomes for them to give a response by making a mark on the table provided in the review and then their questions, they independently wrote their own responses. The specific post therapy SDQs per party (appendices five, six and

sixteen) were completed by themselves; the primary source (Thomas. 2017).

3.6 Data Collection Methods

A mixed method research study but predominantly, a qualitative method and an amalgamation of qualitative data was obtained from the research. An element of quantitative data is integrated through the application of the Goodman's Strengths and Difficulties Questionnaire (Goodman. 1997) as a measuring tool however, the Strengths and Difficulties Questionnaire (SDQ) is based upon the completer's perception of the participant's presenting behaviours so is of a qualitative nature. Holtmann et al (2011) state the SDQ has validity in measuring dysregulation phenotype. A pre and post SDQ was completed by the participant, referrer and parent/carer to audit the participant's progress, the study and evaluate the clinical practice (Youth in Mind. 2012). The quantitative SDQ results and the qualitative data from reviews and the therapist process diary provide knowledge and perspectives from different social constructs; an interpretivist approach (Thomas 2017). The sub-headings below set out the data collections independently.

3.6i Strengths and Difficulties Questionnaires

To measure a participant's self-regulation; their emotional and behavioural symptoms, the Strength's and Difficulties Questionnaire (SDQ) was employed (Deutz, Shi, Vossen, Huijding, Prinzie, Deković, van Baar and Woltering. 2018) and formed the study's small sample of quantitative data. participant, parent/carer and referrer completed pre and post-therapy Strengths and Difficulties Questionnaires (SDQ) to measure self-regulation development in the amalgamation of play therapy and neuroscience through storytelling. Although this data is of a quantitative nature, it is established by the completer's perspective and captures the internal and external behaviours through the components: pro-social, hyperactivity, emotional, conduct and peer relationships (Lai et al. 2019). The use of the SDQ is already

widely established in play therapy practice and due to the underpinning purpose of the measuring tool. Alternative measuring tools were researched in the proposal stages, these included: Leuven Scale, Connors Behaviour Rating, the Sensory Processing and Self-Regulation Checklist (Lai, Yung, Gomez and Siu. 2019), the Teacher Self-Control Rating Scale (Work, Hightower, Fantuzzo and Rohrbeck. 1987). The SDQ was deemed suitable and selected due to the self-regulation theory that underpins the SDQ (Deutz, Shi, Vossen, Huijding, Prinzie, Deković, van Baar and Woltering. 2018). It was able to capture data from the neuroeducation introductory to play therapy; investigating and ascertaining if self-regulation develops in play therapy clients, as a result of delivering neuroscience through storytelling.

The five areas of child development (pro-social, hyperactivity, emotional, conduct and peer relationships) were captured by the SDQ measure the participant's phenotypes and self-regulation capacity (Goodman, Ford, Simmons, Gatward and Meltzer. 2000). Self-control is a key quality required for everyday life (Work, Hightower et al. 1987) and Ridder et al (2012) state the importance of self-regulation; to develop self-control for success in life.

The pro-social data is scored separately to the other four developmental themes. It measures kind, helpful behaviours, empathy and awareness of others (Goodman, Ford, Simmons, Gatward and Meltzer. 2000). Whilst the other four themes have an independent scoring system, they also amalgamate to establish a 'total difficulties' score, table seven demonstrates how to interpret the SDQ data. Out of ten, the higher the score (table seven) for pro-social, the more aware and empathic the participant (Goodman, Ford, Simmons, Gatward and Meltzer. 2000). The other four themes work on a scale of ten but the nearer to zero, the lesser risk in this area (see table seven). The four scores combined (out of forty); the lower to zero, the lesser

risk and this indicates an increase in self-regulation and development. The 'total difficulties' measure the developmental areas of need and self-regulation growth.

The SDQ scoring system was adapted in 2016 from the original 'three-band solution' that used categorisations of 'normal', 'borderline' and 'abnormal', to the 'four-band solution' where the categories are 'close to average', 'slightly raised', 'high' and 'very high' (Youth in Mind. 2012) (see table seven). According to Youth in Mind (2012), changes were made to the 'cut-points' to better reflect upon the proportion of children in each category in larger datasets to measure the self-regulation development in children.

3.6ii Therapist Process Diary

A process diary is comparable to a journaling as they reflect on practice (Bryson. 2021), for the purpose of the study it captured information from sessions.

Throughout each participant's clinical session, the researcher kept a confidential process diary to log the participants' presentation, activities and shown emotions to identify themes. Through capturing this information in the process diary; this supported the research study and each participant's reviewing process. Bryson (2021) expresses the importance of journaling, its ability to reflect on practice, obtain information for analysis and develop systems and procedures. The process diaries enabled the researcher to analyse, reflect upon the study and potentially develop a new therapeutic modality (procedure). At the end of the twelve sessions, the review process was triggered by the researcher and the process diary supported the review. For rigour, the reviewing questions were invariable for the referrer, participant and parent/carer (see appendices one, two and three).

3.6iii Semi-structured Review Interviews

At the point of review, three reviews were held per participant: with the participant, referrer and parent/carer. An analysis of the qualitative data from observing the finer details of each case study, identifying specific foci and drawing from them lends itself to an interpretative phenomenological analysis approach (Thomas. 2017). Whilst measuring self-regulation development for the study and ensuring rigour, the questions remained invariable for all parties. They were: how are they at home/school? What is going well at school/home? What is causing you concern? The qualitative data is constructed from three viewpoints – participant (client), parent and referrer; an interpretivism approach (see appendices one, two and three). All parties inputting their observations of the participant's self-regulation development and progress, acknowledging the participant's internal and external perspective and the external perspective of the referrer and parent (Thomas. 2017). Maintaining the focal point but each with their own slant on the outcomes, depending on the participant's presentation but also from their own interpretation and understanding.

According to Landreth (2012), the parent/carer plays a vital role in sharing information that helps the therapist understand what it is going on in the child's everyday life. Landreth (2012) also suggests that parental information can shape the therapist's perception of the child and this is why the interview questions (see appendix eight) had a light structure to them; to gather the information but keeping a relaxed and informal approach to enable the parent/carer to ask the researcher questions surrounding the therapy and develop a supporting link. Hoped for Outcomes (HfO) were obtained from parent/carer and the referrer. This gave flexibility, they had the ability to personalise the HfOs for the individual child and an additional standardised HfO was implemented for rigour. The standardised being,

'Has the client's (participants) ability to regulate themselves developed since the start of the play therapy sessions?'

3.7 Participants

Once ethical research approval was gained from Leeds Beckett University (see appendix four), the two mainstream primary schools were approached to participate in the research study, participation consent was agreed and 'gatekeepers' were assigned (see appendix fourteen). For the purpose of this dissertation, the gatekeepers are known as the 'referrer.' Each participant had their own individual reason for referral but the underlying theme of, requiring self-regulation development, presented for all. Information sheets (appendix fourteen) explaining the study were provided for each school explaining the study, as well as parent/carer (appendix thirteen) and participant information sheets (appendix twelve).

Across the two primary schools, a total of four participant between the ages of seven and eleven were identified by the referrers to take part in the play therapy sessions/study. The identification process was led by the referrer. The researcher provided the school information (appendix fourteen) as a guide, enabling them to select children presenting with self-dysregulation at school and/or at home. At the time of the study, all four participants were known to their school's social, emotional and mental health (SEMH) team, however, they were not taking part in any other therapeutic intervention or provision. The participating group were made up of three males and one female, all white British.

Piaget's stage of development supported the researcher's decision making in selecting the participant's age group (seven to eleven) for the study (Piaget. 2000). The age group were the focus for this study due to their cognitive capacity to take

on board the neuroscience concept through storytelling (Discover Early Childhood Edu. 2022). Between the age of seven and eleven, children are at the concrete operational stage of cognitive development (Piaget. 2000) and therefore the cohort have the capacity to absorb abstract concepts by applying logic (Piaget 2000). For the study, this means they are at the cognitive development stage where they can apply logic to the idea that they understand the concept of a brain and that they have a brain despite the fact they cannot physically see it (Piaget. 2000).

3.8 Therapist Process Diary

As 'participant observer' (Thomas. 2017), the researcher maintained a process diary throughout the participants' clinical sessions; recording the participant's presentation, activities, demonstration of emotion, self-regulation growth and patterns in behaviours; social phenomena. The information from the process diary is documented as 'Session Information – Identification of Themes (appendix seventeen). Network analysis of themes in qualitative data is known as 'theme mapping' (Thomas. 2017). According to Thomas (2017), everyone interprets and expresses words and events uniquely to them; everyone is differently and each case carries their own meaning, therefore this carries validity to all recorded information. This evaluation research; assesses the effectiveness of this therapeutic intervention through the process diary's data to record themes before, during and after (Thomas. 2017). Ultimately, evaluating whether neuroscience input via storytelling in play therapy sessions can pool resource and effectively develop self-regulation (Thomas. 2017) in participants.

3.9 Ethics

Before initiating the research study and in line with Leeds Beckett University's Research Ethics Policy and Procedures, ethical research approval was sought from the Local Research Ethics Coordinator (see appendix four).

The study focused on a vulnerable group, children and therefore ethical consideration was utilised throughout the study to maintain clarity for all stakeholders and ensure any ethical issues that could arise were addressed (McLeod. 2022). The storage of process diaries and referral paperwork were stored in line with clinical governance and observing individuals' rights of privacy (Bell and Waters. 2014). Clinical supervision protocols were followed, in line with Play Therapy United Kingdom's (PTUK) Ethical Framework (Play Therapy United Kingdom. 2023). Professional indemnity and liability insurance was in place (see appendix fifteen). The schools' safeguarding policy and procedures were adhered to, in line with the local authority's safeguarding procedures and United Kingdom's (UK) government policy (Department for Education. 2022).

The presentation and dissemination of data from the study has been anonymised to protect the privacy of participants, referrers, schools and parents/carers (Bell and Waters. 2014). For the purpose of this study, participants will be known as B, C, D and E to protect their identity.

3.10 Participant Reasons for Referral and Hoped for Outcomes

A brief outline of each participant's background, reason for referral and hoped for outcomes provides a narrative for the study. Following on from this, the qualitative and quantitative data is analysed and the results summarised relating to the research study's findings.

3.10i Participant B (non-Tam)

Participant B was a ten year old with no medical diagnoses, who was referred for play therapy due to the difficulties they faced around managing their emotions, a history of complex family dynamics and conflicting family relationships. The display of emotions resulted in: The presentation of physical aggression in the home and

education environment. Difficulties in social scenarios and peer conflicts. B externalised these behaviours, sometimes towards others and also to themselves. A need to take charge and/or be in control of a situation was witnessed in the home and at school. The referrer hoped the therapy would help: Make sense of family dynamics, Manage their emotions, Develop peer relationships and Develop self-regulation capacity (see appendix seven).

3.10ii Participant C (Tam)

Participant C was a ten year old with no medical diagnoses who was referred for play therapy to support with processing emotions and developing confidence. There is a history of mental health in the family, a complex family history and self-harm in the past. The hoped for outcomes were for: The participant to be able to be able to self-regulate, Healthily process emotions, Process family experiences, Develop confidence and a sense of self (see appendix seven). A referral was made to the Children and Adolescents Mental Health (CAMHS) Team to address the self-harming and they are currently on the waiting list to ensure this medical need is addressed.

3.10iii Participant D (non-Tam)

Participant D was a seven year old, with no medical diagnoses. D was referred for play therapy to support with: Attachment difficulties, Historic exposure to domestic abuse, Sensory needs and Social relationship struggles. The referrer hoped the referral would lead to: Developing healthy relationships, Process past experiences, Manage disappointment and Foster self-regulation (see appendix seven).

3.10iv Participant E (Tam)

Participant E was a ten year old with an identified learning need, who was referred to play therapy in regards to their low presenting mood, violent outbursts. There is a

history of mental health and domestic abuse. It was hoped that participant E would be able to: Identify emotions, Improve their self-confidence and Develop self-regulation (see appendix seven).

3.11 Clinical Outcomes

The clinical outcomes for each participant will be presented separately, maintaining their individualistic needs but collaborating to explore the study focus.

3.12 Summary

In summary, the research study employed an exploratory case study method for a group of four children aged between seven and eleven in two primary school settings. The utilisation of mixed method approaches was applied to the study, capturing data for analysis and exploring the effectiveness of play therapy and neuroscience via storytelling to develop self-regulation.

4. Findings

4.1 Introduction

The exploratory case studies findings are based on four participants aged between seven and eleven years; two participants accessed play therapy only and the other two accessed play therapy and “Tam’s Journey” - forming two groups to measure the self-regulation development. The findings highlighted from the session information (appendix seventeen) for each individual case study indicates the participant’s presentation, activity engagement, emotional expression and patterns in behaviour. From this evidence, themes are identified in their play. Each participant’s findings are individually presented.

4.2 Session Information – Identification of Themes

Each participant's presentation, activities and demonstration of emotions were logged each session by the researcher and this formed part of the qualitative data. For the study this was known as the 'therapist's process diary' and to display the findings, it is documented as session information – identification of themes (see appendix seventeen). According to Landreth (2012), play therapist are responsive to the participant and their world; taking the participant's lead, in line with Axline's Principles (Axline. 1993) and therefore have no need to find out what happened in the participant's life in the past week (Landreth. 2012). The presenting emotions, concepts and activities in each session were captured during sessions, as they appeared (see appendix seventeen).

4.3 Participant Case Study Findings

4.3i Participant B (non-Tam)

Participant B accessed play therapy only as their treatment plan and had full access to the play therapy toolkit in their sessions. B showed a preference for the mediums: talking and movement.

The theme; connection, was a persistent theme in B's therapy sessions. Having experienced disrupted attachments with primary caregivers; a sense of security was sought and a need to form a relationship presented (Bowlby. 1988). Cassidy and Shaver (2016) suggest that a deterioration in (social and emotional) presenting behaviours surrounding socialisation, self-control, autonomy and independence development indicate a deterioration in attachments. The referral process had informed the researcher that participant B externalised difficulties in socialising at home and school. In therapy sessions, B explored family dynamics and their emotional responses; particularly anger and high energy was used as a 'vehicle' to communicate these.

B showed a desire to understand their own emotional responses which included exploring the model of the brain; that was part of the available toolkit. Being as the limbic system (figure five) is responsible for emotional and behavioural responses (Conkbayir. 2023), powerful emotions are activated in this region of the brain, sends messages to the body through part of the nervous system (Conkbayir. 2023) and this triggers the fight or flight response. A thirst to learn more, led to the hippocampus being explored and its function – learning, memory and emotion (figure five). A surface level exploration of the hippocampi was enough for the participant; it helps to process information, store memories and regulate emotion (Postle. 2015). This logical reasoning suited B's learning style.

As part of the nervous system; the autonomic nervous system is made up of two parts – sympathetic and parasympathetic, working in unison to provide balance. Thrive (2017) likens the sympathetic system to a car accelerator and increases the body's state of arousal whilst the parasympathetic systems works as a car's breaking system and decreases physiological arousal, with responsibility for non-voluntary body functions: heart rate, blood pressure, oxygen levels/mobility, blood flow and digestion. Over the course of the play therapy sessions, B's energy levels lowered, a sense of balance presented and an ability to regulate appeared.

Over the course of the sessions, a trusting therapeutic relationship developed and a release of (verbalised) emotions and experiences followed. B was able to accept nurture and comfort from within the secure attachment with the therapist, being 'heard' brought validation to B's experiences. According to Shanker (2020), attachment and vagal tone relate to one another. The model of Porges Polyvagal Theory illuminates how social behaviour and physical health are entwined (Porges and Daniel. 2017). When soothing is sought from and provided by a caregiver, this forms a social relationship and from this, 'co-regulation' is formed (Porges and

Daniel. 2017). Porges and Daniel (2017) state, *'play is a natural and powerful therapeutic tool. From the Polyvagal perspective, play can be conceptualised as an efficient 'neural exercise' that uses social engagement to actively inhibit fight/flight behaviours'* (p. 113).

Whilst self-regulation developed so did B's confidence and self-belief. This aligned with B's energy levels, the physical movement in sessions became controlled and movement was coordinated. This was recognised by the participant.

At the review stage, home shared that although B remains self-critical, they are able to 'hear' the perspective of others. B is generally quite calm but infrequently, can still lose their temper. School shared that B is generally calmer and regulating their anger and aggression (see appendix seven).

4.3ii Participant C (Tam)

Participant C accessed "Tam's Journey" (appendix eighteen) as part of their treatment plan. In addition to the therapeutic story, C accessed the same play therapy toolkit as other study participants and throughout the study C showed a preference for sand and talking methods in their sessions.

Fear, worry and uncertainty were presenting emotions and behaviours in C's sessions from the start. Seeking containment, a concept that metaphorically proved difficult for C. An articulate, expressive participant that looked for solutions to manage their feelings and responses instantaneously, the story of "Tam's Journey" gave C a (metaphorical) logical explanation to their emotional responses and their presenting thoughts, feelings and needs.

Axline's principles were high on the agenda; accepting C as they are, developing a warm, friendly, respectful relationship and taking C's lead established a feeling of permission for C and this forms the fundamental (Axline's) principles in play therapy (Axline. 1993). C established themselves in the therapy room and a sense of permission for the participant to express themselves presented (Axline. 1993); a sense of validation stemmed from this. According to Conkbayir (2023), self-regulatory capacity is not developed alone but through soothing, reassurance and co-regulation and this aligns with Bruce Perry's model: The Three R's: Reaching the Learning Brain – regulate, relate and reason (Beacon House. 2019) and (Conkbayir. 2023).

The therapist role was to be attentive, enabling participant self-reflection/awareness in relation to their own presenting behaviours, enabling self-management of their difficulties (Axline. 1993). On an unconscious level, C sought to regulate, relate and reason; making sense of their world (Conkbayir. 2023). Shanker (2020) suggests emotional growth is possible through a limbic-to-limbic connection. Through the connection formed in the therapeutic relationship, the child's social, communication and cognitive ability is cultivated; supporting the development of self-regulation.

In the story of "Tam's Journey", Tam was encouraged to "calm down" (appendix eighteen p.8) by his mother (Peddle. 2019) and C associated with the expectation placed on Tam. The amygdala responsible for triggering emotional responses and detecting threats (Conkbayir. 2023), C's presenting heightened state of alert and vigilance was likely a physical representation of C's amygdala – safety/survival system (figure five). Shanker (2020) states a highly aroused child is likely to 'tip into' a fight or flight response and with soothing and support, Shanker (2020) expresses it is up to the child to '*acquire the internal strength needed to quell those disruptors*' (p.25).

Through discovering Hetty (sloth), Tam learnt about the amygdala's role (appendix eighteen p.16), to sense danger and maintain safety (Peddle. 2019). According to Peddle (2019) the amygdala has not evolved since the caveman and therefore modern-day life demands are not aligned, causing the amygdala to become muddled. Through metaphor, the explanation of the physiological responses brought a stillness and a sense of awareness to C.

C presented with strong opinion and these were portrayed at high volume, a need for validation perhaps. Presenting emotions and behaviours including frustration, manipulation, burial and protection were witnessed and over time, C explored perception. Through the play mediums, alternative metaphorical viewpoints were noticed, C processed this insight and translated it into their external world - social interactions and relationships.

During C's play and similar to Hetty's drawing of a caveman (appendix eighteen p.16-17) and the almond-shaped amygdala (Peddle. 2019), metaphorical tracks were left. C reflected upon experiences and began to make sense of their world. A sense of belonging and exploration were noted and this led to an increase in confidence; self-challenge trailed this shift in self-assurance.

Throughout C's therapy, a consistent routine was maintained in regard to their physical movement and engagement of mediums. Dix (2021) states that routine leads to regulation. Although Dix's focus is based in the school and classroom setting, this lends itself also to the therapeutic setting for C. At the review stage, the referrer reported an increase in self-confidence, self-regulation and the ability to articulate feelings. For home, a development in family relationships and no acts of self-harm (see appendix seven).

4.3iii Participant D (non-Tam)

Participant D did not access “Tam’s Journey” as part of their treatment plan but had full access to the play therapy toolkit and in their play therapy sessions; used various toolkit mediums including sand, movement, games and talking.

Erratic, chaotic and dysregulated physical mobility presented from the beginning in D’s sessions, the principles of play therapy were crucial to support D’s therapeutic needs and D’s emotional presentation (Axline. 1993). Accepting D as they are, so in turn, a warm and friendly relationship could be established were key (Axline. 1993). Taking into consideration the trauma D has experienced, meeting D’s basic needs were the focus to encourage stability and self-regulation. This is supported by Goodyear-Brown (2019) who states, *‘Our case conceptualisations for traumatised children need to begin with a respect for the importance of meeting basic needs and an understanding of dysregulation as an outgrowth of brain and body storage’* (p.43)

Containment was sought by D; a process that led to other presenting emotions and behaviours such as trickery, connection seeking and the seeking of approval. According to Sherborne (2001), physical contact supports containment. Goodyear-Brown (2019) expresses the importance of containment in therapy and Bion’s likening of parents as “psychic containers” to promote healthy development in children. D’s development has experienced disruption by caregivers and their experiences. According to Fullalove (2019), an established relationship through congruent, respectful and empathic responses leads to the participant feeling safe enough to express themselves. The trickery in D’s play appeared to challenge the stability of the relationship. As the therapeutic relationship established and D grasped they were accepted as they are (Axline. 1993), D sought to take responsibility for safety in their play and this led to self-expression, the trickery also subsided.

D had significantly challenged the boundaries and in the play, there was a sense of “how much will the therapist tolerate, will they stick around” and over time D accepted that as long as the play maintained safe for the participant, the therapist and the therapy space, the session could continue.

Heavy chewing by D; clothes, soft toys and rubber-based objects and this presented whilst the therapeutic relationship developed. Erratic movements would see that the participant made physical contact with the therapist by bumping into them. McGlone (2018) states through denying touch, it has a negative consequence on brain development. This is due to the sensory neurofibres, they are responsive to gentle touch and the body finds this rewarding (McGlone. 2018). These neurofibres are crucial to developing the sense of self and managing stress, in childhood and adulthood (McGlone. 2018). Appropriate, gentle touch was explored; releasing oxytocin, stimulating the nerve fibres that develop the child’s regulatory systems (McGlone. 2018). Touch was crucial for D’s therapeutic processing and development, safeguarding procedures were upheld at all times and this ensured the safety of the participant and the therapist (Department for Education. 2022).

Over the course of D’s sessions, physical movement became more considered and coordination was observed. This is as a result of the stimulation of the parasympathetic nervous system calming the body and regulation evolving (Conkbayir. 2023). At the time of review, the referrer shared that the participant had engaged in social interaction. D’s independence was progressing and as long as caregivers had met his basic needs, D had begun to self-regulate their emotions and behaviours. At home D has shown care for caregivers and although anger is expressed regularly, D can regulate more quickly (see appendix seven)

4.3iv Participant E (Tam)

Presenting low self-esteem and head down from the outset, the growth and nurture of a secure and friendly therapeutic relationship helped E to recognise that they are accepted as they are (Axline. 1993). The process was to be at E's pace (Landreth. 2012) and not rushed along (Axline. 1993). In their play therapy sessions, E showed a preference for movement and talking.

E's ability to play was limited, the initiation of reading "Tam's Journey" brought a directive, unconscious (co-facilitation) approach (Yasenik and Gardner. 2017) to the initial session and became a 'stepping stone'. E identified their learning need and asked to be read to, this paved the way for E to explore the room whilst the therapist was 'preoccupied' reading the story aloud. This dynamic remained throughout the sessions; whilst the therapist was busy, E would try something new. E has been exposed to domestic abuse, 'pausing' the therapist enabled E to manage the physical proximity to one another (Goodyear-Brown. 2019) whilst they explored the room and themselves. Insight was witnessed, through the metaphor of Tam, as E showed capacity to recognise emotional responses. E likened aspects of Tam to themselves, self-reflection posing but articulated that regulating them, brought E challenge.

Taking into consideration the mental health background, Mertens et al (2022) shares that according to Lyke (2009), there is network between self-reflection and happiness nor self-reflection and life happiness. Although positive youth development stems from the three aspects, Mertens et al (2022) '*the role of self-reflection is ambiguous*' (p. 502).

Landreth (2012) suggests that although the therapist is emotionally invested in the participant's play, they are not a 'play mate' and their involvement could interfere

with the participant's process and expression. After checking the 'rules' of the play therapy room, there was a realisation that they could play as they wished as long as they, the therapist and the objects were safe. Precision and control were attempted in E's play, disappointment in their abilities when E deemed it 'not good enough'.

As sessions progressed so did the participant's gross motor skills. A sense of achievement and a thirst for more were witnessed. Repetition was standard in the play, Purvis and Qualls (2020) state that four hundred repetitions of an activity are required to develop a new neural synapse but if it is done through play; it takes between ten and twenty repetitions. E's physical movement became freer and they were able to regulate their energy levels in the therapeutic space. E's play became less insular and a sense of connection was felt. The participant was articulate in what they needed from the therapist, instructions given and as their skills developed, so did E's self-belief and confidence.

According to Shanker (2020), the presence of a caregiver provides comfort and reassurance to a child in the early stages of life and beyond. Through social engagement, self-regulation is cultivated. Shanker (2020) suggests soothing brings neurochemical relief in the form of oxytocin and vasopressin. These are both regulators, developing and maintaining social behaviour, relationships and trust (Nowakowski, Vaillancourt and Schmidt. 2010). Ultimately, developing a sense of stability and providing a secure base (Bowlby. 1988).

At the stage of review, the referrer shared that E was able to identify different emotions in themselves and in other people, that there was a little improvement in the ability to self-regulate, manage their feelings and responses to situations. In relation to E's confidence, the presentation remained the same. The home review revealed that E's belief in themselves was a 'little better' as well as their ability to

self-regulate, manage their feelings and responses to situations. Home shared that E's mood fluctuated but is lighter generally. E is able to communicate more and social relationships remain difficult for E (see appendix seven).

4.4 Findings and Discussion

The characters and story of "Tam's Journey" lends itself well to the metaphor of the amygdala, its purpose and as Sunderland (2017) states in relation to story, this is a story that's gets '*straight to the heart of the matter*' (p.4). In the study, the participants have utilised the intervention of the story in their own way; making the connection to themselves and/or using the metaphor of Tam (appendix eighteen p. 16-17) and in particular, the almond (representing the amygdala in the story).

Conkbayir (2023) supports the neuroeducation undertaken by Amanda Peddle, the author of "Tam's Journey" surrounding how the body and brain are affected by stress, how the story of Tam supports the understanding of the brain and body and how grasping this concept influences ones self-regulation capacity (Conkbayir. 2023).

Although the participants all assimilate to the concrete operational stage of development; as per the study criteria, three of the four were aged ten at the time of referral and one aged seven (participant D). Therefore, the three closer in age have undergone further development and growth (Miller. 2011) compared to the younger participant, technically perhaps putting D at a disadvantage.

For the Tam participants, the therapeutic storytelling approach to neuroscience provided logic through metaphor, challenged their previously established coping strategies and their self-awareness (Sunderland. 2017) and therefore supporting self-regulation capacity. Participants C and E have a history of family mental health

needs, which could indicate there is a possibility that 'fixed' generational coping strategies and access to psychological support were challenged by the study. Cohen (2018) suggests this as 'second hand trauma.'

Both Tam participants choosing to have the story read to them, this put them on par with each other – a directive approach, that freed them to engage with the play therapy toolkit. According to Cohen (2018) 'therapeutic storytelling is powerful and transformative. They engaged with the therapy toolkit at their own pace and the therapist maintained a deep respect for the participant's aptitude to resolve their own problems (Axline. 1993).

The non-Tam participants, both with their individualised reason for referral and experiences but shared the common ground of disruption to family lives and family systems. The study captured that movement featured heavily in their therapeutic processing and play. Initially their movement containing high energy and inconsistency and over the course of their therapy, the mobility became considered and coordinated. This identifies that there is a collaboration of physiological and psychological mechanisms developing emotional regulation (Wearne et al. 2019), activating the parasympathetic nervous system - bringing balance and stability to disrupted nervous systems (Conkbayir. 2023).

There are discrepancies between the hoped for outcomes and SDQ (exit) data findings for some participants. For those, the tailored Hoped for Outcomes show progress (see appendix seven) whereas the SDQ, the formal measuring tool do not all show the same progression and deterioration presents in some of the data. (Youth in Mind. 2012) (see tables one and two).

4.5 Hoped for Outcomes

The findings from the study show no deterioration in relation to all hoped for outcomes. The combined results show positive impact in 77.5%. 14.3% remained the same, whilst 7.1% indicates no response was made by the completer. Different degrees over progress are shown (see table three). Scrutinising the overall data (see table four) into the three reviewer categories; shows that all three parties witness positive change in the participant's presentation.

Probing into the study findings (see table five) for Tam versus non-Tam, shows no negative change to the two sub-groups. 23.1% of responses for the Tam group shows no change and 20% of non-Tam show no change. Looking across (table five), illustrates that progress in relation to hoped for outcomes and subsequently, development of self-regulation was swifter for Tam participants. Taking into consideration the three reviewer groups for the two sub-groups; there is some stagnation seen by home and the referrer (see table six). Positive change is heavily categorised as 'little better' and 'mostly better' categories.

4.6 Strengths and Difficulties Outcomes

The pre SDQ data (see table one) indicate that three participants were classified as 'very high' need for total difficulties by the referrers. One categorised as 'close to average' but the home and participant scores were remarkably close, highlighting 'very high' need. The referrer and home acknowledged that the participant has a tendency to 'mask' their feelings at school before releasing them at home, which may give some insight into why the scoring presents as it does. The SDQ information (see table one) from home and school were in alignment for all four participants, indicating 'very high' need.

The post SDQ findings (table two) generally show positive change in relation to total difficulties for the participants. The referrer for two out of four (B and C) show significant improvement, recategorising from 'very high' to 'slightly raised.' No/little change from the parent SDQ for D and E (table two). Regression for D from their own scoring and positive change in E's data. It is worth noting that for E; the same practitioner did not complete the referrer SDQ and therefore there is a lack of consistency in this piece of data. There is a sense that the perception of the internal and external presentation differs between reviewers and thus reflects in the data.

The pre and post pro-social data present positive progress shifts, some participants initiated in the 'close to average' SDQ categorisation (table seven). All data bar two fall into the 'close to average' and 'slightly lowered' sectors. The two anomalies are with C's home and E's own scoring – one Tam and one non-Tam.

Although positive change is made in the majority, there are some discrepancies and some participants' SDQ total remain in the 'very high' category which leads to the question that if the participant accessed an additional block of twelve sessions, would this bring further positive change. A consideration for future usage of this concept. Although twelve sessions was the pace for the purpose of the study, that is not in alignment with the participants' pace and in line with the principle that underpin play therapy, the participant's pace is to be followed by the therapist (Axline. 1993).

4.7 Summary

The modality of play therapy and the medium of therapeutic storytelling are already entwined in practice; the introduction of neuroscience is an innovative concept that befits some participants. However, this depends on the participant's cognitive developmental stage and their capacity to apply logic to the concept; they have a

brain although it cannot be seen (Piaget. 2000). By employing illustrations to identify the amygdala, neurological and physiological responses, “Tam’s Journey” (Peddle. 2019) provided a metaphorical understanding to the limbic system; how the amygdala influences emotional responses and how responses impact upon daily life (appendix eighteen).

In all therapies, the therapist’s role is to consider and adapt the treatment plan as the therapeutic process progresses. The introduction of neuroscience through “Tam’s Journey” (appendix eighteen) is an additional modality that is worth investment and although dependent on the participant’s treatment response; could be fruitful.

5. Conclusion

The positive change in the study’s post SDQ total difficulties findings indicate there is a place for the introduction of neuroscience through storytelling in play therapy; with the intention to develop self-regulation in play therapy clients.

The findings in relation to measuring self-regulation development indicates that amalgamating the modalities of play therapy and neuroscience through storytelling, appear to speed up the cultivation and development of self-regulation in participants. Having said that, the findings indicate that equally play therapy only has a positive impact in relation to self-regulation capacity. Taking into consideration the (quantitative) SDQ data alone, the clinical measuring tool indicates that one Tam-participant was more responsive to the treatment plan than the other participant and equally, one of the play therapy only (participants) was more responsive than the other (table two). However, viewing the personalised hoped for outcomes independently shows a different perspective; all participants made

progress specific to their own needs, although self-regulation development was quicker for Tam participants (table five).

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Tables

Table 1 - Participant Pre SDQ Scores

SDQ data from:	Client B (Non-Tam)			Client C (Tam)			Client D (Non-Tam)			Client E (Tam)		
	Client	Referrer	Home	Client	Referrer	Home	Client	Referrer	Home	Client	Referrer	Home
PRO –SOCIAL	5	7	5	4	5	5	7	8	6	8	6	6
Hyper-Activity	9	10	10	8	8	10	5	10	8	6	4	9
Emotional	8	7	8	5	10	7	5	6	2	8	1	6
Conduct	8	8	8	7	2	9	4	4	4	5	0	9
Peer	4	7	5	8	7	2	4	5	4	9	0	6
Total	29	32	31	28	27	28	18	25	18	28	5	30

Table 2 - Participant Post SDQ Scores

Data from:	Client B (Non-Tam)			Client C (Tam)			Client D (Non-Tam)			Client E (Tam)		
	Client	Referrer	Home	Client	Referrer	Home	Client	Referrer	Home	Client	Referrer	Home
PRO –SOCIAL Difference +/-	7 +2	5 -2	7 +2	6 +2	7 +2	4 -1	9 +2	6 -2	8 +2	5 -3	5 -1	7 +1
Hyper-Activity	8 -1	7 -3	8 -2	8 0	4 -4	10 0	9 +4	8 -2	8 0	7 +1	7 -3	10 +1
Emotional	7 -1	2 -5	3 -5	7 +2	5 -5	7 0	9 +5	2 -2	6 +4	7 -1	8 -7	8 +2
Conduct	8 0	3 -5	6 -2	5 -2	2 0	4 -5	3 -1	4 0	3 -1	6 +1	1 +1	6 -3
Peer	4 0	2 -5	2 -3	4 -4	2 -5	5 +3	4 0	4 -1	2 -2	5 -4	2 +2	6 0
Total Difference +/-	27 -2	14 -18	19 -12	24 -4	13 -14	26 -2	25 +7	18 -7	19 +1	25 -3	18 +13	30 0

Numbers in italics show the difference between pre and post scoring.

Table 3 – Combined Hoped for Outcomes results for all participants

	Worse	Same	Little better	Mostly better	Much better	No response
All participants	0	14.3	32.1	32.1	14.3	7.1

in percentages %

Table 4 - Combined results for Hoped for Outcomes per reviewer

	Worse	Same	Little better	Mostly better	Much better	No response
Referrer	0	10.7	10.7	14.2	10.7	7.1
Home	0	3.6	17.9	7.1	3.6	0
Client	0	0	3.6	10.7	0	0

in percentages %

Table 5 – Combined Hoped for Outcomes results for Tam vs non-Tam

	Worse	Same	Little better	Mostly better	Much better	No response
Tam	0	23.1	7.7	46.2	15.4	7.7
Non-Tam	0	20	40	20	13.3	6.7

in percentages %

Table 6 - Comparing Hoped for Outcomes - Tam vs non-Tam, per reviewers

		Worse	Same	Little better	Mostly better	Much better	No response
Referrer	Tam	0	14.3	14.3	28.6	14.3	14.3
	Non-Tam	0	25	25	12.5	25	12.5
Home	Tam	0	0	25	25	25	0
	Non-Tam	0	20	20	20	0	0
Participant	Tam	0	0	0	100	0	0
	Non-Tam	0	0	50	50	0	0

in percentages %

Table seven – Interpreting the SDQ data

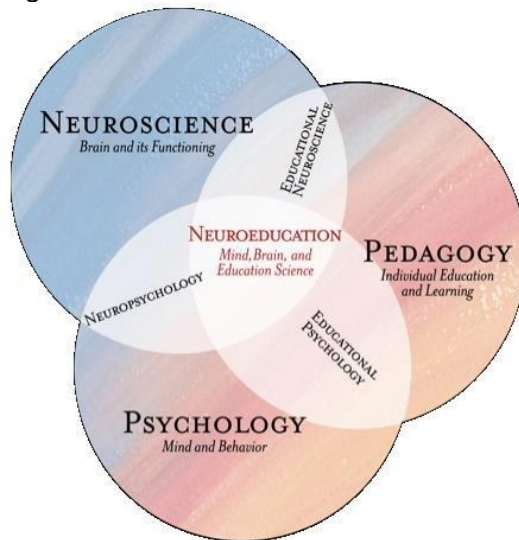
SDQ Scores	Close to average	Slightly raised (/slightly lowered)	High(/low)	Very high (very low)
Interpreting the referrer SDQ data				
Prosocial	6-10	5	4	0-3
Hyperactivity	0-5	6-7	8	9-10
Emotional	0-3	4	5	6-10
Conduct	0-2	3	4	5-10
Peer	0-2	3-4	5	6-10
Total difficulties (excluding Prosocial score)	0-11	12-15	16-18	19-40

Interpreting the home SDQ data				
SDQ Scores	Close to average	Slightly raised (/slightly lowered)	High(/low)	Very high (very low)
Prosocial	8-10	7	6	0-5
Hyperactivity	0-5	6-7	8	9-10
Emotional	0-3	4	5-6	7-10
Conduct	0-2	3	4-5	6-10
Peer	0-2	3	4	5-10
Total difficulties (excluding Prosocial score)	0-13	14-16	17-19	20-40

Interpreting the participant SDQ data				
SDQ Scores	Close to average	Slightly raised (/slightly lowered)	High(/low)	Very high (very low)
Prosocial	7-10	6	5	0-4
Hyperactivity	0-5	6	7	8-10
Emotional	0-4	5	6	7-10
Conduct	0-3	4	5	6-10
Peer	0-2	3	4	5-10
Total difficulties (excluding Prosocial score)	0-14	15-17	18-19	20-40

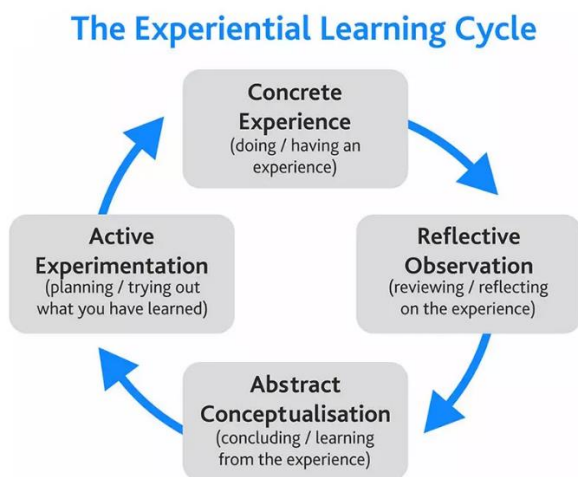
Figures

Figure 1



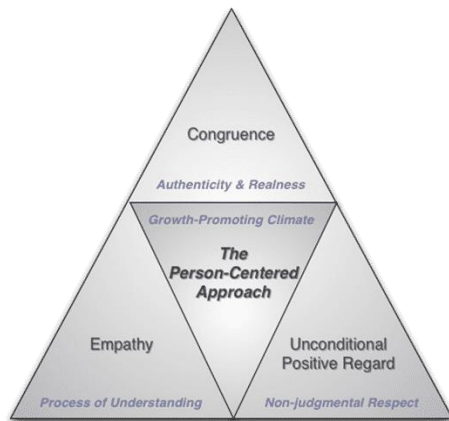
Mind, Brain and Education (MBE) Science as a Multidisciplinary Field (Tokuhamas-Espinosa, 2010)

Figure 2



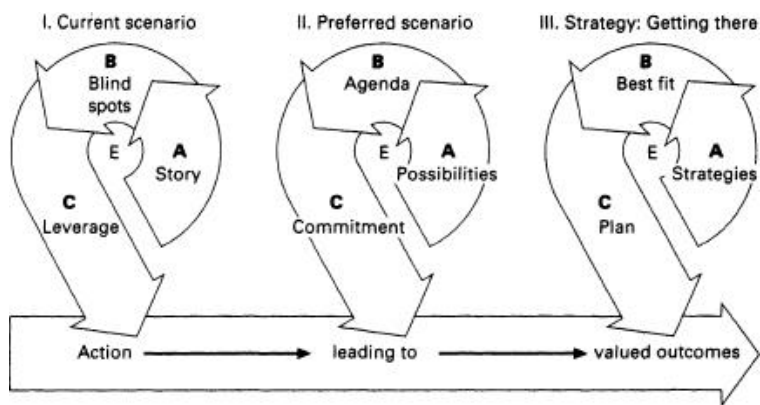
Kolb's Experiential Learning Cycle (Kolb 1984)

Figure 3



Rogers' Person-Centred Approach (Rogers 1959)

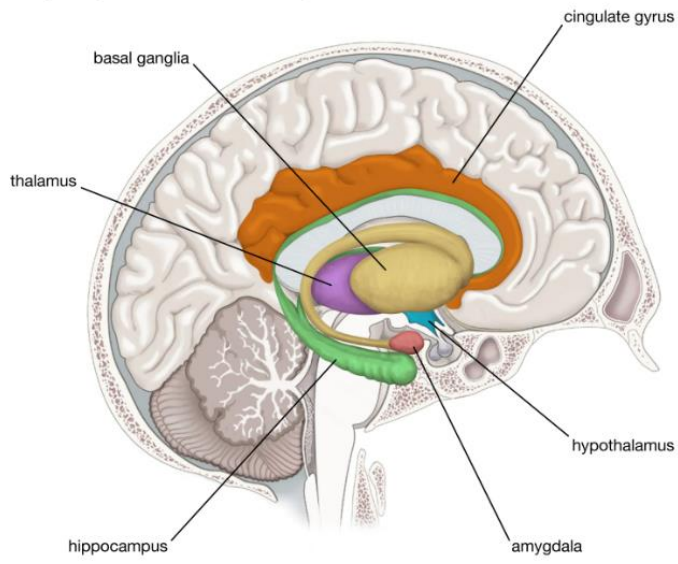
Figure 4



Egan's framework - Skilled Helper Model

Figure 5

Primary components of the limbic system



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Primary components of the limbic system