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Exploring the connections between the presence of developmental trauma and clinical reasoning: The lived experience of pediatric occupational therapists

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Abstract

Background: Developmental trauma is a current issue facing the nation. It adversely affects participation in occupations across the lifespan. This paper examines how the clinical reasoning of practicing pediatric occupational therapists changes when treating clients who have experienced developmental trauma.

Methods: A phenomenological approach was applied using multiple cases. Four individuals, who identified as working with clients with developmental trauma, were interviewed using a series of semi-structured and open-ended questions on their experience treating these clients.

Results: Narrative transcripts were reviewed by the authors and organized into themes of performance patterns of the therapist and the context of developmental trauma which illustrate how clinical reasoning is affected.

Conclusions: This study found a connection between the demonstrated clinical reasoning and the experience and education of the participants when treating clients of developmental trauma.

Developmental trauma is one of the nation's greatest health challenges today (van der Kolk, 2005). Children with histories of trauma, including but not limited to abuse and neglect, meet the criteria for developmental trauma. The Child Maltreatment Report, published in 2017, included data collected from all 50 states including the District of Columbia and the Commonwealth of Puerto Rico, indicated that over 683,000 children were reported as victims of abuse (U.S. Department of Health and Human Services, 2017). According to a report published by the American Occupational Therapy Association, childhood trauma influences activities of daily living or occupations such as: social participation, education, work, play/leisure, and sleep and rest (AOTA, 2015). Occupational therapists are uniquely situated and skilled to address the effects of developmental trauma on participation in occupations. Occupational therapists are trained to assess, intervene, and promote healthy participation in the daily meaningful occupations (AOTA, 2014).

Statement of Research Question and Problem

While there is a growing body of literature on how trauma affects the developing brain, it has not yet been fully connected to how it influences participation in occupation. In addition, there is a gap in knowledge about what is known about developmental trauma and what is being done in current occupational therapy (OT) practice with regards to developmental trauma. Treating clients who have experienced childhood trauma is an emerging field of practice for occupational therapy. We propose the following research question: How does the presence of developmental trauma affect the clinical reasoning of pediatric occupational therapists?

Definition of Terms

Client

For this study the client refers to the pediatric client who has experienced developmental trauma.

Clinical Reasoning

Crucial to this study is a working understanding of what is meant by clinical reasoning. Clinical reasoning is a complex process that therapists use to "plan, direct, perform, and reflect on client care" (Boyt Schell, 2014, p. 384). Boyt Schell further explains this process by saying, "Whenever you are thinking about or doing occupational therapy for an identified individual or group, you are engaged in [clinical reasoning]. It is not a question of whether you are doing it, only a question of how well" (p. 385). There are several types of clinical reasoning a therapist can use based on the situation and their experience. One type of reasoning is not inherently better than another. However, conditional reasoning is a cumulative process typically used by more experienced therapists that "can see multiple futures based on [their] past experiences and current information" (Boyt Schell, 2014, p. 389). Although, Table 1 is not an exhaustive list of clinical reasoning styles, the table provides an overview of the most common.

Table 1
Clinical Reasoning Styles

Clinical Reasoning Style	**Definition**
Scientific Reasoning	Reasoning involving the use of applied logical and scientific methods
Diagnostic Reasoning	Investigative reasoning and analysis of cause or nature of conditions requiring intervention
Procedural reasoning	Reasoning in which therapists consider and use intervention routines for identified conditions
Narrative reasoning	Reasoning process used to make sense of people's particular circumstances, prospectively imagine the effect of illness, disability, or occupational performance problems on their daily lives, and create a collaborative story that is enacted with clients and families through intervention
Pragmatic Reasoning	Practical reasoning used to fit therapy possibilities into the current realities of service delivery

Ethical Reasoning	Reasoning directed to analyzing an ethical dilemma, generating solutions, and determining actions to be taken
Interactive reasoning	Thinking directed toward building positive interpersonal relationships with clients, permitting collaborative problem identification and problem solving
Conditional reasoning	A blending of all forms of reasoning for the purpose of flexibility responding to changing conditions or predicting possible client futures

Note: Boyt Schell & Schell, 2008, p. 7-8

Developmental Trauma (DT)

For the current project, developmental trauma is defined as chronic traumatic events which occurred during critical periods of development and have the potential for cumulative negative effects on a child's future occupational engagement.

Literature Review

Prevalence of Developmental Trauma

The World Health Organization (WHO), acknowledges that accurate worldwide cases of developmental trauma are difficult to assess because of underreporting (WHO, 2016). However, "every year, there are an estimated 41,000 homicide deaths, worldwide, in children under 15 years of age" (WHO, 2016, para. 5), a portion of which is due to child maltreatment. International studies have also found that, "depending on the country, between a quarter and a half of all children report severe and frequent physical abuse"(Butchart & Harvey, 2006, p. 11), which is typically inflicted by caregivers as a form of punishment. Worldwide reports show, "approximately 20% of women and 5%-10% of men report having been sexually abused as children" (Butchart & Harvey, 2006, p. 11). These statistics indicate that developmental trauma is a global issue.

While there may not be an accurate count on the number of children affected by developmental trauma globally, the United States has made gains to quantify this health care epidemic, with the help of the Adverse Childhood Experiences (ACE) Study and similar studies. The original ACE study was conducted from 1995 to 1997 and surveyed 9,508 adults in relationship to 10 types of childhood trauma: physical, verbal, and sexual abuse, physical and emotional neglect, a parent who is an alcoholic, a victim of domestic violence, an incarcerated family member, a family member with a mental illness, and a loss of a parent through divorce, death, or abandonment (Felitti et al., 1998). The study revealed 52% of participants experienced one or more episodes and 6.2% of people experienced four or more episodes (Felitti et al., 1998, p. 249). Several additional national, state, and local studies have since been conducted to quantify the prevalence of ACE among US children. For example, Gilbert et al. (2015), conducted a study with a larger sample size that was modeled after the original ACE study. Of the 53,998 participants surveyed, the results yielded a similar picture as the original study where approximately 60% of participants reported at least one episode (Gilbert et al., 2015). Furthermore, according to the 2011 to 2012 study completed by the National Survey of Children's Health (NSCH), 47.9 % of U.S. children have had experienced one or more episode which equates to almost 35 million U.S. children who have experienced childhood trauma (NSCH, 2012).

Physiological Effects

The effects of trauma on the body are well documented. The WHO recognizes that developmental trauma experiences can impair nervous system development and lead to negative health consequences in adulthood (WHO, 2016). The before mentioned ACE study found a strong correlation between the "exposure to abuse or household dysfunction during childhood

and multiple risk factors for several of the leading causes of death in adults" (Felitti et al., 1998). This includes a higher risk of heart disease, cancer, stroke, diabetes, and liver disease (Felitti et al., 1998; Butchart & Harvey, 2006). In addition, developmental trauma can cause an ongoing stress reaction in children. According to Timmer & Urquiza (2014), chronic exposure to the stress hormone, cortisol, can cause dysregulation and change how a child responds to stressful events in the future; this change in response can create irregularities in development (p. 23). Developmental irregularities can include impairments to cognitive, emotional regulation, and physical health (Felitti et al., 1998).

Research also demonstrates that developmental trauma can change the physical structure of a child's developing brain. A study performed by De Bellis and Kuchibhatla (2006), found structural differences in the cerebellum and vermis for pediatric subjects that had experienced maltreatment; results indicated cerebellar volume differences (pg. 697). The cerebellum is responsible for motor control, reflex adaptation, and motor learning as well as cognition (Glickstein & Doron, 2008). Additionally, a meta-analysis examining people who have experienced trauma showed multiple areas of compromised neural structures (Karl, et al., 2006). These structures include: changes to the hippocampus, amygdala, frontal-limbic systematic impairments, and effects on the hypothalamic-pituitary-adrenal axis. Each area is responsible for neurological processes such as making decisions, emotional regulation, and memory. These changes negatively influence future development with overall health and functional performance.

Response to Developmental Trauma: Other Professionals

As more information emerges on the effects of trauma, professionals outside of the occupational therapy field are responding by developing research-based practices. The term trauma informed care has emerged as an inter-professional construct to label practices for

treating the effects of trauma. According to the National Child Traumatic Stress Network, a trauma informed system is one where all aspects of the organization recognize and respond to the effects of traumatic stress (National Child Traumatic Stress Network, 2012). Teachers and school systems, primary care systems, and the mental health field represented by the American Psychological Association (APA), are all responding by modifying their current practices to meet the growing need.

Work done by Bell, Limberg, and Robinson (2013), outlined interventions for teachers working with children who have experienced trauma, including identifying at-risk children and referring them to a mental health professional within the school and supporting students throughout the therapeutic process. Additionally, Plumb, Bush, and Kerservich (2016) proposed a logic model for creating a trauma-sensitive school. Comparably, healthcare workers, in July 2017, representing various stakeholders from across the country assembled to discuss a three-year initiative to embed trauma informed care into the primary care system (Canady, 2017). This initiative provides primary care workers with standardized screening tools and evidence-based clinical interventions with the aim to promote resiliency and recovery for people who have experienced trauma (Canady, 2017). Similarly, in 2008, the APA established a task force to study children and trauma with the goal of identifying current knowledge and potential gaps in knowledge (La Greca et al, 2008). This task force acknowledged the need for mental health professionals to provide interventions in a culturally responsive manner and to work towards educating other professional groups on recognizing and treating children who have experienced traumatic events (La Greca et al, 2008).

Response to Developmental Trauma: Occupational Therapy

Trauma informed care is a developing area for the occupational therapy field. Children who have experienced developmental trauma are being diagnosed with symptoms that mimic other diagnoses, such as Post Traumatic Stress Disorder (PTSD), Emotional Impairment, Sensory Processing Disorder, and Attachment Disorder (Perry, 2009). Children exhibiting these types of symptoms are often referred to occupational therapy services because these systems tend to negatively affect occupational engagement.

Occupational therapy made one significant contribution to the combined therapy model referred to as SMART (Sensorimotor Motor Arousal Regulation Treatment) as it was designed and authored by occupational therapist Jane Koomar. This new psychotherapy model draws on occupational therapy's knowledge of sensory integration and combines it with, art therapy, sensorimotor trauma principles and child trauma principles (Koomar, 2009, p.3). While this is an important contribution by occupational therapy made in the treatment of developmental trauma, there is still limited research currently being conducted by occupational therapists on what is considered best practices for treatment with children who have experienced developmental trauma (Fraser, MacKenzie & Versnel, 2017, p. 214).

Impact on Occupation

There is vast amount of evidence that developmental trauma changes the structure of the brain (De Bellis & Kuchibhatla, 2006; Koomar, 2009; Glickstein & Doron, 2008; Karl, et al., 2006). These changes influence a child's successful participation in activities of his/her daily life. Developmental trauma affects how individual processes and integrates sensory information as well as the ability to self-regulate (Ogden & Minton, 2000). This can manifest in difficulties with areas such as aggression, anxiety, emotional regulation, attachment, depression, executive functioning, and trusting others (Ogden, Pain, & Fisher, 2006; van der Kolk, 2003). These

challenges, in turn, impact most every occupation of life. Children who experienced trauma may face obstacles in social participation, education, play, leisure, work, sleep, eating, and self-care (AOTA, 2015). Given the high prevalence of developmental trauma in the United States, the many ways a child's participation in daily life is impacted, and given the scope and domain of an occupational therapist, the literature provides ample evidence that there is a veritable need for occupational therapists skilled in developmental trauma.

Filling the Gap

There are many gaps in the research concerning occupational therapy and children who have experienced developmental trauma. One such gap is a lack of research on how developmental trauma affects the clinical reasoning of occupational therapists. This project intends to fill this gap by interviewing pediatric occupational therapists on their experiences. By interviewing occupational therapists about their current practices with developmental trauma, this project aims to ascertain if there is a change in clinical reasoning in response to established research.

Methodology

This study used a phenomenological approach to explore the connection between the presence of developmental trauma and clinical reasoning. Phenomenological research answers questions of meaning. This research method is most useful when studying a new topic or to understand an experience as it is understood by those who are having it (Cohen, 2000, p.3). The Institutional Review Board of Grand Valley University approved this study, and all participants provided informed consent.

Participants

To be included in this study, participants were required to be practicing pediatric occupational therapist in Michigan. A convenience sample was used to select participants for this study. An informational letter describing the study was posted on the Grand Valley State University Occupational Therapy Alumni Facebook Group and Michigan Alliance of School Physical and Occupational Therapists (MASPOT) List Serv. A total of six people responded to the postings and four participants from varied setting were selected to take part in interviews. Table 3 provides relevant demographic data about each participant. All participants in this study were assigned pseudonyms to maintain the confidentiality of the information.

Procedures

Individual interviews were scheduled with the selected participants. Two researchers conducted each interview. The first researcher used a semi-structured interview guide to ask open-ended questions and relevant follow-up questions. Responses to these questions yielded the primary source of data for this study. The second researcher collected field notes in the form of observational data before, during, and after the interview. The interviews were carried out virtually or in person based on the convenience of the participant. The interviews ranged in time from 29 to 43 minutes. The interviews were recorded using two devices. The audio recordings were retained in entirety and stored securely. The audio recordings were then transcribed.

Data Analysis

Braun and Clarke's six step thematic analysis process was used to guide data analysis (2006). During step 1, each researcher read the transcriptions of each interview and noted initial impressions of the interviews. Next, step 2 consisted of each researcher working systematically through each transcription to identify sections of transcription with initial codes. Afterwards, the researchers compared their initial codes and came to consensus on initial codes. Step 3, each

researcher sorted all of the codes and associated data into potential sub-themes. The sub-themes were agreed upon and defined. Then the researchers individually grouped the sub-themes into themes. During step 4, the researchers compared their individual themes with their team by comparing the exemplars from data and the alignment to the proposed theme. The process included merging, removing, and/or creating themes to better represent the data. Then, the team evaluated whether the themes matched the data as a whole by re-reading the data to make sure the themes made sense. The agreed upon themes became part of the audit trail. Step 5, after analysis and review, two overarching themes were identified. The two final themes were defined and named, and a detailed analysis is given in this report. The final step is the written report.

Trustworthiness

In order to provide trustworthiness in this project, the authors employed peer debriefing, prolonged engagement, triangulation, inquiry audits, and reflexivity. Peer debriefing was conducted after the completion of each interview between the two-person interview team and at the completion of all interviews by the complete team. Prolonged engagement was established using the interview guide and individual follow up questions. Triangulation was completed through the two-person interview teams, follow-up discussions between team members after the interviews, and a research team discussion after all interviews were collected. Two inquiry audits were completed by a well-versed qualitative researcher and OT professor. Each researcher kept a personal reflexive journal, saved to their hard drive. The reflexive journal supports confirmability by providing an area for each researcher to describe personal thoughts, feelings, and reactions to people and events in the course of data collection (Taylor, 2017, p. 208). This step supported being conscious of and reflective about the ways in which questions

and methods might impact the data. This additional but important step gives interpretation and confirmability to hermeneutic phenomenology.

Results

The goal of this phenomenological study is to gain a better understanding of how clinical reasoning of pediatric occupational therapists is affected by the presence of developmental trauma. The thematic analysis described by Braun and Clarke (2006) was applied to four interview transcripts. The following themes were developed during data analysis: (a) performance patterns of the occupational therapist and (b) context of developmental trauma. The data are presented narratively using participant quotes that help to explain and justify the themes and sub-themes. Table 2 is a visual representation of the themes and sub themes developed from the transcriptions.

Table 2
Themes and sub themes developed from transcriptions

Themes	Sub-Themes
Performance patterns of the occupational therapist	Potential markers or symptoms of developmental trauma
	The occupational therapy process
	Intrinsic factors of the occupational therapist
Context of developmental trauma	Profession and personal opinions
	Environmental factors

Performance Patterns of the Occupational Therapist

All four participants displayed unique performance patterns in the presence of developmental trauma. Performance patterns are consistent goal-directed actions that are developed over time and are situated to specific contexts and environments (AOTA, 2014, p. S7). Below are two quotes from two participants referencing the mindset they use when deciding how to act with a client who experiences developmental trauma. Chris stated, "So again, you're taking each child in each situation, knowing their history, knowing their occupational profile and going from there." Chris's actions are guided by a general framework that could be applied to any situation. In contrast, Davidson applies the information she knows about developmental trauma and feels that since she "has a better understanding of how the brain is affected by trauma" she can "think about some potential behaviors that are being exhibited" and she uses that as "a reference point" to act appropriately.

Identifying potential markers and symptoms of developmental trauma. The first performance pattern that was discovered in the data was the participants' ability to recognize, identify, and name potential markers and symptoms of developmental trauma. This serves as the first subtheme of performance patterns of the occupational therapist. As seen in the following exemplars, the recognition of developmental trauma symptoms was varied.

Alex. "Sensory for sure . . . a lot of those children had just more behavioral issues . . . more aggressive behaviors . . ."

Davidson. "Seeing a lot of increased behavior in the classroom and that can look anything like increased activity, decreased frustration tolerance, some aggression, some violence, some eloping, and inattention. I don't even know if they can attend [to the task at hand]." Later in the interview, she continues by stating, It's a subtle feeling, like you're just watching and you're like, he - he's not doing that because he's autistic. He's doing that for some other reason

and like - and like I said, there's this knowing, but I can't prove it, but is certainly doesn't look typical…

Becks. "A lot of these kids that are coming in having a lot of I'm going to use a very professional term of wonky stuff going on with their vision. That seems to be a really common consequence of trauma. So, we work a lot on visual motor and fine motor as well as integrated as much sensory- based interventions as you can. A lot of these kids are very tactile defensive. They have a lot of proprioceptive issues and vestibular issues. Their balance is really bad, force rate is bad, then they may have some poor motor planning, things like that." Becks went on to describe regressive behaviors "regression with toileting is a big one that we see with younger kids, 'Oh, they were totally trained and now they're not,' you know. Bedwetting, nightmares like a lot of those intrusive flash backs, things like that."

Consistent with the literature, some of the participants articulated the neurological changes due to developmental trauma and how it manifests in behavior.

Chris. "It's almost as if their brain kind of shuts off and they are unable, they have zero control of their emotions and their ability to follow directions, and their ability to kind of process any sort of information that is coming at them."

Davidson. "Distract themselves from what they're doing in order to just calm down and get back in their thinking brain, you know, so when I think about that sensory-wise, it's to help them get out of that fight, flight or freeze and just get back so that they can now get back into their thinking brain, and be able to make a choice, you know, another choice"

Becks. "Kids who have developmental trauma, their brains are actually developing differently . . .There's actual anatomical changes as well as physiological changes. So, if you do scans of the brains of kids with developmental trauma, you will see actual physiological, like

actual anatomical differences in their brain, so their limbic system will be much more developed, the amygdala will actually be bigger in those kids. Their prefrontal cortex will be less developed and typical children their own age and physiologically, like how everything works, those emotions, neural pathways are much more finely developed. That's their go-to all the time. When something happens, it's just instantly processed through that limbic system much more quickly and much less of it actually reaches the prefrontal cortex. So, their brains are actually working differently than are built differently than kids who had not had trauma. So, because of that, you see lots of differences in emotional regulation, you see lots of differences in cognition, ability to concentrate, attention focus. A lot of these kids are really hyper vigilant. So, if you're watching like a creepy movie at home by yourself in the dark and you heard a noise go by and suddenly like everything is louder and you're just like hyper alert and everything's brighter. Some of these kids are going through their whole day like that, so it just leaves very little energy for actual learning, social development and like I said, their brains are just developing different. They're just hot-wired in that cognitive feedback circle of hyper vigilance and react, hyper vigilance and react, you know, the fight, fright, flight, or freeze response."

The occupational therapy process. The second sub-theme relates to the process used by participants to provide occupational therapy services. Occupational therapists are trained to utilize the occupational therapy process for treatment. "The process includes evaluation and intervention to achieve targeted outcomes, occurs within the purview of the occupational therapy domain, and is facilitated by the distinct perspectives of occupational therapy practitioners when engaging in clinical reasoning, analyzing activities and occupations, and collaborating with clients" (AOTA, 2014, pp. S9-S10).

The first thing demonstrated in the data was that evaluation and goal writing did not change. Becks commented, "I really don't mention trauma or anything like that when I'm writing goals. So goals I write for kids with trauma are usually not really any different than the goals unlike for kids who do not have trauma. They don't have a different tone. They really don't talk much about trauma at all." When asked about evaluations and goal writing, Chris said, "No, I don't think so. I mean, you're taking each patient as they are." She continued by reflecting on her evaluation, "The way that I look at it...notes in initial evaluations are for insurance purposes, which may not be a great way to look at it, but I am getting data, writing what is happening and creating goals."

While there was no noted change in evaluation and goal writing, there were differences in how the participants intervened in the presence of developmental trauma.

Chris. "There's no one cookie cutter intervention that I would use with a child with trauma versus autism or that kind of thing."

Davidson. "I think I come to work because I create relationships with these kids and try to help them find safety and feel safe enough to be successful.

Becks. "As intervention planning goes, I put as much into each activity that I can. So, if I can get one activity that addresses an ADL that they might be struggling with that has a social component to it, that has visual motor or fine motor as well as sensory, with some extra sensory input built into it…"

These intervention services included education to caregivers, support staff, and the client's support system.

Alex. "Because a lot of those children had just more behavioral issues and we actually just did a presentation to our security team because security is often involved with those kids

because they are defying and oppositional and just kind of have more aggressive behaviors which make raised safety issues for the staff."

Chris. "Even just providing foster parents and parents with the education, it's just, the ideas we're trying to change their thinking in a way that their brain is wired to be able to process and regulate information that's going in."

Davidson. "We often bring in the community agencies… we do refer families out . . .but probably the most helpful thing for us in the school is the wraparound services."

Becks. "I do a lot more, I think, trauma education with parents . . . I make sure that they get it in written form . . ."

The following examples show how the participants view discharge with clients who have experienced developmental trauma. Chris reflected by saying, "It's a conversation between parents and I. For the most part, some conversations are a little bit more difficult because parents don't necessarily want to be done because their child is doing so well but most of the time when they're ready to be discharged, it's a very open communication between therapist or between me and the parents." Later in the interview, she described a pragmatic way of looking at discharge planning, Chris stated, "I have had to discharge a couple of kids with trauma because I couldn't justify treatment anymore because they we're doing well with our goal areas that we've had, the handwriting, the strength, the balance. Something that is justifiable through insurance." Becks looks at discharge planning differently, she said, "Discharging is not something we do often." "so we do take a look at [the living situation] and what kind of resources are in place but discharging is honestly something I haven't done yet, except for when kids have just dropped out because they've gone back to their biological parents and those biological parents are not interested in continuing OT."

Intrinsic factors of occupational therapist. The final sub-theme for performance patterns of the occupational therapist is the unique intrinsic occupational therapy factors that influence how the therapists practice. These factors are the specific capacities, characteristics, or beliefs that reside within the occupational therapist that influence actions.

All participants shared similar approaches modifying their behavior when treating kids with developmental trauma including lowering their voice and getting down on the floor. Becks summarized this idea, "I'm a talker and I'm generally loud and I'm usually pretty high-edged person but that changes [when with clients who have experienced developmental trauma] I'm generally on the ground for most of my therapy sessions, never standing over kids, never standing too close, never really standing behind them or beside them, trying to be in front of them as much as possible so that they could always see what I'm doing. I definitely speak a little bit slower."

The demographics of the therapist, as relates to education and experience, are important factors that influence a therapist's practice. Table 3 represents relevant information regarding the demographics of the occupational therapist which influences their performance patterns.

Table 3

Education & Experience of the Occupational Therapist

Interviewee	Total Years of experience	Pediatric experience	Current Pediatric Practice Setting	Education		
				OT education (related to DT)	Continuing Ed (related to DT)	Self-Directed (related to DT)
Alex	1	1	inpatient	No	No	unknown
Becks	4.5	4.5[a]	outpatient	No	Yes	Yes
Chris	5	5	outpatient	No	1-day in-service	unknown

Davidson	25	25	school	No	Yes	Yes

Note: Developmental Trauma (DT)
[a]Participant noted 30 years of additional experience with children with a variety of developmental delays and mental illness in several different settings outside the occupational therapy field.

Context of Developmental Trauma

The second theme in this project is the context of developmental trauma. The context of developmental trauma is defined as a variety of interrelated conditions within and surrounding pediatric clients that have experienced developmental trauma (AOTA, 2014 p. S28). The four participants all were cognizant of how outside conditions influenced how they practiced.

Professional and personal opinions. The first sub-theme in the context of developmental trauma is personal and professional opinions. This is defined as the held opinions, beliefs, or thoughts about clients with developmental trauma by both professionals and laymen. The participants commented on how this context influences how clients are perceived, which effects the overall treatment plan of the clients.

The most influential data that emerged from the transcription of the interviews indicated that many of the pediatric clients had diagnoses that were questioned by the participants. For example, many of the clients were diagnosed with Attention Deficit Hyperactivity Disorder (ADHD), Oppositional Defiance Disorder (ODD), and Reactive Attachment Disorder (RAD), and kids on the autism spectrum. Davidson reflected on this idea, "I see so many kids that have been diagnosed with a medical diagnosis of ASD and we're just like . . .I don't know." This was concerning to the participants because these "misdiagnosis" may cause additional harm. Becks commented, "A lot of kids are on ADHD meds which if they are having anxiety, and like secondary to PTSD, it's actually going to make their attention problems worst. So, they really do need to be checked out and not just given ADHD meds right away."

Environmental factors. The second sub-theme, environmental factors, play an important role in the context of developmental trauma. Environmental factors are defined as physical and social conditions that surround the client and in which the client's daily occupations occur. (OTPF). Practitioners must understand how social and physical constraints influence a client's performance and respond accordingly. For example, the participants of the study all commented on the necessity for coordinated care. Davidson stated, "If I don't have a day where I haven't spoken with another related service member, it's an oddity. I don't even think that's happened." Chris talked about how decisions are made as a team, "So there's not one designated profession who decides, we definitely do the whole team approach - the holistic view."

In addition, two major environmental factors that influence client-care are insurance and access to care. Becks commented on insurance factors (page 22) "the authorizations that go out . . . , we have to keep it very physical-based- like very much within the medical model." Chris also reflected on how insurance parameters influence discharge planning, "Insurance also sometimes plays a role...because they are out visits or they were denied coverage because of the code or any those types of issues."

Further, the participants recognized there are limited resources to respond to the need. Becks stated, "We have people coming up as far north as Traverse City. We have people coming East as far as Flint, South Path Kalamazoo." She continued by saying "We have three teams on the east side of the state and then just one team here on the west side of the state."

Discussion

A recently published study that followed a cohort of 1420 participants observed over a 22-year period found "childhood trauma exposure is a normative experience, statistically speaking, that affects the majority of children at some point and subsequently has the potential to

influence many aspects of functioning" (Copeland et al., 2018). These findings were consistent with the established literature on the prevalence of developmental trauma and its effect on overall and long-term functioning and well-being. This information demands that the occupational therapy community responds to this endemic need. This study attempts to contribute to the overall understanding of this topic by gaining a better understanding of how clinical reasoning of pediatric occupational therapists is affected by the presence of developmental trauma.

As it relates to the presence of developmental trauma, this study found a strong correlation between the demonstrated clinical reasoning and the experience and education of the participants in this study. As cited earlier, clinical reasoning is defined as the processes used by practitioners to plan, direct, perform, and reflect on client care, and there are several different types of clinical reasoning. While most of the different types of reasoning styles are not hierarchical in worth, the conditional reasoning style is more sophisticated in that it is "a blending of all forms of reasoning for the purpose of flexibility responding to changing conditions or predicting possible client futures" (Boyt Schell & Schell, 2008, pg. 443). This type of reasoning synthesizes not only all the information that is available, it utilizes each of the different types of reasoning styles and is able to use a "macro-and micro view that includes a forecast for the future and concern for the details of the present" (Boyt Schell & Schell, 2008, pg. 218). The data from this study illustrated that Becks and Davidson, the occupational therapists who had the most experience and education with developmental trauma, reliably demonstrated use of conditional reasoning in their practice.

The applied use of conditional reasoning was consistently exhibited in the participants' ability to recognize, identify, and name markers of developmental trauma. All of the participants

identified complex sensory issues as a potential marker of developmental trauma. However, Becks and Davidson were found to have a deeper diagnostic lens. They also identified vision issues, dysregulation, proprioceptive and vestibular issues, and motor planning challenges as indicators or symptoms of developmental trauma. Remarkably both Becks and Davidson also had a working knowledge of the physiological changes in the central nervous system as a result of developmental trauma and were able to articulate the connection of these brain changes to behavior and symptoms. The data also showed that even a small amount of specific training in developmental trauma yielded an increase in clinical reasoning. This is evident by the number of times a participant referenced neurological changes to the brain. Alex had no additional training in developmental trauma and did not comment on brain changes. Becks and Davidson, with the most additional training, each commented five separate times on neurological changes and behavior. Chris, who had taken a one-day seminar, commented three times on how the brain influenced behavior. Upon self-reflection, Chris was even able to recognize that experience yielded better practice. She said, "when I got more experience with these kids with trauma, it kind of set a light bulb off in my head."

Compelling data from this study supports that the more experience and education a practitioner has with developmental trauma, the more conditional reasoning is utilized in the delivery of services. The interventions of Becks and Davidson demonstrated their ability to not only use scientific, diagnostic, procedural, and pragmatic reasoning, but they also demonstrated narrative and interactive reasoning. This was seen in their multi-layer interventions that addressed the multi-needs of the clients, as well as their ability to direct treatment to foster safe and positive interpersonal relationships. Further, understanding the unique challenges that developmental trauma presents to a client's support system, they designed robust caregiver

education to help create collaboration and the sense of team unity. The conditional reasoning, particularly the ability to predict possible client futures, was keenly seen in their approach to foresee the long-term needs of their clients. They both recognized the expectedness of regression in their clients and planned for it. Of special note, Becks, with the most education and experience, indicated that discharging children who had experienced developmental trauma had yet to happen in her practice.

Limitations

Due to the small size of this pilot study, the findings may not be generalizable to the experience of pediatric occupational therapists worldwide. However, the four participants provided an in-depth and diverse picture of the phenomenon of pediatric occupational therapists and developmental trauma which produced meaningful results. Phenomenological design is based on human interpretation, all interviewers were new to this study design, and to the process of coding, which offers inherent room for misinterpretation of data. To mitigate the effects of the design and the inexperience of the authors, all authors kept a reflexive journal and participated in structured group conversations. The reflexive journal was used to reflect on inherent bias that were held related to developmental trauma, used as spring board to connect what was believed to what was read or experienced during the interview process. The structured group conversations were based around the interview guide before the first interview, after each interview, during steps of the coding and theming process, and during the writing of this article.

Implications and Future Research

It can no longer be debated that a significant number of the population experience developmental trauma and that the effects are detrimental to well-being and participation in occupations both now and long-standing. For those whose vocation it is to equip others for

engagement, this information not only necessitates a response, it calls us to be leaders in the national discussion. However, the occupational therapy field is ill-equipped. The resource pool is shallow and further research is needed. What we know is that the scope and domain of developmental trauma cannot be fully understood unless there is a clear understanding of the physiological underpinnings of the condition. In order to best serve clients, occupational therapists need to be equipped with a working knowledge of neurological changes due to developmental trauma. In addition, thorough resources need to be developed and readily available for practitioners to access, including how to reach clientele, evidence-based best practices, and advocates to secure coverage for treatment. What is clear, is that best practices include coordinated care which invites therapists to have deliberate collaboration with other professionals. Future research needs include investigation into what is currently been taught in occupational therapy studies to explore if there is a gap between what is known and the delivered information. Other areas of research include discovering what practices are working for current practitioners and if those practices align with the literature or providing supporting research.

Conclusion

The phenomenological approach of this study gave opportunity to explore the ways that clinical reasoning is affected by the presence of developmental trauma. By sharing their lived experiences, the four participants supplied a personal and in-depth look at how they identify and intervene with clients who have experienced developmental trauma. The data demonstrates that there are changes in clinical reasoning. This study has shown that along with experience, specific education about developmental trauma better enables the therapist to utilize conditional reasoning during practice. In conclusion, given their expertise in enhancing quality of life through participation in occupation, occupational therapists, when well-equipped, can be optimal

providers of care for those who have experienced developmental trauma. The challenge set forth, is to equip both therapists and the field of occupational therapy to best serve and lead to do so.

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Appendix A

Themes and Sub-themes Defined

Theme	Sub-theme
I. Performance patterns of the occupational therapist *Theme Definition:* Performance patterns are consistent goal-directed actions that are developed over time and are situated to specific contexts and environments (AOTA, 2014, p. S7).	**A. Knowledge of potential markers or symptoms of developmental trauma** *Sub-theme Definition:* the ability to recognize, identify, and name potential markers or symptoms of developmental trauma.
	B. The occupational therapy process *Sub-theme definition:* "The occupational therapy process is the client-centered delivery of occupational therapy services. The process includes evaluation and intervention to achieve targeted outcomes, occurs within the purview of the occupational therapy domain, and is facilitated by the distinct perspectives of occupational therapy practitioners when engaging in clinical reasoning, analyzing activities and occupations, and collaborating with clients" (AOTA, 2014, pp. S9-S10).
	C. Intrinsic factors of the occupational therapist *Sub-theme definition:* are specific capacities, characteristics, or beliefs that reside within the person that influence actions
II. Context of developmental trauma *Theme Definition:* A variety of interrelated conditions within and surrounding pediatric clients that have experienced developmental trauma (AOTA, 2014, p. S28).	**A. Professional and personal opinions** *Sub-theme Definition:* A variety of interrelated conditions within and surrounding pediatric clients that have experienced developmental trauma (AOTA, 2014, p. S28).
	B. Environmental factors

	Sub-Theme Definition: physical and social conditions that surround the client and in which the client's daily occupations occur (OTPF).

Appendix B

Interview Guide

- What does your typical day look like?
    - amount of patients?
    - length of sessions
    - diagnoses?
- How would you define developmental trauma?
    - What are the symptoms of developmental trauma that you have witnessed?
    - What patterns have you noticed among those treated from trauma?
    - How common do you work with someone with developmental trauma?
- How do you identify a child with developmental trauma?
    - chart, observation, referral
- Tell me how you may change your approach for clients with developmental trauma?
    - body posture? voice? assessment? recording notes?
    - does it impact how you write a goal?
    - decisions for intervention strategies?

Appendix C

Informational Letter

Dear colleagues:

We are occupational therapy students conducting a phenomenological research project focused clinical reasoning in response to developmental trauma. We are in the process of recruiting pediatric occupational therapists for in-depth interviews spanning between 30-60 minutes that can speak to the experience of treating those with developmental trauma.

If you are interested or have further questions about the study, please complete the attached Demographic's Form and return it to matsonbr@mail.gvsu.edu. Please return by...

If you have additional pediatric occupational therapy contacts, please forward this letter along to them.

Thank you,

Gwen Blake, Brooke Matson, Briar Plantinga, and Julie Shafer

Appendix D

Demographic Form

Name:
How long have you been practicing:
Credentials:
Primary practice setting:
Circle:Full-time Part-time

Contact information

Appendix F

Consent Form

1. TITLE: Exploring the connections between the presence of developmental trauma and clinical reasoning: the lived experience of pediatric occupational therapists.

2. RESEARCHERS: Scott Truskowski, PhD, OTRL, Occupational Science & Therapy, & Occupational Therapy Students: Gwen Blake, Brooke Mattson, Briar Plantinga, Julie Shafer

3. PURPOSE: Developmental trauma is one of the nation's biggest health challenges today. Childhood trauma negatively influences activities of daily living or occupations such as: social participation, education, work, play/leisure, and sleep and rest. Occupational therapists are uniquely situated and skilled to address the effects of developmental trauma on participation in occupations. However, there is a gap in research for how developmental trauma affects the clinical reasoning of occupational therapists. This project intends to fill this gap by interviewing pediatric occupational therapists on their experiences. By interviewing occupational therapists about their current practices with developmental trauma, this project aims to ascertain if there is a change in clinical reasoning in response to established research.

4. REASON FOR INVITATION: We are inviting pediatric occupational therapists to participate in an interview session to discuss how the presence of developmental trauma affects their clinical reasoning.

5. HOW PARTICIPANTS WILL BE SELECTED: Participants selected for the study are licensed occupational therapists in the state Michigan, practicing at least part time, in a pediatric occupational therapy setting. Participants who do not have a reliable internet connection if they choose a virtual interview platform and state they have not had experience with developmental trauma will be excluded.

6. PROCEDURES: Participants will be asked to participate in an interview session regarding their experience treating children with developmental trauma and how their clinical reasoning may be impacted. The location will be either a private location or a virtual meeting, this will be based on the

participants convenience. Interviews will last 45-90 minutes and will be recorded. There will be no cost to the individual.

7. RISKS: Taking part in this study poses a minor risk in the form of a confidentiality breach. Taking part in this study has a potential for identification. To minimize the risk of identification, we will not use personal identifiers when presenting the data. In addition, the data will be presented in aggregate form to decrease the risk of identification.

8. POTENTIAL BENEFITS TO YOU: While there are no tangible benefits for the participants, this experience may help them come to recognize how developmental trauma affects children and might influence their clinical reasoning in the future.

9. POTENTIAL BENEFITS TO SOCIETY: This project has the potential to enable occupational therapists to better identify, assess, and treat children with developmental trauma. Further, the information gathered may enhance the field of occupational science as it might lend to the body of knowledge of best and evidence-based practices.

10. VOLUNTARY PARTICIPATION: Your participation in this research study is completely voluntary. You do not have to participate. You may quit at any time without any penalty to you.

11. PRIVACY AND CONFIDENTIALITY: Your name will not be given to anyone other than the research team. All the information collected from you or about you will be kept confidential to the fullest extent allowed by law. In very rare circumstances specially authorized university or government officials may be given access to our research records for purposes of protecting your rights and welfare.

12. RESEARCH STUDY RESULTS: If you wish to learn about the results of this research study you may request that information by contacting: Brooke Mattson, email address: matsonbr@mail.gvsu.edu

13. PAYMENT: There will be no payment for participation in the research.

14. AGREEMENT TO PARTICIPATE: By receiving this consent form below you are stating the following:

• The details of this research study have been explained to me including what I am being asked to do and the anticipated risks and benefits;

• I have had an opportunity to have my questions answered;

• I am voluntarily agreeing to participate in the research as described on this form;

• I may ask more questions or quit participating at any time without penalty. I have been given a copy of this document for my records.

If you have any questions about this study, you may contact either Brooke Mattson at matsonbr@mail.gvsu.edu or Dr. Scott Truskowski at truskows@gvsu.edu

If you have any questions about your rights as a research participant, please contact the Office of Research Compliance & Integrity at Grand Valley State University, 1 Campus Drive, Allendale, MI. Phone: 616-331-3197. E-mail: rci@gvsu.edu.