[MAPPING REVIEW]

Exploring the Vona du Toit Model of Creative Ability: Applications, strengths, and weaknesses in occupational therapy – A systematic mapping review

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ABSTRACT

The Vona du Toit Model of Creative Ability (VdTMoCA) is an occupational therapy practice model rooted in the work of South African occupational therapist Vona du Toit in the 1960s and 1970s. While the model is increasingly applied in predominately South Africa and the UK and included in several pre-registration occupational therapy curricula, there is limited published literature exploring its use in clinical practice. To date, only one publication addresses its presence in occupational therapy education, and no comprehensive review has mapped its clinical application. This study aimed to fill that gap through a Systematic Mapping Review, which is suited to broad topics and provides an overview of existing literature without focusing on a single research question. A total of 30 papers were retrieved and charted. Findings indicate that the VdTMoCA is used across diverse clinical and non-clinical settings and supports therapists throughout the entire occupational therapy process. It offers a structured approach to assessing and treating clients with varying levels of volition, motivation, and occupational performance, particularly in complex mental health and forensic contexts. The model enhances clinical reasoning, justifies intervention choices, and strengthens professional identity. This review also highlights gaps in research that warrant further investigation to support evidence-based practice.

Implications for practice

- The VdTMoCA is an occupational therapy practice model that guides the entire therapy process, supporting therapists in diverse clinical and non-clinical settings.
- The model demonstrates utility in addressing varying levels of motivation and action, and occupational performance among clients, enhancing assessment and outcome measurement capabilities.
- By enabling therapists to justify interventions based on clinical reasoning, the VdTMoCA enhances therapists' professional value and identity, particularly in addressing neglected aspects of occupational therapy, such as engagement of and effective therapy for individuals whose volition, motivation and occupational performance is severely impaired in mental health and forensic services.

INTRODUCTION

The Vona du Toit Model of Creative Ability (VdTMoCA)[1] is an occupational therapy practice model originating from the work of the South African occupational therapist Vona du Toit in the 1960s and 1970s[2] . It has been referred to as the Model of Creative Ability[3] , the Model of Creative Participation and the Model of Motivation and Action before being revised and published in full as the VdTMoCA by Van der Reyden et al.[1]. The VdTMoCA is purported to guide occupational therapy assessment, intervention and outcome measurement, and to be

applicable to all individuals across the lifespan, in ill-health and in wellness, in clinical and non-clinical contexts[1,3].

The VdTMoCA explains the relationship between a person's volition and corresponding action. From a developmental perspective, changes in volition and action are observable in sequential levels of creative ability, meaning one's ability to create something new in the form of tangible or intangible products of one's effort in activity participation. Each level has three phases through which development, recovery or decline in creative ability occurs: therapist-directed, patient-directed and transitional phase. As part of the occupational therapy assessment, the Creative Participation Assessment form and the Creative Ability Assessment grid [1] are tools for identifying a person's level and phase of creative ability. The VdTMoCA is a practice model which, based on practice theory (theory of creative ability), provides a means for understanding the relationship between occupational therapy interventions and occupational performance[1, 4]. Hence, in addition to guiding assessment, the VdTMoCA provides a detailed intervention guide to grading intervention to achieve stated therapy aims to sustain, recover or grow/improve a person's creative ability. Change in creative ability can be recorded on the assessment form, the grid and/or on the Activity Participation Outcome Measure (APOM)[5].

Although the model has been used for over 50 years in South Africa [6], the historical context of apartheid isolated occupational therapists internationally between 1960 to 1994 and the model was barely known outside of South Africa[7]. The introduction of the VdTMoCA to UK practice in 2003 stimulated revived interest in the model in South Africa, prompting research and publication activity. With a 22-year history in the UK [8], the VdTMoCA has become increasingly widespread in application and is known to be included in the curriculum of several pre-registration occupational therapy programmes predominantly in the UK and South Africa. However, the VdTMoCA has not been widely published, and to date, the model only features in one publication on the teaching of occupational therapy models in pre-registration occupational therapy education in South Africa[9].

No review has been conducted on the use of the VdTMoCA by occupational therapists, therefore it is unclear where, how and why the VdTMoCA is used and to what effect. It is important for educators and clinicians to assess its relevance to current practice and inform occupational therapists seeking to engage in evidence-based practice. A systematic mapping review (SMR) was conducted to describe and graphically display the application of the VdTMoCA according to the occupational therapy process, its strengths and weaknesses and research gaps.

Review question

What is known about the use of the Vona du Toit Model of Creative Ability (VdTMoCA) by occupational therapists?

METHOD

Study Design

A systematic mapping review (SMR) is an organised method for gathering, analysing, and presenting data on a broad range of studies related to a particular topic[10,11]. An SMR review was chosen because rather than concentrating on a single research question or theory, it usually covers a large body of literature on a broad topic. This enabled mapping of the VdTMoCA's application as a practice model and identifying gaps in research of the model. Furthermore, the main goal of an SMR is to provide a descriptive summary of the evidence by classifying and summarizing previous studies[12,13]. In order to show the distribution of studies, techniques, findings, and important themes and trends, mapping review results are frequently displayed graphically using charts, graphs, or tables[10,12,13]. This facilitates the concise communication of complex information.

Finding gaps in the literature is a major result of an SMR, which can assist stakeholders in determining what further research is required and guide research goals[10-13]. Since SMRs concentrate more on outlining existing research than assessing the robustness of findings, included studies do not require the same degree of quality assessment as systematic reviews[10,11].

A mapping review uses systematic techniques for finding, selecting and evaluating material, much like any other review. According to James et al.[10] and Vanhala et al.[11], this entails a well-defined search strategy, inclusion and exclusion criteria, and thorough documentation of the review procedure. Additionally, it is an iterative process in which researchers may modify their search tactics in response to preliminary results[10]. Therefore, the SMR was chosen as a suitable methodology to capture the breadth of literature on the VdTMoCA, including unpublished sources and low-level evidence studies.

The mapping process as described by Petersen et al.[12] and James et al.[10] were combined and comprised the following six stages.

Stage 1: Identifying the research question and the research team

The broad research question of this review was: what is known about the use of the VdTMoCA by occupational therapists? The broad question was split into four sub-questions:

1. In what clinical and non-clinical fields is the VdTMoCA applied to occupational therapy practice?
2. For which stages of the occupational therapy process is the VdTMoCA used?
3. What are the strengths and weaknesses of the VdTMoCA?
4. Where are the gaps in research in the VdTMoCA?

Stage 2: Conducting a search for the primary studies in the VdTMoCA

A health systems librarian was consulted to support the development and accuracy of the search strategy. Nine electronic database searches were completed on the 4th February 2022 using Ultimate, Africa-wide Information, APA PsycInfo, Cinahl Complete, Medline Complete, Psychology & Behavioural Science Collection and SocINDEX for literature published between 2002-2022 The search terms were "Vona du Toit" AND "Creative Ability" AND "creative participation"; "Occupational Therap*" AND "Creative Ability" AND "creative participation"; "Assessment" OR "intervention" OR "Outcomes" AND "Creative Ability" AND "creative participation". Relevant peer-reviewed literature in the form of research papers, editorials, theses (PhD) and dissertations (master's) were included in the search. A hand search was also completed of grey literature known to the authors. No reviews which summarise the literature on the VdTMoCA have previously been published. In August 2024, an update search was conducted, and three more publications were added.

Stage 3: Screening and identifying the primary papers

Literature was included if the application of the VdTMoCA in the occupational therapy process was described in any population. Opinion pieces had to focus on or discuss the VdTMoCA in more than 50% of the article. Theses and dissertations had to focus on aspects of the VdTMoCA and its application to practice. Two authors evaluated each piece of evidence to see if it met the inclusion criteria using a checklist (Appendix A, page…). Any conflicts of opinion were resolved at a final meeting with all three authors to confirm eligibility.

Stage 4: Coding and generating a systematic map database

The Covidence software program was used to chart and code the data systematically and consistently according to set inclusion/exclusion criteria (Appendix A, page…) linked to the sub-questions of the study. Once consensus was reached between the three authors, full text articles were uploaded. The coding template (Table I, page 3) was used to extract the data consistently and objectively to increase the reliability of the extracted data. Clinical and non-clinical settings were coded as mental health, physical health or non-clinical. The occupational therapy process was coded as assessment or screening, intervention and outcomes measurement. Stages of the occupational therapy process were used to chart the application of the model (Table I, page 3). One study could have had more than one of the elements of the occupational therapy process.

Table I. Criteria for each stage of the occupational therapy process

Elements of the OT process	Criteria
Assessment including screening	Brief assessment and labelled as screening in the study. Assessment of the levels of creative ability, functional abilities using any of the assessment tools in the VdTMoCA.
Intervention	Where the effect of intervention was measured with a control and experimental group, or where clients were used as their own controls (Pre-post studies).
Outcome measurement	Studies where effect size were calculated. Studies where positive or negative change were measured.

Strengths and weaknesses were charted relating to any aspect of the VdTMoCA. Two authors charted information into the template of the Covidence software. All three authors met to get consensus resulting in the final data extraction. Data were then exported to an Excel spreadsheet and checked for errors.

We identified key areas requiring further study by comparing well-researched topics with those that were underrepresented or absent. These gaps were documented after data charting and narratively synthesised in the results and discussion sections.

Stage 5: Critical appraisal

Although critical appraisal of included studies are not usually done in SMRs, James et al.[10] included this as an optional stage to identify robustness of the evidence base of the topic. We chose to include this step to report on the level of evidence of VdTMoCA studies using the Oxford Centre for Evidence-Based Medicine (OCEBM) scale for quantitative research[13] . This scale ranges from one (high level of evidence) to five (low level of evidence). For qualitative research we used the Critical Appraisals Skills Programme (CASP)[14] . The CASP uses 29 criteria questions that cover the entire research process. These are rated with a simple scale scoring one (no to the criteria question), two (can't tell) and three (yes to the criteria question).

Stage 6: Describing the findings

Characteristics of the included literature were collated (Table II, below) while data relating to the sub-questions of our review were coded as explained in the coding template (Table I, below). The results are presented in tables and figures.

Ethics:

No ethical clearance was required as no human participants were involved in the study.

RESULTS

A total of 30 papers were retrieved and charted. The PRISMA diagram (Fig. 1, below) shows the process of selecting articles as well as theses and dissertations (T&D) for the study.

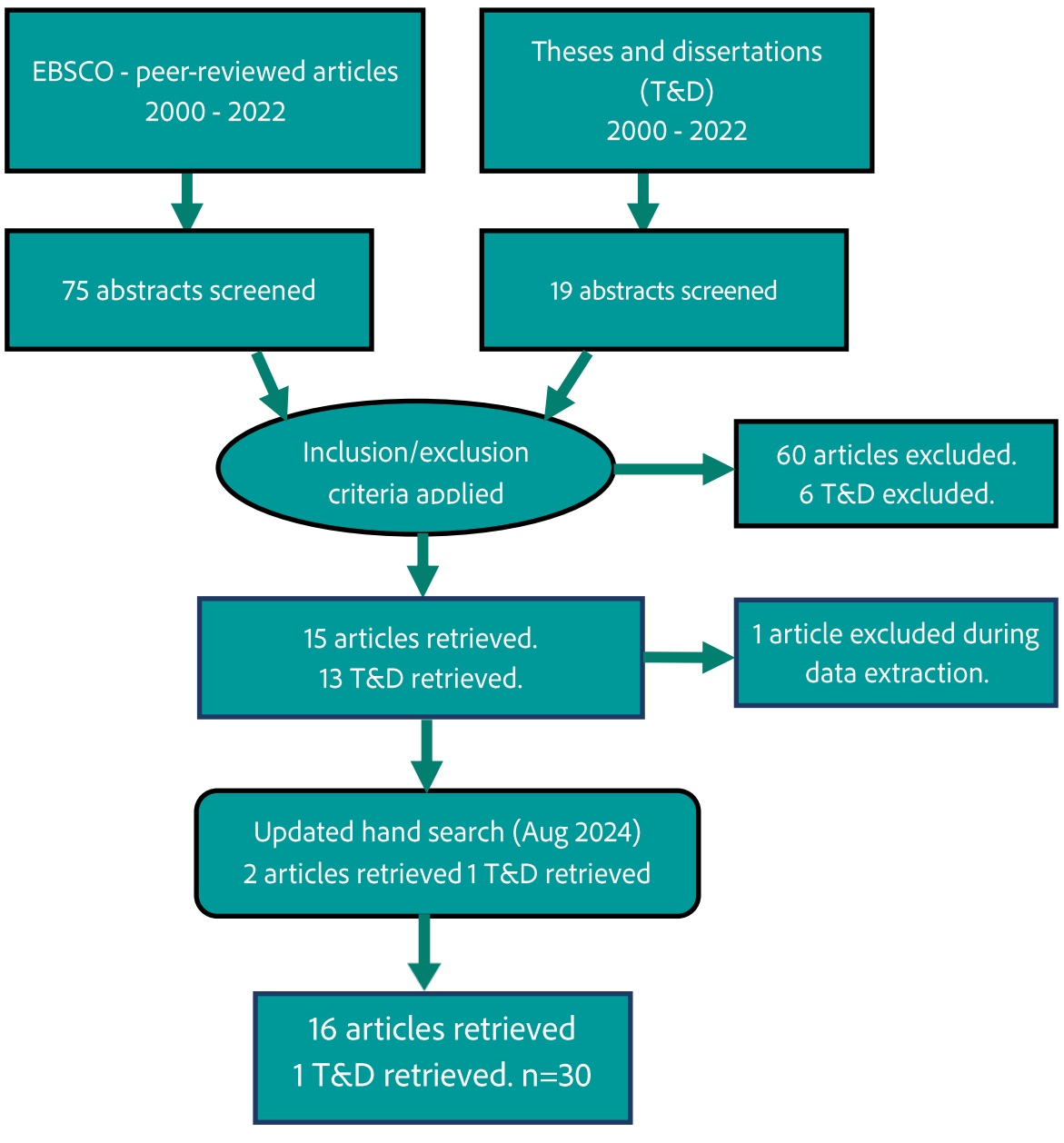

Figure 1 PRISMA diagram of selection of literature

Literature on the VdTMoCA covered a 22-year period from 2002-2024. Table II (below) shows the characteristics of the papers. The majority of research was completed in South Africa (n=20) and the UK (n=9). One cross-national study was done in South Africa and the UK.

Sixteen papers were published in peer reviewed journals, of these three were commentaries. There were 14 master's dissertations and PhDs in total. There was a mix of study designs with most research applying quantitative designs (n = 18), followed by qualitative studies (n = 6), and one case study. Critical appraisal of the quantitative studies highlighted that they range between 3 and 4 on the OCEBM, indicating a medium to poor level of evidence. In general, the qualitative studies were of a higher level of evidence, ranging from 2.1 – 2.8 using the CASP tool (Table II, below).

Table II. Characteristics of the included literature

Lead Author and Date	Research Title	Type of Evidence and Research Design	Context and Sample Size	Evidence Level and appraisal tool
1. Adams (2016) [15]	Development of descriptors for domains and items for collective participation in occupations	PhD Mixed Methods	Occupational Therapists in South Africa n = 18	CASP 2.5
2. Adams and Casteleijn (2023) [16]	Assessment of participation in collective occupations: Domains and items	Research article Mixed Methods	Literature and occupational therapist in South Africa n= not reported	CASP 2.1
3. Bahgoo (2018) [17]	Implementation of mirror therapy for upper limb function in stroke survivors on two levels of creative ability	Master's Dissertation Quantitative	Stroke survivors with motor dysfunctions in South Africa n = 13	OCEBM 3
4. Brooke (2015) [18]	Selected psychometric properties of the activity participation outcome measure to describe trends in a forensic population of mental health care users	Master's Dissertation Quantitative	Occupational Therapists (OT) and Patients (P) in Forensic Hospitals in South Africa n = 3 OT n = 62 P	OCEBM 3
5. Camp et al. (2020) [19]	Responsiveness of the Activity Participation Outcome Measure in adult patients with Traumatic Brain Injury in an acute private neurological rehabilitation setting in South Africa.	Research Article Quantitative	Traumatic brain injury patients in acute neurological rehabilitation phase in South Africa n = 24	OCEBM 3
6. Campbell-Breen (2004) [20]	Motivation in Mental Health: A hermeneutic qualitative exploration of client and occupational therapist narratives	PhD Qualitative	Adult mental health patients (P) and Occupational Therapists (OT) in the UK n =11 OT n = 11 P	CASP 2.8
7. Carpenter (2016) [21]	What are Occupational Therapists experiences of utilising the Vona du Toit Model of Creative Ability Creative Participation Assessment in forensic mental health settings in the U.K?	Master's Dissertation Qualitative	Occupational Therapists in medium and low secure units in the UK n = 8	CASP 2.6
8. Carter (2013) [22]	Analysis of routine outcome measurement data in mental health occupational therapy.	Master's Dissertation Quantitative	Adult acute inpatient mental health patients in the UK n = 194	OCEBM 3
9. Casteleijn and Smit (2002) [23]	To determine the reliability, construct and criterion validity of the Creative Participation Assessment (CPA).	Research Article Quantitative	Inpatient Schizophrenic patients in South Africa n = 52	OCEBM 4

Lead Author and Date	Research Title	Type of Evidence and Research Design	Context and Sample Size	Evidence Level and appraisal tool
10. Casteleijn and de Vos (2007) [24]	The Model of Creative Ability in vocational rehabilitation	Research Article Case study	Traumatic brain injury in South Africa n = 1	OCEBM 4
11. Casteleijn (2014) [25]	Using measurement principles to confirm the levels of creative ability as described in the Vona du Toit Model of Creative Ability	Research Article Quantitative	Mental health care users in South Africa n = 713	OCEBM 3
12. Dawes (2021) [26]	An exploration of occupational therapists' perceptions of using the activity participation outcome measure in forensic mental health inpatient settings.	Master's Dissertation Qualitative	Occupational Therapists from inpatient forensic settings in the UK n = 7	CASP 2.5
13. DeBruyn and Wright (2017) [27]	Joining the Dots: Theoretically Connecting the Vona du Toit Model of Creative Ability (VdTMoCA) with Supported Employment	Commentary	Commentary South Africa	N/A
14. DeWitt (2003) [28]	Investigation into the Criteria and Behaviours Used to Assess Task Concept	Research Article Qualitative	Occupational Therapists in South Africa n = 18	CASP 2.1
15. Girardi and Zywicka-Rospond (2020) [29]	Activity Participation and Inpatient Violence in Secure Mental Health	Research Article Quantitative	Violent and non-violent psychiatric inpatients with psychosis, mood disorder, personality disorder or dementia in the UK n = 94	OCEBM 3
16. Jansen and Casteleijn (2009) [30]	To compare an Occupational Therapy programme tailored by the VdTMoCA compared to treatment as usual for patients with diabetic foot problems.	Research Article Quantitative	Type 2 diabetic patients with a diabetic foot condition South Africa n = 10	OCEBM 4
17. Jeffers (2015) [31]	The Lived Experience of Occupational Therapists who use Vona du Toit Model of Creative Ability	Master's Dissertation Qualitative	Occupational therapists in the UK n=7	CASP 2.2
18. Lee (2018) [32]	Development of an outcome measure based on motivation and action for occupational therapists in neurological rehabilitation	Master's Dissertation Qualitative	Occupational therapists in South Africa n=19	CASP 2.4
19. Monareng et al. (2021) [33]	The application of the Vona du Toit Model of Creative Ability to self-employment in South African informal microenterprises	Research Article Quantitative	Self-employed micro-enterprise owners in a low resourced urban township in South Africa n = 16	OCEBM 3
20. Nepaul (2017) [34]	The association between substance abuse, psychosis, and activity participation in adults: A retrospective record review	Master's Dissertation Quantitative	Patients with psychosis with a co-morbid substance abuse disorder, substance induced psychosis or schizophrenia without substance abuse in South Africa n = 240	OCEBM 4

Lead Author and Date	Research Title	Type of Evidence and Research Design	Context and Sample Size	Evidence Level and appraisal tool
21. Pillay (2016) [35]	Responsiveness to change and convergent validity of the activity participation outcome measure in adolescent mental health care users	Master's Dissertation Quantitative	Adolescent Mental Health Care Users in South Africa n = 24	OCEBM 4
22. Rice (2011) [36]	The development of an assessment protocol for activity participation in those suffering from mental illness	Master's Dissertation Qualitative	Mental health Occupational Therapists in South Africa n = 20	CASP 2.3
23. Samsonraj et al. (2012) [37]	Evaluating outcomes of therapies offered by occupational therapists in adult mental health	Research Article Quantitative	Adult mental health patients (inpatients 21%, community 46%, rehabilitation 10%, home treatment 4%, assessment unit 12%, forensic 7%) In the UK n = 109	OCEBM 3
24. Sherwood (2005) [38]	A study to explore the methods and processes of the model of creative ability assessment applied by occupational therapists in in-patient mental health and forensic settings in South Africa.	Master's Dissertation Qualitative	Mental health Occupational Therapists using the VdTMoCA in South Africa n = 15	CASP 2.3
25. Silaule and Casteleijn (2021) [39]	Measuring Change in Activity Participation of Mental Health Care Users Attending an Occupational Therapy Programme in Rural South Africa	Research Article Quantitative	Inpatients with schizophrenia, mood disorders or substance use disorders in South Africa n = 64	OCEBM 3
26. Turnbull et al. (2002) [40]	Investigation into the Assessment of Recovery in Head-injured Patients	Research Article Quantitative	Male adults with severe head injury in South Africa n = 16	OCEBM 4
27. Van der Linde and Casteleijn (2016) [41]	A comparison of two assessments of levels of functioning in clients with intellectual disability between occupational therapists and nursing staff within a long-term mental healthcare facility in South Africa	Research article Quantitative	Male and female children, adults and geriatric inpatients with intellectual disability. n = 568	OCEBM 5
28. Van der Reyden et al. (2017) [42]	The Analytical Survey Method: A valuable tool for efficient and effective Occupational Therapy service provision for a patient/client population	Commentary	Mental health care units in the UK	N/A
29. Van de Vyver and Willemse (2006) [43]	To classify children with severe and profound disabilities into groups according to levels of functioning and to devise a stimulation programme which can be implemented by caretakers.	Commentary	Patients with severe and profound mental retardation and/or cerebral palsy in South Africa n = 23	N/A
30. Wolhuter (2014) [44]	The impact of adolescence-initiated alcohol and cannabis abuse/dependence on the level of activity participation in adult males suffering from a psychotic disorder.	Master's Dissertation Quantitative	Males with psychotic disorder: with cannabis abuse, alcohol abuse or without substance abuse in South Africa n = 78	OCEBM 4

OCEBM scale: 1 = high level of evidence, 5 = low level of evidence; CASP scale: 1 = no to criteria question (Low evidence); 3 = yes to criteria question (High evidence).

The results of the review are presented according to the four broad questions as outlined in the Method section.

1. **In what clinical and non-clinical fields is the VdTMoCA applied to occupational therapy practice?**

Table III below summarises the clinical and non-clinical fields that were reported in the studies included in this mapping review.

Table III. Clinical and non-clinical fields

Mental Health	Physical Health	Non-clinical
Occupational Therapists Adult Inpatient Forensics Children Adolescents Older adults Alcohol and Substance Misuse Dementia Violence and Aggression Mood Disorder Personality Disorder Schizophrenia Psychosis Severe intellectual impairments	Occupational Therapists Stroke Neurological rehabilitation Traumatic Brain Injury Cerebral Palsy Type 2 diabetic foot	Self-employed Communities – low-income group

2. **For which stages of the occupational therapy process is the VdTMoCA used?**

The literature reports on the use of the VdTMoCA in the assessment (including screening), intervention and outcome measurement stages of the occupational therapy process. Of all the stages, assessment was reported on the most.

Assessment

The VdTMoCA's Creative Participation Assessment (CPA)[1] was most frequently reported. Validity and reliability of the CPA have been established in a mental health patient population, but further investigations were recommended [23], particularly in the field of intellectual impairment [41]. Carpenter [21] found the CPA is suitable for use with patients of various diagnoses and presentations in forensic mental health. In adult mental health services, Samsonraj et al.[37] found a good correlation between scores on the CPA and the Global Assessment of Functioning, but no correlation with the Canadian Occupational Performance Measure. In stroke rehabilitation and forensic mental health, the assessment is holistic[19,40], and flexible for use with differing client populations without losing an occupational therapy focus [21, 38]. The VdTMoCA assessment informed risk management in forensic mental health services[28,31,40] and a high security hospital[23], and was a holistic presentation of clients' abilities.

The Creative Ability Assessment grid was used by Turnbull et al.[40] for assessing adults with traumatic brain injuries and correlating the levels of creative ability with the Glasgow Coma Scale in 16 clients. The study suggests parallels between recovery of creative ability and neurobiological recovery in head-injured patients. Van der Linde and Casteleijn[41] found excellent correlation between the CPA and the nursing tool, the FSHS, indicating their potential to both guide suitable activity design for occupational therapy and guide nurses in executing appropriate care plans and intervention. Rice[36] developed the Activity Participation Assessment to assess domains of the model's APOM and showed good content validity. Adams[15] developed a tool to assess creative ability in groups of people, i.e., collective participation. Adams' tool showed good content validity. Van der Vyver and Willemse[43] used the VdTMoCA to inform the development of a screening tool which may help in formulating a sensory-based treatment approach for children with profound disabilities.

Intervention/Treatment

Informed by assessment of creative ability, therapists apply the VdTMoCA's level-specific treatment principles, which support clinical reasoning, and provide focused intervention at the 'just right' challenge, promoting engagement and meeting patients' needs[19,20,28,31,33,40,44]. In stroke rehabilitation, Bahgoo[17] found the VdTMoCA useful for setting achievable treatment outcomes, creating a therapeutic environment, and designing and facilitating intervention, which enables clients to experience success and increase their motivation to further participate. Several studies underscored the importance of intervention to the lower levels of functioning as they often present with challenging behaviours[19,21,26,42,45], or are unresponsive and unaware of their environment and who previously may have been deemed too unwell to receive occupational therapy services[41]. The VdTMoCA thereby addresses an under-explored aspect of occupational therapy.

Van der Reyden et al.[42] developed a tool, the Analytical Survey Method for occupational therapy managers to evaluate and develop their service to ensure cost-efficiency and maximise therapeutic input in mental health service delivery.

Outside of clinical settings, Monareng[33] found that the VdTMoCA is valued for predicting successful self-employment in a low-resourced community and predicting the support, supervision and therapeutic intervention needed to facilitate self-employment in South Africa. De Bruyn & Wright[27] outlined the potential of the VdTMoCA to enable occupational therapists to provide suitable intervention to support clients in job roles through graded activities targeting levels of creative ability.

Outcome Measurement

The APOM was the most reported outcome measure[5,19,20,21,24,28,31,35,36,38,41,46], followed by the CPA [21,30,37]. The APOM has sensitivity for detecting small change in patients with traumatic brain injuries, enabling identification of small changes in clients to justify service funding[19]. The APOM identified improvement post VdTMoCA-informed intervention in acute mental healt[22], and post usual occupational therapy in adolescent mental health[35]. When used routinely to monitor changes in activity participation over periods of time, outcomes raised awareness that institutionalisation may account for no overall change in forensic clients after a certain period of time [18]; changes in violent and nonviolent patients[29], and the optimal length of stay before inpatient adolescents ceased to make significant further progress [35]. APOM scores were used to make predictions: about the ability of clients with psychotic disorders and substance abuse to live independently in the community[34,44]; potential acute mental health re-admission for clients in certain circumstances[22]; and the minimum level and phase of creative ability for adolescents in a mental health service to cope effectively within the school environment[35].

Lee[17] developed an outcome measure to determine clients' levels of creative ability in the field of neurology, and Adams[15] developed a measure of collective participation, but both require testing in practice.

3. What are the strengths and weaknesses of the VdTMoCA?

The strengths were analysed in themes of contribution of the VdTMoCA to the occupational therapy profession, guiding the occupational therapy process and facilitating clinical reasoning, providing relevant and sensitive assessment and outcome measurement tools, guiding intervention and the just right challenge, measuring, predicting and advising about patients' intervention and discharge, and adding value and increasing professional identity. Figure 2 (page 9) depicts the strengths of the VdTMoCA in three timeframes: 2002–2008, 2009–2018, 2019–2024. Most strengths were reported in 2009-2018.

The utility of assessment and outcome measurement tools were the most reported strength, followed by the ability to measure, predict and advise on patient intervention and discharge. Within the theme of measuring, predicting and advising, several papers mentioned that the VdTMoCA enables clinicians to assess all clients, including the most significantly impaired for whom assessment has historically been problematic.

Similarly, the VdTMoCA enables intervention provision for all clients including the most severely impaired [32,38,41]. Through utilising the model, therapists are confident in defining and demonstrating their professional identity and value, and to gain recognition for the valuable contribution occupational therapy makes to multidisciplinary teams and a service as a whole [21,26,31]. Ultimately, job satisfaction as occupational therapists was experienced to a degree that was previously lacking before use of the VdTMoCA [26].

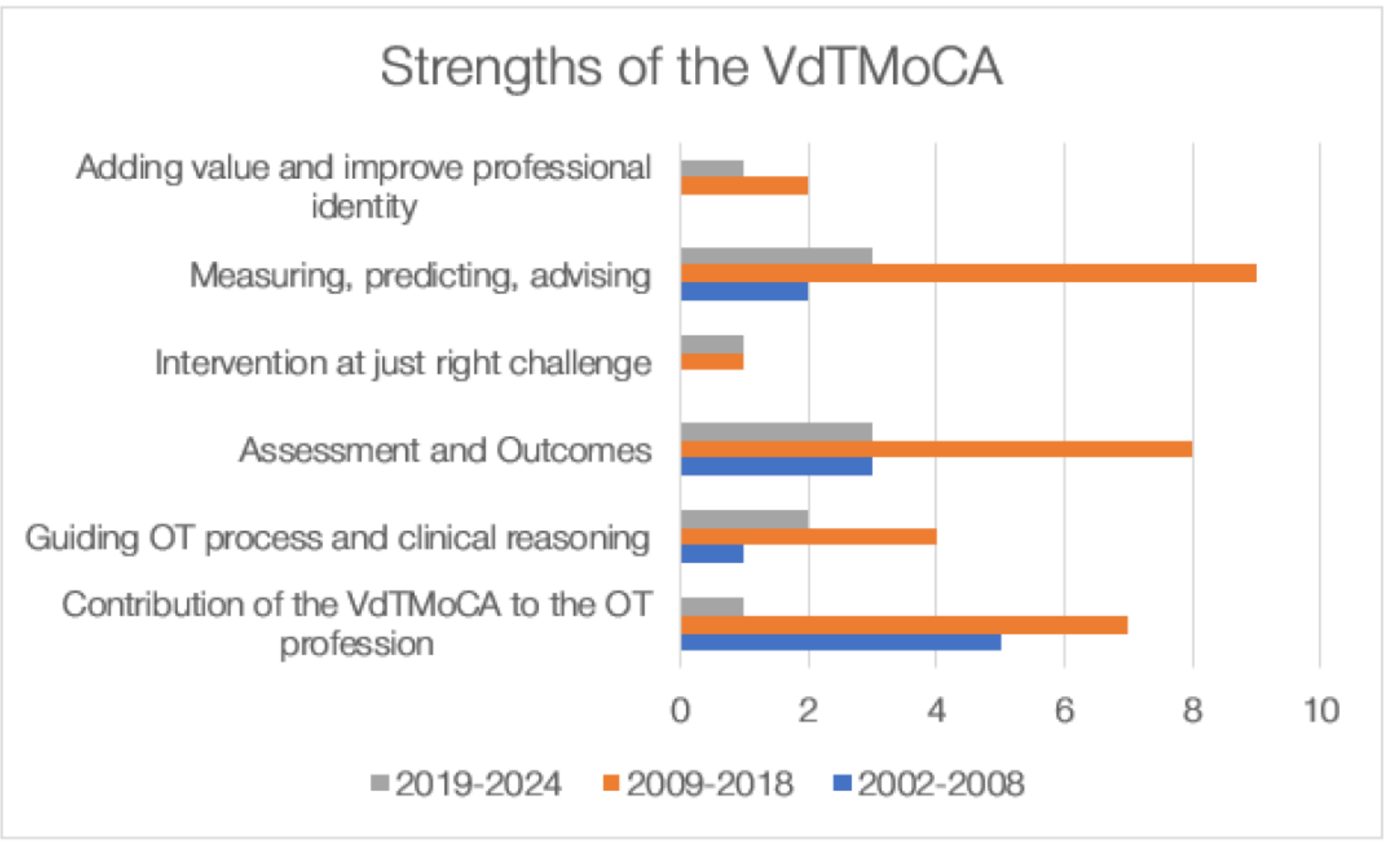

Figure 2. Strengths of the VdTMoCA reported in three timeframes

Challenges and weaknesses

Only one study aimed to identify weaknesses of the VdTMoCA[38]. However, the authors looked at all literature for mention of difficulties in understanding and utilising the VdTMoCA due to inherent shortcomings of the model. Issues emerged that were not indicative of weaknesses but challenges, related to learning and implementing it. As a result, a new category was established to encompass challenges. Figure 3 (page 9) indicates weaknesses, and challenges (indicated with *), most of which were reported between 2002-2018.

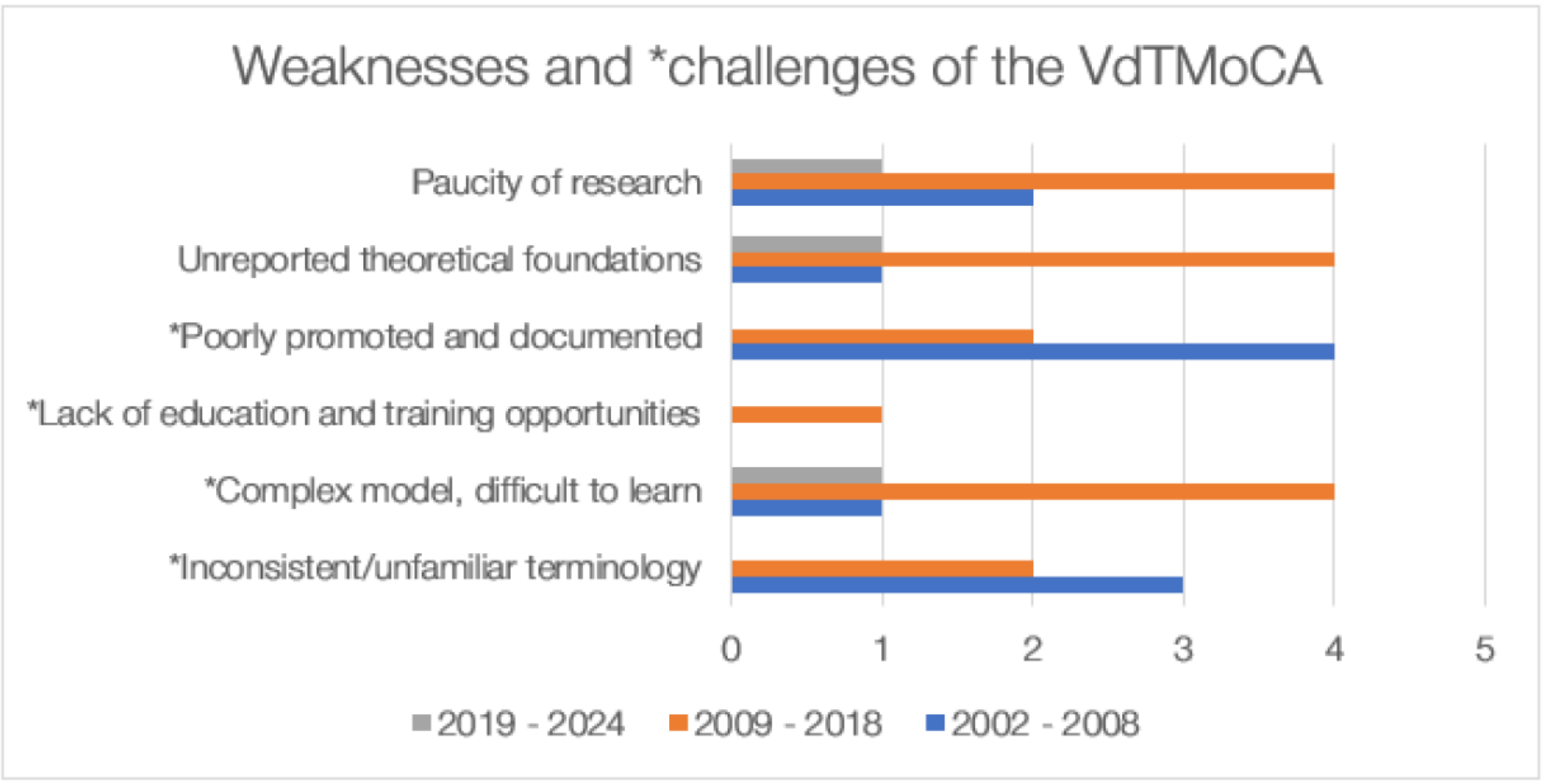

Figure 3. Weaknesses and *challenges of the VdTMoCA reported in three timeframes

Prior to 2019, the VdTMoCA was poorly documented[17,26,30,32] and was known by differing names, the inconsistency of which caused confusion for newcomers[24]. Some constructs lacked definitions at the time of the study[31], and perceived as open to subjective interpretation[21]. Before 2019, the absence of a published Creative Participation Assessment form, made the model difficult to use[15]. In the period 2002-2018, VdTMoCA terminology was experienced as unfamiliar and complicated, posing a challenge to learning the model[21]

Table IV – Findings of the Systematic Mapping Review. (See attached documents)

Research gaps

The need for research was predominantly stated in relation to the findings of research undertaken. The most mentioned research needs were effectiveness or validation of the VdTMoCA with different client groups, in various contexts[38, 41] as well as in wellness[43], and further testing of the CPA and APOM with different client groups[23,25]. The call for further validation of the CPA may be considered as superseded by Casteleijn's[25] study, however, the omission of the last three levels of creative ability from this study means that their existence still needs to be established[25].

Only nine papers mentioned the need for research. The majority were listed by Carpenter[21] in relation to the field of forensic mental health and not all clearly arising from Carpenter's research findings, but research ideas. Carpenter[21] suggests that research is needed into the benefits of the Model, specifically benefits to the multidisciplinary team of occupational therapists using the VdTMoCA and its compatibility with the Model of Human Occupation; facilitators and challenges of embedding the VdTMoCA within forensic services, the levels of creative ability as indicators of risk; and the VdTMoCA's terminology. New tools need a standardised protocol for their use[40]. Guidelines need developing for enabling self-employment for people with disabilities [33] and for the application of the VdTMoCA with stroke patients[17]. Equally, the authors note that the testing of new assessment tools/approaches that utilise the VdTMoCA[38,42], Lee's[32] new outcome measure, and the utility of new VdTMoCA-informed intervention[43] and the Analytical Survey Method[42], are yet to be reported.

DISCUSSION

Our study is the first to identify and describe the literature on the use of the VdTMoCA by occupational therapists, its strengths, weaknesses and challenges.

VdTMoCA across a broad range of clinical and non-clinical populations

The VdTMoCA shows versatility in its applicability in clinical and non-clinical setting. While the model is known to be used with older persons[47,48], and is purported to be applicable to young children[45], there is a lack of VdTMoCA literature on the model's utility with these client groups.

In non-clinical settings, the levels of creative ability have enabled therapists to predict a person's readiness for work, influencing various community projects[27, 33]. Given the prevalence of vocational training as an occupational therapy intervention in the UK[46], exploring the usefulness of the VdTMoCA in vocational rehabilitation[47] and supporting employment is worthy of exploration.

Adams[15] devised a tool to gauge creative ability levels within non-clinical community settings. The tool includes five domains and 19 items that help occupational therapists understand and assess the motivation, abilities, and dynamics of collectives to guide effective intervention and health promotion[16]. Uniquely, this study delves into creative ability within collective involvement rather than individual achievement. Communities frequently harbour invaluable local and indigenous knowledge and skills, which can be leveraged through collective engagement. Adams' tool holds the possibility to investigate and promote collective participation in communities, particularly in low and middle-income countries, to facilitate sustainable development that is inclusive and community drive[17.18].

The VdTMoCA in the assessment stage of the occupational therapy process

A strength of the VdTMoCA is that its assessment is flexible for use with a broad range of clients and presentations, enabling rapid intervention to promote recovery. This is partly due to being non-standardised, identified by some therapists as a benefit[23,26,40]. Non-standardisation allows individuals the time and freedom to show their volition and

abilities[24] , which is important for assessing creative ability in any moment[38]. This is particularly relevant to therapists working with clients experiencing acute mental health disturbance[48] , as therapists must engage with rapidly fluctuating needs[49 , 50]. Some therapists perceived non-standardisation as a weakness because they are externally pressured to use standardised assessments[31]. If occupational therapists hope to show the true value of occupational therapy, what is needed are assessments and measurement tools that focus on the person, not the instrument[51]. This review indicates that therapists value the VdTMoCA non-standardised occupation-based assessment for enabling assessment of all clients, including the most impaired and difficult to engage.

The VdTMoCA and risk assessment

A strength of the VdTMoCA is the value of the levels of creative ability in predicting and advising on clients' occupational behaviour and performance. Of particular note, is therapists' contribution of level of creative ability knowledge to risk assessment in forensic practice[29]. The levels are useful for facilitating MDT discussion and gaining a shared understanding regarding clients' readiness for changes to risk management, and to test readiness before making major risk management decisions [21]. Similarly, Dawes[26] reported that therapists clinically reason the link between clients' levels and risk, putting meaning to risk behaviour and advising on what therapy resources should be made available to manage risk. Through the lens of the levels of creative ability, therapists are empowered to challenge other discipline's underlying assumptions regarding risk and readiness to engage with staff, and provide a different insight into reasons for particular behaviours[21 , 29]. As a result, therapists enable the MDT to realise a more sympathetic and less critical approach towards clients, which enhances staff support and prevents the team from setting unachievable patient goals[21].

Using the 'just right' challenge in VdTMoCA-informed intervention

The concept of the just right challenge, pioneered by Ayres and Marr[52], was consistently highlighted as a crucial component of intervention. The principle of grading challenges and facilitating satisfying participation is essential for enabling an experience of success and accomplishment, increase motivation for continued participation and ultimately, facilitate growth from one level and phase to the next[19,20,26,28,31,33,40]. Rebeiro and Polgar[53] describe the just right challenge as essential for enabling initial and sustained occupational engagement.

An important strength of the VdTMoCA is that it enables occupational therapy at the 'just right challenge' for clients on the lowest levels, presenting as 'low functioning', difficult to motivate, or with erratic and unpredictable behaviour and experienced by therapists as difficult to assess and treat[24]. Therapists identify what is and is not the 'just right challenge' in terms of intervention and in clients' daily living experience. This is a significant finding, as there is an absence of occupational therapy literature on this aspect of practice. The literature suggests that the VdTMoCA fills a gap in knowledge for therapists, despite use of other models[31].

The levels and phases of creative ability enable therapists to anticipate or predict challenging situations for clients, assisting in smooth transitioning from hospital to community integration. Using the APOM as a measure, Wolhuter[44] and Nepaul[34] found that the overall level of creative ability for clients with psychotic disorders and substance abuse predicts difficulties living independently in the community, prompting targeted intervention. In adolescent mental health, trends in activity participation captured on the APOM indicated a minimum score (Passive Participation level, therapist-directed phase) for clients to be able to cope within the school environment [35]. APOM data also identified degree of decline in function on discharge and the need for ongoing community services[39]. Carter's[22] research in acute mental health revealed that changes in phases within a level were more prevalent than shifts in entire levels, providing valuable insights to expectations of improvements from admission to discharge. Furthermore, Carter[22] suggests that it is possible to predict acute mental health re-admission for clients discharged below the Passive Participation level. Monareng[33] also suggested a benchmark of Passive Participation is required before exploring self-employment as a work option for clients in rehabilitation.

The VdTMoCA and Outcome Measurement

The use of VdTMoCA tools has underscored the significance of outcome measurement in occupational therapy. The delineation of phases within levels of creative ability is a key feature of the VdTMoCA assessment and outcome measurement tools, enhancing its sensitivity in detecting subtle changes in occupational behaviour and activity participation. Casteleijn[25] confirmed that the levels of creative ability with the phases in each level, follow a hierarchical order which resembles the characteristics of a linear or interval scale. This feature makes the APOM sensitive to change. Multiple studies have emphasised the APOM's sensitivity and responsiveness, particularly in illustrating changes during and after intervention[20,21,24,28,37,41]. Demonstrating the effectiveness of interventions has long been a focal point in occupational therapy research[54 , 55]. The VdTMoCA has emerged as capable of capturing and showcasing changes pre- and post-intervention, with potential to evidence the impact of intervention.

Clinical reasoning and professional identity

The VdTMoCA is valued for enabling clinical reasoning with confidence, justification of interventions to the MDT[23,28,33], resulting in a positive professional identity[23,28,33,40], and job satisfaction[26]. However, the lack of published research limits the implementation of the VdTMoCA, therefore there is a need for research and publication on the application to practice.

Learning the VdTMoCA: weaknesses and challenges

The VdTMoCA is a complex model requiring reading and experiential learning, preferably through an apprenticeship approach, but certainly over an extensive period[28,33,40,60]. This is challenging, particularly for occupational therapists in contexts where the VdTMoCA is not well-known[8], as is the case in the UK[20 , 21]. Introducing the VdTMoCA to UK practice commenced in 2003[8], however, few qualifying therapists know it[21]. This impacts therapists' progress in developing their VdTMoCA knowledge as service provision is interrupted by teaching the model to new staff[21]. Education must prepare students for practice, hence Carpenter[21] calls for the VdTMoCA to be taught in pre-registration UK education. However, teaching a model is reliant upon educators' personal preferences[56] and having adequate knowledge to do so, but such competence is only recently emerging in the UK.

No terms were specified, but VdTMoCA terminology was experienced as unfamiliar and complicated, posing a challenge to learning the model[23,40]. Some terms lacked definitions, leaving them open to subjective interpretation[23,33]. Addressing this weakness has been critical through research Sherwood[57] and the publication of the VdTMoCA text. Grasping new professional terminology and/or different interpretations of the profession's axioms is a known challenge in learning a new occupational therapy model[58]. Each occupational therapy model should extend the knowledge of the profession[59]. This review indicates that the VdTMoCA is valued for its contribution to the knowledge and practice of occupational therapy, only possible through contributing new conceptualisations which in turn, necessitates new terms.

Need for research

As expected with a practice model purported to be applicable to all individuals and guide the entire occupational therapy process, there are many areas of the Model requiring research. It is important to recognise the significant differences in the economic, socio-cultural contexts of research and that not all research is generalisable. There is a need for more studies in different contexts and client groups. While there is valuable research utilsing the Model's outcome measures to discover important factors affecting client outcomes, it is essential to establish

that positive outcomes are the result of the effectiveness of the VdTMoCA. As a practice model which details the what, how and why of occupational therapy, together with its outcome measures the VdTMoCA provides all that is needed to demonstrate the effectiveness of occupational therapy and identify what brings about change. There is therefore, tremendous scope for research that uses control groups and for detailed service evaluations[42] . Finally, the need to testing and develop theory, although not explored in this review, should not be overlooked.

CONCLUSION

Our findings support Van der Reyden et al.'s[1] assertion that the VdTMoCA is an occupational therapy practice model that guides the whole occupational therapy process. Occupational therapists can apply this model broadly for various client needs within clinical and non-clinical contexts. The VdTMoCA has good utility for serving individuals with varying degrees of volition, motivation and occupational performance, changes in which can be captured by the model's assessment and outcome measurement tools. The VdTMoCA enables therapists to provide clinically reasoned justification of interventions, improving therapists' sense of value and professional identity.

The model's effectiveness in working with clients at lower levels of creative ability and those exhibiting challenging behaviours underlines its value in addressing a neglected aspect of occupational therapy, especially in mental health services. This suggests that the VdTMoCA is filling a gap in therapists' knowledge. Similarly, the VdTMoCA is making a significant contribution to occupational therapy and multidisciplinary service delivery in forensic services, previously highlighted as an area potentially needing a new occupational therapy model[60].

The model's weaknesses appear to relate to the limited extent of its documentation. As these weaknesses are only evident in literature pre-dating the 2019 publication of the VdTMoCA in full, it is unclear whether they have been adequately addressed. Findings regarding challenges support the assertion that the VdTMoCA is not a simple model which can be learned quickly. Research which provides insight into what it takes to learn and know the VdTMoCA is needed, taking into consideration the influence of pre-registration occupational therapy education. In preparing students for practice, occupational therapy programmes are encouraged to explore the extent to which the VdTMoCA is used in local services and consider the need to include the VdTMoCA in its curriculum.

Given the breadth of this review's aims, relatively little literature was found and much of it was unpublished. A valued uniqueness of the VdTMoCA is that it provides theory-driven, occupation-focused detail on how to design interventions for defined outcomes which can be captured by the APOM. Therefore, to meet an occupational therapy research priority to demonstrate the effectiveness of occupational therapy, develop evidence-based practice and demonstrate the value of occupational therapy, this review strongly encourages occupational therapists to undertake rigorous high-quality research into the link between VdTMoCA-informed intervention and outcomes. Furthermore, publication is essential.

Author Contributions

Daleen Casteleijn and Wendy Sherwood conceived the study and developed the protocol for the review. Daleen Casteleijn obtained the software to screen and chart the data and accessed the library resources of the University of Pretoria. All listed authors participated in the searching and screening of the literature, as well as charting the data. All three listed authors contributed to the writing up of the manuscript.

Conflicts of Interest

Daleen Casteleijn and Wendy Sherwood independently provide paid services for training in the VdTMoCA.

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