

Original Article

# Trauma informed occupational therapy school practice with adolescents with social emotional and behavioural difficulties: findings of standardised measures<sup>1</sup>

*Trauma informando práticas escolares em terapia ocupacional com adolescentes em dificuldades socioemocionais e comportamentais: achados a partir de medidas padronizadas*

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## **Abstract**

**Introduction:** Although non-standardized qualitative and quantitative reports from 39 Irish students aged 12 to 14 years, with complex social and emotional needs and their 13 teachers had established benefits of ‘Movement Matters’, an occupational therapy designed participatory curriculum for learning self-regulation in mainstream schools (National Behaviour Support Service, 2015a), standardized measures were required for quality assurance by the Irish Government funded service. **Objective:** The relevance of findings of standardized attitude measurements on the impacts of an occupation focused intervention with a discrete school population in areas of social disadvantage are discussed. **Method:** Findings of the ‘Pupil Attitude to Self and School’ (PASS) (Granada Learning, 2021) and ‘Strengths and Difficulties Questionnaire’ (SDQ) (Youth in Mind, 2021), both well-established standardized measures of attitude and behaviours completed (pre and post intervention) by teachers, parents and students are presented. **Results:** No statistically significant differences were found between the standardized pre and post intervention measures. However, findings indicate a disparity between how

<sup>1</sup> Ethical permission: Permission to conduct this research study was granted by the NBSS. This included permission granted by parents, students and teachers for their data to be included in the study. The ethical requirements of the Faculty of Health Sciences Ethics Committee, Trinity College Dublin were met. All national child protection and national good practice guidelines for working and researching with children in school were adhered to in the trial and in the review and exploration of the trial data. All ethical decisions regarding this study were made following discussions with the research supervisor and NBSS coordinator.

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these students in complex environments experience school in comparison to large UK study populations. **Conclusion:** This paper discusses the use of these standardized measures for capturing impacts of an occupation focused intervention in a school environment. It calls for an increased appreciation on outcomes measurement related to the intervention's aim of providing experiences of meaningful participation and well-being. Further collaborative research on outcome measurement of participation of students in complex mainstream school environments is required.

**Keywords:** Schools, Adolescents, Reliability of Result, Social Justice, Occupational Therapy/Education.

### Resumo

**Introdução:** Embora relatórios qualitativos e quantitativos não padronizados de 39 estudantes irlandeses, de 12 a 14 anos, com necessidades sociais e emocionais complexas e seus 13 professores tenham estabelecido benefícios de 'Movement Matters', uma terapeuta ocupacional projetou um currículo participativo para aprender autorregulação no ensino regular (National Behaviour Support Service, 2015a), tendo sido necessárias medidas padronizadas para garantia de qualidade do serviço financiado pelo governo Irlandês. **Objetivo:** Discutir a relevância dos resultados das medidas de atitudes padronizadas sobre os impactos de uma intervenção focada na ocupação com uma população escolar em áreas de desvantagem social. **Método:** São apresentados dados do 'Pupil Attitude to Self and School' (PASS) (Granada Learning, 2021) e 'Strengths and Difficulties Questionnaire' (SDQ) (Youth in Mind, 2021), ambas medidas padronizadas bem estabelecidas de atitude e comportamentos (pré e pós-intervenção) por professores, pais e alunos. **Resultados:** Não foram encontradas diferenças estatisticamente significativas entre as medidas padronizadas pré e pós-intervenção. No entanto, os resultados indicam uma disparidade sobre como esses alunos vivenciam a escola em ambientes complexos, em comparação com estudos de grandes populações no Reino Unido. **Conclusão:** Este artigo discute o uso dessas medidas padronizadas para compreender os impactos de uma intervenção focada na ocupação em um ambiente escolar. Observa-se a necessidade de uma maior apreciação da medição de resultados relacionados ao objetivo da intervenção ao fornecer experiências de participação e bem-estar significativos. São necessárias mais investigações colaborativas sobre a medição dos resultados da participação dos alunos em ambientes complexos de escolas regulares.

**Palavras-chave:** Escolas, Adolescentes, Confiabilidade do Resultado, Justiça Social, Terapia Ocupacional/Educação.

## Introduction

Earlier reports from student and teacher voice had established the benefits of 'Movement Matters', a differentiated curriculum programme to support self-regulation for better participation in schools. This report discussed the findings and limitations of pre and post standardised measures related to this discrete group of students with significant challenges.

Attending and thriving in school is one of the most important occupations of childhood and adolescence. The educational experience of individuals can have lifelong impacts in terms of employment, social maneuverability and overall wellbeing (Rumberger & Rotermund, 2012). This is especially the case for students from socially disadvantaged communities, some of whom experience social emotional and behavioural difficulties (SEBD) that significantly impact on their engagement in school occupations (Smyth & McCoy, 2006; Riddell, 2008). Higher prevalence of students with SEBD has been reported in schools in areas of social disadvantage (McCoy et al., 2012). There is a body of literature that applies the concept of developmental trauma to those experiencing the more severe SEBD difficulties (Ford & Cloitre, 2009; Sarr, 2011) so as to better understand their needs. Developmental trauma refers to exposure to multiple, cumulative traumatic events, usually of an interpersonal nature, during childhood which results in developmentally adverse consequences (Busuttill, 2009; van der Kolk, 2005; Cahill & Pagano, 2015). Traumas can include the experiencing of physical, sexual and emotional abuse, neglect, loss, or disruption of primary attachment relationships and chronic emotional dysregulation of caregivers (Ford & Cloitre, 2009; Sarr, 2011). The impact of developmental trauma compounds the everyday challenges that this underserved student population faces and increases the likelihood of school dropout and long-term occupational deprivation (Marczuk et al., 2014). This paper aims to contribute to the growing body of literature (Whiting, 2002, 2018; Petrenchik & Weiss, 2015) relating to occupational therapy's role in relation to trauma informed school practice by reporting on some of the findings of an occupational therapist-teacher collaboration in developing and delivering a self-regulation learning programme with adolescents with SEBD in 13 post primary schools in Ireland. The intervention under study is called 'Movement Matters' and has been the focus of research previously using non-standardised measures and qualitative data (National Behaviour Support Service, 2015a; Fitzgerald & Mac Cobb, 2017). The study presented here builds on this previous work by employing pre and post standardized measurement scales of attitudes and behaviour widely used with school populations in the United Kingdom and elsewhere (Parliament, 2010; National Behaviour Support Service, 2013; Granada Learning, 2016). The Strengths and Difficulties Questionnaire (SDQ) (Youth in Mind, 2021) and the Pupil Attitude to Self and School (PASS) (Granada Learning, 2021) measures are widely accepted in mainstream education as a student profiling tool (Parliament, 2010), and as a recognised method of evaluating interventions (Mathai et al., 2003; Ford et al., 2009; van Roy et al., 2008; Palmieri & Smith, 2007; Richter et al., 2011). The national agency delivering this work routinely applied these measures as part of their evidence gathering approach. The authors were interested in exploring the characteristics of this discrete group of students and recognised the potential of the SDQ and PASS in this regard.

Pawson & Tilley (1997) conceptualised programmes such as Movement Matters as 'theories' which are embedded in the complex social systems of schools where desired outcomes are dependent on (1) the individual capacities of students and teachers, (2) the interpersonal relationships created between them, (3) the institutional environment of schools that promote alternative views on behaviour and learning and (4) the wider educational system and policy makers that support or undermine the participation of students with diverse learning needs.

## **The Context**

The background to the work described in this paper involves the collaboration between an academic Occupational Therapy Department in an Irish university, and the National Behaviour Support Service (NBSS) in the national Department of Education. This service is designed to promote positive behaviour for learning through the provision of a systematic continuum of support in Post-primary schools (age range from 12 to 18 years), addressing students' social, emotional, academic and wellbeing needs, through collaborative consultation and specifically designed programs at three levels: Level 1: school-wide for all students, Level 2: targeted intervention for some students estimated at approximately 15% and Level 3: intensive individualized support for a few students, estimated at 5% (Sugai & Horner, 2002; Fuchs & Fuchs, 2006; Lane et al., 2009). A "Behaviour for Learning Programme" trained teacher facilitates the planning, implementation and evaluation of effective responses to challenging behaviour at Level 2 and Level 3, (approximately 20% of the school population) in NBSS partner schools. This teacher works with identified students, individually or in small groups on learning programmes that are designed so students can participate and succeed better in school. An individual Student Behaviour Plan is developed for each student in receipt of this support. The majority of Irish schools involved with this service are designated as "DEIS" schools (Delivering Equality of Opportunity in Schools) within the Irish education system. They tend to be located in communities experiencing social disadvantage. DEIS schools differ from non-DEIS schools in terms of the social class background, parental education, household income and family structures of their students, and have a greater prevalence of students from non-English speaking backgrounds and students with special educational needs. While the curriculum offered is the same as in non-DEIS schools, the DEIS schools are distinguished by their access to additional funding for learning supports and slightly smaller class sizes because of their needs. Cooper & Jacobs (2011) reported that greater numbers of students in DEIS schools experience social, emotional and behavioural difficulties which interfere with social functioning and academic engagement. Thus, characteristics of the schools include lower rates of completion of junior and senior cycle than non-DEIS schools and have more challenging disciplinary climates. Such negative interactions are associated with lower rates of school retention and progression to post-school education and training (Smyth et al., 2015).

Research published by the National Behaviour Support Service indicates the positive contribution made by occupational therapy to improving school experience and achievement in these settings (National Behaviour Support Service, 2015a; National Behaviour Support Service, 2015b). A 2014 study states that students with SEBD receive inadequate occupational therapy services, are at risk of limited participation or exclusion from school, and are an underserved population (Marczuk et al., 2014).

## Literature Review

### Trauma informed OT practice

Trauma in childhood is a pervasive issue but has not been the focus of many school-based occupational therapy intervention studies. Whiting (2018) suggests that it is reasonable to assume that most school-based occupational therapists are in school regions that have children who have experienced trauma, particularly those therapists that work with an at-risk population such as those attending 'DEIS' post primary schools in Ireland. Having a full understanding of the impact of trauma on a child's school performance is essential for those working in the schools to help facilitate the development of skills that are needed to prosper in a learning environment (Day et al., 2015). The link between social deprivation and SEBD is well established. The literature points to a pattern of problematic behaviour and low academic achievement in areas of social disadvantage. Duncan et al. (1994) found that low income and poverty were good predictors of cognitive development and behavioural measures. Other research refers to the importance of the early childhood years for learning self-regulation skills such as regulating attention (Holzer et al., 2007; Duncan et al., 2007). Bolger et al. (1995) established the link between long term exposure to poverty and behavioural problems at school. Marczuk et al. (2014) posits that at-risk students may be marginalized by the lack of available programs that foster school connectedness and meet their needs. For example, students who fail a grade may disconnect from school due to separation from valued peer relationships. NBSS school based occupational therapists guided by evidence informed practice models such as the Person-Environment-Occupation model (Law et al., 1996) are well placed to develop curriculum content (O'Donnell, 2015; Fitzgerald & Mac Cobb, 2017) that meet the 'occupational needs' (Doble & Caron-Santha, 2008) of students affected by trauma and have contributed to an enhanced school experience.

The literature favours a sensory based approach to designing trauma sensitive interventions for such students (LeBel & Champagne, 2010; LeBel et al., 2010). A sensory approach can support a person's self-organization, helps them to reduce the frequency of crises (Champagne & Stromberg, 2004), and learn about modulating their own arousal levels (Arvidson et al., 2011). Trauma-informed occupational therapy interventions should focus on sensorimotor arousal regulation while emphasising student strengths, as well as build resilience and a sense of safety and control (Hopper et al., 2010). Such interventions should also promote mastery and problem solving skills and be completed in a fun, playful environment with a supportive peer to promote a co-regulated learning experience (Arvidson et al., 2011). The importance of blending a sensory approach with cognitive strategies in order that students are able to become more self-aware and make adjustments when needed to increase participation is highlighted by Petrenchik & Weiss (2015). Self-regulation programmes such as the Alert Program (Williams & Shellenberger, 1996) adopt this blended approach and have been found to be beneficial for students with SEBD (Mac Cobb et al., 2014; O'Donnell, 2015). Whiting (2018, p. 298) outlines her vision of trauma informed school based occupational therapy interventions that strive for participation-focused gains in education, social interaction, and play. With an improvement in resilience and

engagement in the occupation of being a student, the child can feel empowered to achieve success. “Under the facilitation and leadership of the occupational therapist, this type of programming in the public schools could provide much needed support for children who have experienced trauma”. In addition, a recent review of activity and occupation-based interventions, found substantial evidence to support the use of activity and occupation based interventions to address the mental health, behavioural, and social participation concerns of children and youth, particularly those that enhance the mind-body connection (Cahill et al., 2020).

## **Movement Matters Programme Description**

‘Movement Matters’ is a sensorimotor based programme aimed to support and develop the behaviour for learning skills of students receiving ‘Level 3’ intensive support within the Behaviour for Learning classroom. The programme offers students the opportunity to experience daily success in a school-based occupation and be recognised as an effective learner by peers and adults. It is composed of 20 sessions, run each day for 20 minutes with one or two students as part of their individualized Behaviour for Learning plan. It consists of a range of activities to build students’ skills and confidence in four key developmental movement categories: prone extension; bi-lateral integration; supine flexion and postural control. The selection and development of these categories was informed by the ongoing research and advancement of Sensory Integration theory (Ayres, 1972, 1979; Schaaf & Miller, 2005). While the intervention does not adhere to the strict criteria of Ayres ‘Sensory Integrative Approach’ (Ayres, 1972, 1979) in terms of its implementation, it is very much grounded in the theory of sensory integration and modulation (Miller & Lane, 2000; Willingham, 2011). The short, intense, daily physical activities in the programme aim to provide regulating and organising sensory input and enable more effective school participation throughout the school day. The programme was designed for teacher delivery, in the space available in the Behaviour for Learning program classrooms. The initial feasibility study of the “*Movement Matters*” programme was implemented in 11 NBSS Post-primary partner schools, in locations around Ireland during the academic year 2013/2014.

Research on teacher and student perceptions of the program and its applicability in the school setting was conducted. For this, Behaviour for Learning teachers were provided with in-service training and on-going weekly in-classroom support from the occupational therapist for facilitation of the program. The findings from the feasibility study, suggested that *Movement Matters* was an effective intervention for students experiencing difficulties staying on-task in the classroom (National Behaviour Support Service, 2015a). The study also found that engagement in the programme has contributed to students’ social and emotional literacy skills. The “calming” effect of the program was found to be quantitatively significant and qualitative data provided by both teachers and students concurred that the students were better able to attend to their mainstream lessons having done *Movement Matters*. For example one teacher commented that

The effect that this programme has had on Student 2, in my opinion, has been excellent. He is a very challenging student and has a lot of OT

difficulties. This opinion has been backed by members of our Care Team who have reported that he seems calmer and physically more able to stay seated in class. It must be mentioned also that this student has himself requested to continue with this programme as he is aware that it helps him to stay focused in class (National Behaviour Support Service, 2015a, p. 33).

Another teacher reported that

[...] from a behavioural point of view found it fantastic as in one of the students I was working with ...I have worked with him for two years now and I have done various different interventions, Crucial Skills...and while we had some success with him the success we had with him when we did this was unbelievable. The difference in the child...the way he reacted in class, how he was able to settle and it wasn't just the fact that he was coming in and he liked doing it...it definitely made a difference. Teachers were coming back and saying to me how he was more focused, that he was actually getting involved, that he wasn't just being quiet for the sake of just getting the mark to be able to come back in, he was engaging more with it, with the lessons even when he had the class after the Movement Matters or before, that would usually be a class that he would get in trouble in, he was engaging in class, he was answering questions, he was doing the bit of homework, he was interacting with the other kids...so from that point of view it really, really made a difference (National Behaviour Support Service, 2015a, p. 41).

From a student perspective, nearly three quarters (70.0%) of the students who responded indicated that they felt that doing Movement Matters had helped them to feel calmer in all or most of their other lessons. Over a quarter (26.7%) stated they felt calmer in all of their lessons. Most of the students (77.8%) reported that they felt Movement Matters had helped them with their learning in the classroom. Many of their responses to describe how it had helped them in this area referred to being calmer. Nearly all of the students (92.6%) indicated that Movement Matters had helped them with their behaviour in the classroom. Many of the student responses referred to the way Movement Matters had calmed them down and so their behaviour in lessons had improved with the implication that they were better able to learn skills and subject content during mainstream classes. Some perspectives of the programme's impact in the students' own voice are outlined below (National Behaviour Support Service, 2015a, p. 37).

"Yes was not fidgeting as much in class".

"Yes, was calmer when I went back".

"It calmed me down more".

"I focus on my work".

"Calm me down, I was quiet".

"I got out of class. Keeps you calm".

“Yes. Didn’t get into trouble after doing it”.

“Yes because I was very chilled going back to class”.

“Yes a bit. It makes you focus more when you go back in”.

“Easier to behave as I was calm”.

“Helped me calm down”.

“I can sit still in class more”.

“Yes I was chilled out”.

“Yes kind of, it was just easier to relax in class”.

“It calmed me down”.

“Better at staying in my chair in class”.

“Feel better after”.

“Stop listen and think, got all 1s some days”.

“Didn’t get into much trouble”.

“I was good after doing it” (National Behaviour Support Service, 2015a, p. 38).

The process of developing the Movement Matters programme has also been studied (Fitzgerald & Mac Cobb, 2017). The need for this intensive, individualised self-regulation learning programme emerged from the collaborative relationships established between occupational therapists and teachers who had successfully implemented an adapted version of the Alert Program in NBSS partner schools (Mac Cobb et al., 2014; National Behaviour Support Service, 2015b) The Movement Matters programme was found to be the product of an interdisciplinary scholarship of practice approach (Hammel et al., 2002) to developing practice and generating knowledge in a practice context that had little evidence to inform practice at the time (Fitzgerald & Mac Cobb, 2017).

The rationale for reporting the findings of this study stems from calls for more research into activity and occupation-based interventions to support mental health, positive behaviour, and social participation for children and youth (Cahill et al., 2020) and for more trauma-informed interventions that can be implemented in schools under the leadership of occupational therapists (Whiting, 2018). There is also a call within the profession for robust outcomes measures to be used to evaluate practice to improve the evidence base of occupational therapy (Laver Fawcett, 2014; College of Occupational Therapists, 2013; Law & McColl, 2010).



## **Methodology**

### **Context of the study**

The data reported here was first documented in the lead author's PhD study (Fitzgerald, 2019) that examined the wider practice development journey and evidence generating process for school based occupational therapy in Ireland between 2010 and present day. The approach to this practice and research was pragmatic in nature and aimed to take advantage of a unique partnership between a university department and a government body. Collaborative relationship building between therapists and teachers was prioritised (Missiuna et al., 2012) in the early stages and opportunities for therapeutic intervention supports were identified. Research opportunities presented themselves and practice-based evidence was considered important as this stage with a view to developing more robust methodologies as the practice context was clarified (Fox, 2003; Barkham & Mellor-Clark, 2003) and the occupational therapy influence within the NBSS strengthened. The data reported here is part of that process of practice development, evaluation and reporting. Future applications of the Movement Matters programme are planned and it is intended that the outcomes of this research will inform the design and evaluation of those iterations with the goal of increasing the quality and robustness of the evidence collected.

As referred to in the introduction, this pilot study of Movement Matters was designed as a follow-on from the feasibility study of Movement Matters in 2013/14 (National Behaviour Support Service, 2015a) that collected non-standardised quantitative data and qualitative data pertaining to student and teacher experiences of the programme. The selection of the standardised measures, the Strengths and Difficulties Questionnaire (SDQ) and the Pupil Attitude to School and Self (PASS) measure was influenced by the NBSS's aspiration to build on the qualitative evidence of the feasibility study and supplement it with more robust quantitative outcome data. A literature search had not identified that more suitable measures were available for this discrete group within the school population.

### **Participants**

The participants of this study are the 39 students who engaged in the Movement Matters Programme over the course of the research period (2014/2015). Their ages ranged from 12 to 15 years with a mean age of 13.4. Thirty four of the participants were male and 5 female. Thirteen teachers in 13 schools in urban (9) and rural (4) settings were involved in delivering the programme. Two students were selected to complete the programme in each school. The selection criteria for students was not strict other than that the students would have completed the adapted Alert Programme (National Behaviour Support Service, 2015b), in order that they were familiar with the concept and language of self-regulation. Teachers were advised that the programme was designed for students receiving Level 3 support, those with more complex needs, and exhibiting behaviours consistent with a profile of Attention Deficit Hyperactivity Disorder (ADHD) or Sensory Modulation Disorder (SMD).

However, they did not require an official diagnosis of such a disorder to participate, in line with policy developments in the provision of additional learning supports for student in Irish schools (National Council for Special Education, 2014). Following a teacher training day, occupational therapists engaged in once weekly co-facilitation programme session with the teachers in their classroom to assist them with delivery, problem solving, individualised student support and planning for programme sustainability.

Permission to conduct this research study was granted by the NBSS. This included permission granted by parents, students and teachers for their data to be included in the study. The ethical requirements of the Faculty of Health Sciences Ethics Committee, Trinity College Dublin were met.

## **Measures**

### *Strengths and Difficulties Questionnaire (SDQ)*

The Strengths and Difficulties Questionnaire (SDQ) is a brief behavioural screening questionnaire designed for use with 3-16 year olds. It exists in several versions to meet the needs of researchers, clinicians and educationalists. The NBSS chose the SDQ as an outcome measurement for the study as it had been used in prior studies (National Behaviour Support Service, 2013) to measure changes in behaviour and is recognised as an appropriate tool for evaluating interventions. “Before” and “after” SDQs can be used to audit everyday practice (e.g. in clinics or special schools) and to evaluate specific interventions (e.g. parenting groups). Studies using the SDQ along with research interviews and clinical ratings have shown that the SDQ is sensitive to treatment effects (Mathai et al., 2003; Ford et al., 2009; van Roy et al., 2008; Palmieri & Smith, 2007; Richter et al., 2011). Students who participated in the Movement Matters Programme were measured from three sources; self, parent/guardian and teacher before and after the programme was delivered.

### *Pupil Attitude to School and Self*

*Pupil Attitudes to Self and School (PASS)* is an all-age attitudinal survey that provides a measurement of a pupil’s attitudes towards themselves as learners and their attitudes towards school, suitable for pupils aged 4 to 18+. This psychometric measurement that has been standardised against a highly representative national sample of more than 600,000 respondents and is used in over 2,500 schools across the UK (Granada Learning, 2016). PASS has been verified for test-retest reliability, demonstrating that it measures core attitudes rather than shifting attitudes and tastes. Without this validity, scores would vary significantly when re-measured at another time and be skewed by unknown and tangential influences (Parliament, 2010).

It assesses nine core dimensions linked to behavioural difficulties and well-being: Feelings about school, Perceived learning capability, Self-regard, Preparedness for learning, Attitudes to teachers, General work ethic, Confidence in learning, Attitudes to attendance, Response to curriculum demands.

## **Administration of measures**

The researcher was not involved in the interactions with students while the PASS measure was being administered before and after the Movement Matters Programme. The administration of the pre and post PASS and SDQ measures was facilitated by an associate of the NBSS who is on The Register of Qualifications in Test Use (RQTU) and has been awarded qualifications in educational test use by the British Psychological Society. The students did not have had any previous relationship with the assessor.

## **Data analysis**

Quantitative data was prepared for analysis by the scoring and coding of outcome measures. Data was entered into the statistical package for social science programme, version 18 (SPSS, Inc., Chicago) by the researcher. Before the analysis of the pre and post PASS and SDQ measures can be completed, it was necessary to assess the distribution of the collected data. Parametric tests are used to assess normally distributed data while non-parametric tests can be used to assess non-normally distributed data. For this study, the assumption of normality was tested using the Kolmogorov Smirnov/Shapiro Wilks test. A non-significant result (sig. value of more than .05) indicates normality. The null hypothesis assumes that there will be no statistically significant change in the students' scores after completing the intervention. Statistical significance for both of these tests is determined by the probability (p) value found in the final column of the results tables under Sig. (2-tailed). If the value is less than 0.05, it can be concluded that there is statistical significance between the two scores and the null hypothesis is rejected. If the score is more than 0.05, the null hypothesis remains.

## **Findings**

### **Distribution of data**

For this study, the assumption of normality was tested using the Kolmogorov Smirnov/Shapiro Wilks test. A non-significant result (sig. value of more than .05) indicates normality. Data that was found to be normally distributed was tested using the 'paired t-test', while non normally distributed data was tested using the non-parametric 'Wilcoxon signed rank sum test'.

### **PASS analysis**

This section reports the results the pre and post intervention PASS scores to evaluate the impact of the intervention on students' scores. This analysis was conducted using a 'Paired Sample T-test' for normally distributed data and the 'Wilcoxon Signed Rank Sum Test' for non-normally distributed data. Pre-testing was conducted prior to the intervention period which lasted 5 weeks. Post-testing was conducted in a period after the completion of the programme. The post-testing period varied between schools due to the logistical challenges faced by the qualified NBSS associate organising school visits over a wide geographical area.

### Normally distributed data

As can be seen below, Table 1 outlines the results of the Paired Sample T-tests for factors 2, 4, 5, 6 and 7 as they were found to be normally distributed. There was no statistically significant change in the students’ scores, thus the null hypothesis remains.

**Table 1.** Results of the Paired Sample T-tests for Factors 2, 4, 5, 6 and 7.

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence interval of the Difference				
				Lower	Upper			
Perceived Learning capability PRE – POST	.47027	9.02148	1.48312	-2.53764	3.47818	.317	36	.753
Preparedness for Learning PRE –POST	.94595	13.52797	2.22398	-3.56450	5.45639	.425	36	.673
Attitude to Teachers PRE- POST	-1.46757	22.64381	3.72262	-9.01739	6.08226	-.394	36	.696
General Work Ethic PRE - POST	-41081	14.16917	2.32940	-5.13505	4.31343	-.176	36	.861
Confidence in Learning PRE-POST	-2.67027	12.69586	2.08719	-6.90328	1.56274	-1.279	36	.209

Explanatory note: Std.: Standard. t: t-value. df: degrees of freedom. sig: statistical significance.

### Non-normally distributed data

As can be seen in Table 2 below that outlines the results of the Wilcoxon Signed Rank Sum Test for factors 1, 3, 5 and 9, there was no statistically significant change in the students’ scores, thus the null hypothesis remains.

**Table 2.** Results of the Wilcoxon Signed Rank Sum Test for Factors 1, 3, 5 and 9.

	Test Statistics (a)			
	Feelings about school POST – PRE	Self regard as a learner POST – PRE	Attitudes to attendacne POST – PRE	Response to Curriculum demands POST – PRE
<b>Z Asymp. Sig. (2-tailed)</b>	-.445(b) .657	-1.867(b) .062	-.889(b) .374	-1.689(b) .091

(a) Wilcoxon Signed Ranks Test. (b) Based on negative ranks.

### SDQ analysis

This section reports the results the pre and post SDQ scores to evaluate the impact of the intervention on students’, parents’ and teachers’ scores. This analysis was conducted using a ‘Paired Sample T-test’ for normally distributed data and the ‘Wilcoxon Signed Rank Sum Test’ for non-normally distributed data.

### Student

There was a 96% completion rate of student SDQs. As can be seen in Table 3 below that outlines the results of the Paired Sample T-tests, there was no statistically significant change in the students’ scores, thus the null hypothesis remains.

**Table 3.** Pre and Post intervention SDQ (Student) comparison. Paired Samples Test.

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence interval of the Difference				
				Lower	Upper			
SELF Overall stress PRE – POST	.56757	5.05822	.83157	-1.11893	2.25406	.683	36	.499
SELF Emotional Stress PRE –POST	.02632	1.95195	.31665	-.61527	.66791	.083	37	.934
SELF Behavioural Difficulties PRE- POST	.28947	2.02562	.32860	-.37633	.95528	.881	37	.384
SELF Hyperactivity and concentration difficulties PRE - POST	.44737	1.99591	.32378	-.20867	1.10341	1.382	37	.175
SELF Difficulties getting along with other children PRE - POST	-.10811	1.95482	.32137	-.75988	.54366	-.336	36	.739
SELF Kind and Helpful Behaviour PRE - POST	.10811	1.64627	.27065	-.44079	.65700	.399	36	.692

Explanatory note: Std.: Standard. t: t-value. df: degrees of freedom. sig: statistical significance.

### Parent

There was a 56% completion rate of parent SDQs. As can be seen in Table 4 below that outlines the results of the Paired Sample T-tests, there was no statistically significant change in the parents’ scores, thus the null hypothesis remains.

**Table 4.** Pre and Post intervention (Parent) comparison. Paired Samples Test.

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence interval of the Difference				
				Lower	Upper			
PARENT Overall stress PRE – POST	-.23077	4.85032	1.34524	-3.16179	2.70025	-.172	12	.867
PARENT Emotional Stress PRE –POST	-.07692	2.46514	.68371	-1.56659	1.41275	-.113	12	.912
PARENT Behavioural Difficulties PRE- POST	.15385	1.67562	.46473	-.85872	1.16641	.331	12	.746
PARENT Hyperactivity and concentration difficulties PRE - POST	-.07692	1.55250	.43059	-1.01509	.86124	-.179	12	.861
PARENT Difficulties getting along with other children PRE - POST	-.07692	1.70595	.47314	-1.10782	.95397	-.163	12	.874
PARENT Kind and Helpful Behaviour PRE - POST	.15385	1.81871	.50442	-.94519	1.25288	.305	12	.766

Explanatory note: Std.: Standard. t: t-value. df: degrees of freedom. sig: statistical significance.

### Teacher

There was a 71% completion rate of teacher SDQs. The Behaviour for Learning teacher who facilitated the Movement Matters Programme with the students completed

this measure. The teacher SDQ data was assessed using both parametric and non-parametric tests due to the distribution of the data returned. The results are outlined in Tables 5 and 6 below. As can be seen in the tables that outline the results of the Paired Sample T-tests and the Wilcoxon Signed Rank Sum Test, there was no statistically significant change in the teachers’ scores, thus the null hypothesis remains.

**Table 5.** Results of the Paired Sample T-tests of normative Teacher pre & post data.

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence interval of the Difference				
				Lower	Upper			
TEACHER Overall stress PRE – POST	.23810	3.85882	.84206	-1.51842	1.99461	.283	20	.780
TEACHER Emotional Stress PRE –POST	.04545	1.78558	.38069	-.74623	.83714	.119	21	.906
TEACHER Behavioural Difficulties PRE-POST	.31818	2.00918	.42836	-.57264	1.20900	.743	21	.466

Explanatory note: Std.: Standard. t: t-value. df: degrees of freedom. sig: statistical significance.

**Table 6.** Results of the Wilcoxon Signed Rank Sum Test of non-normative Teacher pre and post data.

	Test Statistics (a)		
	TEACHER Hyperactivity and concentration difficulties POST – PRE	TEACHER difficulties getting along with other children POST – PRE	TEACHER Kind and helpful behaviour POST – PRE
Z Asymp. Sig. (2-tailed)	-1.780(b) .075	-.619(b) .536	-1.276(b) .202

(a) Wilcoxon Signed Ranks Test. (b) Based on negative ranks.

## Summary of findings

Even though other measures had identified change, the results of the SDQ and PASS measurement tools showed no statistically significant change post intervention. However, comparing the pre-intervention Irish student data from the PASS and SDQ measures with large UK studies using the same instruments (Granada Learning, 2016; Meltzer et al., 2000) with similar age groups offered potentially interesting insights into how the Irish students receiving ‘Level 3’ support experience school.

## Student characteristics

The main finding to emerge from analysing this data was the considerable disparity between how the students in this study experience school and life in comparison to their peers in large studies conducted in the UK. The mean scores in all of the PASS factors and most of the SDQ scales in this study were considerably lower than the mean scores in the UK sample. Of particular note were the substantially lower scores in the following PASS scales: ‘Perceived Learning Capability’ (mean score 43.99% participant sample versus 86.5% UK sample), ‘Self-Regard as a Learner’ (mean score 34.6% participant sample versus 77.5% UK sample), ‘Preparedness for Learning’ (mean score 35.28% participant sample versus 90.5% UK sample), ‘Confidence in Learning’ (mean score 47.32% participant sample versus 81.5% UK sample) and ‘Response to Curriculum

Demands' (mean score 35.49% versus 80% UK sample). Detailed comparison and interpretations of these differences is published elsewhere (Fitzgerald, 2019) and can be referred to for further information.

This comparative data provides the occupational therapy profession with insights related to self-efficacy, self-determination and motivation as learners on a previously underserved population as highlighted by Marczuk et al. (2014). It also suggests that the Behaviour for Learning teachers were well informed and utilised accurate professional judgement when selecting students for 'Level 3' intervention. The PASS and SDQ data confirms that this discrete group of students have complex needs and are different in this regard to their peers. They are appropriately selected for a differentiated curriculum experience including occupational therapy programmes that promote self-regulation, mastery experience and self-determination.

## **Discussion**

This paper aimed to contribute to the growing body of literature relating to occupational therapy's role in trauma informed school practice by reporting on the findings of a study that employed a research design to measure attitudes and behaviour before and after the intervention. Previous qualitative research had reported positive outcomes from the student and teacher perspective (National Behaviour Support Service, 2015a) sufficient that the programme was approved for further use with the targeted Level 3 population with complex needs.

### **Reflections on outcome measurement**

That no statistically significant findings were identified by these measures could suggest that the Movement Programme had no 'effect' on the student participants. Alternatively, it is argued that the measures were not designed to capture the changes intended by the Movement Matters programme that were clearly articulated in the programme aims and session objectives, and were assessed by teacher and students at the end of each session. Qualitative reports from students and teachers established positive changes in their understanding of self-management for learning in the classroom, satisfaction with their own performance and enjoyment of co-operative relationships with the teacher and other student in the programme (National Behaviour Support Service, 2015a).

The PASS and SDQ standardized measurement tools focused on students' attitudes on their life in school that had formed over a number of years. Changes in how a student feels about school may take longer to change, particularly if the previous experiences have been of failure and difficulty, typical of that for the discrete group in this study.

Pawson & Tilley (1997) conceptualised programmes such as Movement Matters as 'theories' which are embedded in the complex social systems of schools where desired outcomes are dependent on (1) the individual capacities of students and teachers, (2) the interpersonal relationships created between them, (3) the institutional environment of schools that promote alternative views on behaviour and learning and (4) the wider educational system and policy makers that support or undermine the participation of students with diverse learning needs. With these factors in mind, setting out to capture

the benefit of an occupation-based intervention using these standardised measures was aspirational. As the 'student characteristics' section above outlined, the population under study are a discrete and complex group of students educated predominantly within the 'mainstream' with minimal special educational support and no occupational therapy intervention in Ireland until recent times. Therefore the assumptions of the general population may not be relevant to the values of this population. The use of these standardised outcome measures also needs to be interpreted in the context of the complex social and cultural environments of the schools where the research took place, mostly within areas of socio-economic disadvantage.

The qualitative data from students and teachers reported in the Movement Matters feasibility study (National Behaviour Support Service, 2015a) indicated that the programme did indeed improve the school experience of the students who participated in it. Having established that the standardised measures used in this study may not be the most effective method of capturing change for this cohort of students following intervention, more appropriate methods of outcome measurement are required for future research involving Movement Matters.

### **Wellbeing versus performance**

Whalley-Hammell (2007) links participation and well-being to quality of life and suggests that this should be the focus of all occupational therapists in their practice. This has been re-emphasised more recently by Pizzi & Richards (2017) who declare that occupational therapists become leaders in promoting health, wellbeing and quality of life as central to practice and emphasising participation over performance when measuring impact. This theme is well established with the 'Occupational Well-Being Framework' proposed by Doble & Caron Santha (2008, p. 186). They contend that occupational therapists should re-think the focus on measuring occupational performance outcomes and consider the importance of individual's subjective occupational experiences. The authors propose that "individuals' subjective experiences of their occupational lives are an important occupational therapy outcome", and that individuals are more likely to experience occupational well-being when they choose and engage in occupations that consistently meet their 'occupational needs'. As previously established in the literature, students with SEBD are at risk of occupational deprivation (Marczuk et al., 2014) and alienation from school potentially resulting in prolonged disengagement from employment and social exclusion (Riddell, 2008). The 'Occupational Wellbeing Framework' is a potentially useful lens through which to view the school experience of students with SEBD to ensure that these needs are being met as much as is possible within the curriculums and activities of school. Doble & Caron-Santha (2008, p. 189) conclude that "[...] by working in collaboration with clients or advocating on their behalf, occupational therapists can ensure that clients have access to occupations that have the potential to meet their occupational needs". This is particularly relevant to school based occupational therapy in which building staff capacity and influencing the physical, social and cultural environments of schools including curriculums is a major part of the role. The NBSS occupational therapy team have always recognised the challenges of meeting the individual needs of all students receiving 'Level 3' support within the Behaviour for Learning programme across Ireland. However, by developing structured learning programmes such as Movement Matters from occupational therapy theory that teachers can implement with support in schools, students can



autonomously develop competence in graded learning experiences in supportive peer and adult relationships.

More recently, Saraswati et al. (2018) have advanced Doble and Caron Santha's pioneering work by developing a research driven framework for occupational wellbeing created using literature, community dwelling members and occupational therapy academics as its basis. The outcome of their work recommended the removal of 'need' as it suggests causality and the refinement of the wellbeing domains to identity, belonging, competence autonomy, pleasure and contentment. These domains will inform the research protocol design of future Movement Matters evaluations incorporating practice-based evidence with assessment tools such as pre- and post-tests, goal ratings, and qualitative logs as recommended by Whiting (2018).

### **Reflections on the study participants**

It is a cause of concern that students who have been in the Irish education system for approximately eight years differ substantially from the profile of the UK sample. This cohort of students have not been supported by in-school occupational therapy up until recently. By the teachers identifying them for the programme demonstrates that they understand their complex needs but the literature also indicates that teachers do not have the skills and resources to adequately support these learning needs (Scanlon and Barnes-Holmes, 2013). However, the collaborative approach between occupational therapists and teachers has delivered an intervention that appears to be an enjoyable and effective self-regulation programme with spin off of greater participation in classes after the programme as reported by students and teachers (National Behaviour Support Service, 2015a). Thus, occupational therapy theory and framework has contributed something meaningful as part of inter-professional practice. It is argued that occupational therapy contribution to education within a three tiered, collaborative consultative model (Fuchs & Fuchs, 2006; Lane et al., 2009; Missiuna et al., 2012; Sugai & Horner, 2002; Villeneuve, 2009) to students with SEBD is valuable. In developing the Movement Matters programme, the occupational therapists drew on Ayres Sensory Integration Theory (Ayres, 1972, 1979), attachment theory (Cook et al., 2005; Gerhardt, 2013; van der Kolk, 2005) and the Person-Environment-Occupation model (Law et al., 1996) which resulted in a unique, context specific 'Level 3' intervention accompanied by weekly coaching, mentoring and review related to the specific needs of each student. In keeping with recent best practice in inclusive education (National Council for National Council for Special Education, 2014), and in-school occupational therapy practice (Missiuna et al., 2012; Villeneuve, 2009), the Movement Matters programme was conducted within the mainstream education context and also built on the capacity of educators to practice with students with SEBD.

### **Limitations**

A research design that has validity is one that obtains accurate results, in that it accurately measures what it intends to measure (Price & Murnan, 2004). Assumptions made based on established reliability and validity (Mathai et al., 2003; Ford et al., 2009; van Roy et al., 2008; Palmieri & Smith, 2007; Richter et al., 2011) in using the PASS and SDQ measures were that changes related to the intervention would be captured. However, the Movement Matter programme was not designed with the goal of bringing about changes that could be measured

by the PASS and SDQ measures. It was not assumed that the population under study would fit within the normative data set as they were previously identified as Level 3 students with complex and well established difficulties, unlikely to be changed in a programme of 20 sessions. In addition, the statistical power with a study population of 39 is unlikely to yield statistically significant results. The results of this sample are not generalizable to the population of Level 3 students in Ireland because of the small sample size. The absence of a control group means that there is no sample who didn't complete the Movement Matters Programme with which to compare the study sample.

The authors recognise that direct comparisons and conclusive findings cannot be made to the sample in this study using the data reported in the large UK studies (Granada Learning, 2016; Meltzer et al., 2000). However, comparing the mean scores of the students in NBSS partner schools to the students in the UK study provides an insight into how an understudied population experience their lives in comparison to a large sample in a similar country.

## **Conclusion**

This article has reported the quantitative outcome data of a national pilot of a trauma informed school-based occupational therapy intervention, and has reflected on contemporary issues within the profession related to outcome measurement and impact. This study will serve as a basis for the development of a more robust and bespoke research protocol for future evaluations of the Movement Matters programme that has the potential to contribute to the occupational wellbeing of students with SEBD in educational settings.

## **Key findings**

- Previously established benefits of the Movement Matters programme were not captured in standardised measures of attitude and behaviour (SDQ & PASS).
- Comparing the SDQ and PASS data provided by Irish students receiving 'Level 3' support with a large UK sample suggests that there is a considerable disparity between how these students with complex learning needs experience school and life in comparison to their peers in large studies conducted in the UK.
- Future studies of the intervention should be designed using the Occupational Wellbeing Framework of Saraswati et al. (2018) to ensure that occupation related outcomes are captured.

## **What the study has added**

- This study has contributed to the calls for more research into occupation-based interventions to support youth mental health (Cahill et al., 2020) and trauma-informed interventions that can be implemented in schools (Whiting, 2018).
- It has also highlighted these students as a discrete group with complex learning needs who can benefit from a differentiated curriculum experience including occupational therapy programmes.

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### Author's Contributions

Brian Fitzgerald was responsible for the text conception, organization of sources and analysis. Siobhan Mac Cobb contributed to the paper through critical review, analysis and feedback to lead author. All authors approved the final version of the text.

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