PREPARING TO OBSERVE THE IMPACT OF THERAPEUTIC TEACHING PRACTICES
From Flow to self regulation and learning

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Abstract: This paper outlines the research process that aimed to evidence the impact of therapeutic teaching practice within a school for young people with social and emotional challenges resulting from adverse childhood experiences. It is an issue for society that many children and young people have traumatic experiences in their lives that seriously impact on their wellbeing, health and capacities to learn. This paper outlines a New Approach to supporting such vulnerable learners. The project entitled «Learning in a new key» (LINK) involved music therapists working with non-music specialist teachers to introduce musical listening and improvisation as a regular group therapeutic experience in the classroom. The music of our society is a deep cultural reservoir that can be drawn on by teachers to soothe, nurture and potentially heal our troubled and vulnerable young people. The observational schedule herein described was developed during the second year of the project to measure the impact of this work on individual young people. The tool originated from the work of Csikszentmihalyi (1990), to assess the optimal state of being, he called Flow. The concept was developed further to enable researchers to observe and measure the Flow experience in classrooms with young children engaged in active music making (Addessi, Ferrari, & Carugati, 2015). This paper maps the growth of the observation tool within the LINK Project drawing on ideas from early years education, therapeutic practice and psychology. Research into the impact of music listening and making on brain development and healing has also influenced the design of the schedule leading to insights about sensory processing and relationality (Perry & Hambrick, 2008). The use of Flow variables is a relatively new approach in education where systems would benefit from being able to develop a rationale for such practice to meet the challenging needs of children and young people with adverse childhood experiences. Discussion of the potential for the Flow observation schedule will be explored and recommendations for the future identified that will include the use by individual teachers.

Keywords: therapeutic teaching practice, group music making, observational schedule, sensory and relational engagement, measurement

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ANTECIPANDO A OBSERVAÇÃO DO IMPACTO DE PRÁTICAS DE ENSINO TERAPÊUTICAS: DO *FLOW* À AUTORREGULAÇÃO E APRENDIZAGEM

Resumo: Este artigo descreve o processo de pesquisa que evidenciou o impacto da prática de educação terapêutica numa escola para jovens com adversidades sociais e emocionais, resultantes de experiências traumáticas na infância. O facto de muitas crianças e jovens passarem por experiências traumáticas nas suas vidas têm um impacto sério no seu bem-estar, saúde e capacidade de aprender, o que constitui um problema social. Este artigo descreve uma nova abordagem para apoiar esses alunos vulneráveis. O projeto «Aprender num novo tom» (LINK) envolveu musicoterapeutas que trabalham com docentes não-especializados em educação musical, para introduzir a audição musical e a improvisação como experiência terapêutica comum na sala de aula. Na sociedade, a música constitui um reservatório cultural profundo que pode ser aproveitado pelos docentes para nutrir, acalmar, potencialmente, curar jovens «problemáticos» e vulneráveis. O cronograma observacional aqui descrito foi desenvolvido para medir o impacto desse trabalho, durante o segundo ano do projeto, com jovens individuais. O instrumento baseia-se no trabalho de Csikszentmihalyi (1990), destinado a avaliar o ótimo bem-estar designado Flow. O conceito foi desenvolvido para permitir que os investigadores observassem e medissem a experiência de Flow, em salas de aula, com jovens envolvidos ativamente na produção musical (Addessi, Ferrari, & Carugati, 2015). Este artigo mapeia o desenvolvimento da ferramenta de observação, durante o projeto, inspirando-se em ideias de educação infantil, práticas terapêuticas e psicologia. Algumas pesquisas sobre o impacto da audição e da criação da música no desenvolvimento e na cura do cérebro também influenciaram o desenho do projeto, conduzindo a saberes sobre processamento e relacionalidade sensorial (Perry & Hambrick, 2008). O uso das variáveis do Flow constitui uma abordagem relativamente nova e os sistemas de educação beneficiariam do aumento da capacidade para desenvolver um *racional* para tal prática, no sentido de atender às desafiantes necessidades de crianças e jovens com experiências infantis traumáticas. Será explorada a discussão do potencial do cronograma de observação do Flow bem como se apresentam recomendações para o futuro que foram identificadas e que incluirão o uso por cada docente.

Palavras-chave: práticas educativas terapêuticas, música de grupo, programação observacional, envolvimento sensorial e relacional, medição

SE PRÉPARER À L 'OBSERVATION DE L'IMPACT DES PRATIQUES PÉDAGOGIQUES THÉRAPEUTIQUES: DU *FLOW* À L'AUTO-RÉGULATION ET À L'APPRENTISSAGE

Résumé: Cet article décrit le processus de recherche visant à mettre en évidence l'impact de la pratique de l'enseignement thérapeutique développée au sein d'une école pour les jeunes ayant des difficultés sociales et émotionnelles résultant d'expériences défavorables vécues au cours de l'enfance. Les expériences traumatisantes chez de nombreux enfants et jeunes constituent un problème important pour notre société car elles ont un impact sérieux sur leur bien-être, leur santé et leurs capacités d'apprentissage. Cet article présente une nouvelle approche pour soutenir ces apprenants vulnérables. Le projet intitulé «Learning in a New Key» (LINK) implique le travail de musicothérapeutes avec des enseignants non spécia-

lisés en musique afin d'introduire, de façon régulière en classe, une expérience thérapeutique de groupe basée sur l'écoute musicale et l'improvisation. La musique dans notre société est un réservoir culturel riche qui peut être utilisé par les enseignants pour apaiser, nourrir et potentiellement guérir les jeunes vulnérables et en difficulté. Le calendrier d'observation décrit dans cet article a été développé au cours de la deuxième année du projet afin de mesurer l'impact de ce travail sur chaque jeune. L'outil utilisé, appelé Flow, provient du travail de Csikszentmihalyi (1990). Il prétend évaluer l'état optimal de l'être. Le concept a été développé pour permettre aux chercheurs d'observer et de mesurer l'expérience de Flow dans les salles de classe avec de jeunes enfants activement engagés dans la construction musicale (Addessi, Ferrari, & Carugati, 2015). Cet article propose une cartographie de la croissance de l'outil d'observation dans le Projet LINK en s'appuyant sur des idées éducatives chez les jeunes enfants, sur la pratique thérapeutique et la psychologie. La recherche sur l'impact de l'écoute et de la construction de la musique sur le développement et la guérison du cerveau a également influencé l'organisation du projet et ont permis d'identifier des connaissances sur le traitement et la relationalité sensorielle (Perry & Hambrick, 2008). L'utilisation des variables de flow est une approche relativement nouvelle dans l'éducation. Cette dernière trouverait des avantages à pouvoir développer un rationnel pour une telle pratique afin de répondre aux besoins difficiles des enfants et des jeunes ayant connu des expériences défavorables dans leur enfance. Une discussion sur le potentiel du programme d'observation de Flow sera explorée et des recommandations pour l'avenir seront proposées. Elles incluront l'utilisation faite individuellement par les enseignants.

Mots-clés: pratique de l'enseignement thérapeutique, création de musique de groupe, programme d'observation, engagement sensoriel et relationnel, mesure

Introduction

The LINK Project has supported teachers working with vulnerable young people in collaboration with music therapists to develop their professional knowledge and skills in the field of therapeutic teaching practice. The first year of LINK was spent training the teachers to draw upon their cultural reservoir of music and arts traditions as they introduced a wide range of music for group music listening. Teachers were also trained to enhance their skills and confidence to use a range of musical instruments and games for group music making in the classroom. The second year of LINK set up a process to measure the impact of this work on young people. The impact study included the creation of written narrative accounts of the interventions together with systematic observations to measure individual responses. This paper outlines the development of the observation schedule, drawing upon educational (Soni, 2010), psychological (Stern, 2010a) and music therapy assessment processes (Music Therapy Star, n.d.) to refine the categories for observation. We explain how the schedule was adapted to suit the context of the UK school and make proposals for its future use.

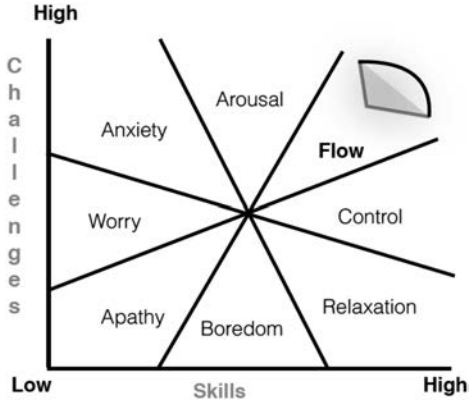
Background

a) Theoretical framework: introduction to the Flow variables

The psychologist Csikszentmihalyi's (1996) theory of Flow provided a framework to evaluate wellbeing during interactive musical experience in the classroom. He had outlined a range of emotional states that a person might experience – arousal, control, boredom, anxiety, worry, relaxation and apathy, mapped against two axis of challenges and skills. The following diagram explains where the optimal state of Flow would occur when challenges and skills are at their highest and are well matched.

FIGURE 1

Diagram as from Csikszentmihalyi (1996: 31)



Flow was initially observed in adults, described as when «…people were highly challenged and felt highly skilled for an activity in which they were participating, they were in a state of optimal enjoyment, where their ideas "flowed" without obstacles, and their actions had interpretable consequences that directed further involvement in the task» (Custodero, 2005: 189).

Children and young people may always be in a state of Flow as they engage in new challenges daily and are curious and eager to engage in learning. However, this is not the case for the young people included in this project whose life histories mean they cannot Flow easily. Making music together has its roots in experience of very young children who attune to their main carers through melodic contour and rhythmic patterns, a concept called communicative musicality (Malloch & Trevarthen, 2009). Young children will bring music into their play activ-

ities and respond spontaneously to sounds heard or created. This process is fundamental to child development and necessary for wellbeing.

Silverman and Baker (2016) proposed Flow as a construct with potential within music therapy for both the client and the therapist. Their approach supported music therapists to develop a person-activity fit model that enhances the Flow experience and develops music therapy practice. Their study encouraged clients to self-assess their responses in terms of Flow state in relation to wellbeing, health and therapeutic outcomes. They write that Flow may represent a positively framed and less invasive method for measuring users' perceptions of the therapeutic outcomes (Silverman & Baker, 2016).

Anna Rita Addessi, sought to understand the function of music making in relation to emotional regulation in classrooms, by measuring the Flow state of children playing with the MIROR-improvisation prototype – a machine that can imitate the style of a human playing the keyboard (Addessi et al., 2015). Addessi has developed the application of the Flow concept by not solely recording the place of Flow state occurring but by using some of the variables of Flow and measuring the intensity of these variables. Csikszentmihalyi (1990) identified 11 variables or behaviours that can be witnessed when someone is deemed to be a state of Flow. These included *focused attention, concentration, clear-cut feedback, clear goals, pleasure, control of situation, merged awareness, no worry of failure, disappearance of self consciousness, change of the perception of time, autotelic experience.* Addessi chose five of these variables and developed a Flow Grid to structure observations of children engaged in musical interaction with a Continuator machine (Addessi & Pachet, 2006). She chose: *focused attention, clear-cut feedback, clear goals, pleasure* and *control of the situation.* The Flow Grid enabled the observer to understand the outward sign (or the behaviour we see) of internal emotional expression during musical interactions. The Continuator machine was able to «match» sounds played on a keyboard by children and respond back to them engaging them in a way that a music therapist might «match» the sounds heard (Addessi et al., 2015). The Flow framework provided all partners in the LINK Project with a common approach to measuring the responses of children and young people engaged in music making.

Music making in the LINK Project meant that vulnerable young people were engaged in group musical improvisation in their classrooms with their teachers. Improvisation is one of the main tools of music therapy defined by Wigram (2004: 37) as «any combination of sounds and sounds created within a framework of beginning and ending» and clinical improvisation being the «use of musical improvisation in an environment of trust and support established to meet the needs of clients». Musical improvisation used in a group therapeutic situation in the classroom has many potential benefits for the young people involved, MacDonald and Wilson (2014) identify four such characteristics: (1) its potential to link conscious with unconscious processes;

(2) the demands on attention of absorption in a creative process; (3) the non-verbal social and creative interaction experienced; (4) the capacity for expressing difficult or repressed emotions without having to articulate these verbally. (MacDonald & Wilson, 2014: 1).

These characteristics were deemed to be of value for the young people at the school. So the LINK project set up weekly sessions of musical improvisation in four separate classrooms. Two young people in each classroom would be observed as they engaged in musical improvisations using five variables of Flow. Initially these observations occur weekly six times as a means of measuring the impact of the experience.

b) School context in UK

The study took place in a residential special school for young people who have had traumatic life histories, aged between 10-19 years and all with high scores in terms of adverse childhood experiences (ACE) that they experienced in their early lives. The ACE score measures 10 kinds of childhood trauma: five are personal, covering experience of physical, sexual and verbal abuse and emotional and physical neglect and five relate to other family members, a parent who is a victim of domestic violence or is an alcoholic/drug user, a family member in prison or diagnosed with a mental illness or the absence of a parent through divorce, death or abandonment. Each experience is a point and scores allocated provide a predictor of the grown adult's physical, social and emotional difficulties (Dube, Anda, Felitti, Edwards, & Williamson, 2002). A majority of the young people exhibit behaviours similar to those suggested for Post-Traumatic Stress Disorder. These include low self-esteem, difficulties in emotional regulation, challenges in forming social relationships and short concentration spans. The young people have multidisciplinary support needs and the residential school seeks to meet them through specific provision of education, care and therapy. All staff is part of a trauma informed, attachment focused, relationship based and evidence supported therapeutic school and children's home. The overall goals of the school have been incorporated into LINK to ensure that teachers are informed about the impact of early trauma on a young persons' development; they understand that avoidant attachment models lead to an insecure and disintegrated sense of self (Bowlby, 1988); they develop young people's relational health acknowledging physical, psychological, social and moral safety for all; maintain a therapeutic setting in school and home context and that all practices are built upon evidence gathered from research outcomes.

The therapeutic school and children's home employs a range of arts therapists and psychotherapists. The LINK project sought to bring therapists together with teachers to enable both professionals to learn from each other. Discussions with teachers and therapists led to under-

standing that transition times were the most challenging for young people. It was proposed that therapeutic music making could take place at the start of the morning session, just before lunchtime, again at the start of the afternoon sessions and at the end of the day. Such practice aimed to support young people in relaxing and calming themselves ready for transition into the learning context or the home context more easily. We explored ways to record young people's responses when engaged in group music listening and improvising.

Preparation for the application of the Flow variables in UK school

The UK group of teachers and trainers decided that measurement using the Flow variables would be valuable in developing a rationale for the use of music listening and making in school. They reflected upon this plan at the Joint Staff Training Event (JSTE) held in Bologna and their discussion was recorded. They felt young people could benefit from having an «optimal experience» in order to: support the process of transition between their house group/home and the learning environment of the school; enhance young people's readiness for learning; remove their barriers to learning; introduce music/arts based activities to the curriculum (meeting notes Bologna JSTE April 7th 2016).

UK teachers also felt that the Flow observation could contribute to case studies of young people perhaps even lead to individual Flow profiles to «support the de-escalation process for staff working with young people» (Bologna JSTE April 2016[1]). However, teachers were concerned that the process of gathering evidence could be intrusive and might lead to young people becoming anxious and unsettled rather than relaxed and able to make music together. It was decided that observers well known to the young people would take on the role, be in the classroom, but recall and record the event directly after it had taken place rather than be making notes during the session. Teachers agreed to a six-week data collection period. Observers would work in four classrooms creating a narrative account of each session and recording Flow observations of two young people in each class immediately after classroom sessions.

The ethical protocols in gaining consent from young people and their parents for involvement in the project was complex. We asked about the use of video and audio material, sending forms and information to parents/carers of eight young people. It transpired that three of the young people were of an age to give consent themselves so we were able to discuss it fully with them. Two of the young people involved said that they did not wish to be videoed so we made the decision to make solely audio recordings. One young person said he did not want to

[1] Joint Staff Training Event (Bologna April 2016). Notes from UK colleagues meeting April 7th 2016.

be a «guineapig» but recognized that he really enjoyed the musical activities so decided to sign the consent form in the end, solely for audio recordings. The involvement of the young people in these discussions contributed to their valuing their own music making and recognizing that others were also interested in it.

Development of the Flow variables

A set of statements explicating the five Flow variables was developed to support the observers in understanding what they were looking for during musical improvisation. This process drew upon perspectives from education (Soni, 2010), music therapy assessment (Music Therapy Star, n.d.) and therapeutic practice (Stern, 2010b).

The particular educational perspective originated in an early years context where attitudes towards learning are fostered in young children by adults both working and living with them. The Accounting Early for Life Long Learning programme developed by Bertram and Pascal (Soni, 2010) was introduced to all early years contexts in Bristol 2016, as an assessment tool for a multi-professional context with expectation for parental involvement. The programme explored children's language and communication skills, their attitudes and dispositions to learning, their social competence and self-control, their emotional wellbeing and their physical development. The following statements were extracted from each area as particularly helpful for the LINK project seeking to develop a therapeutic teaching approach: displays sensual awareness; shows an interest and keenness to explore, to be curious and to play; initiates interaction with adults and/or peers; expresses and manages a range of emotions; uses tools and materials for a particular purpose, demonstrating fine movements (drawn from Soni, 2010).

These statements relate directly to the Flow variables indicating that aspects of Flow could be valuable in developing young people's attitudes towards learning for the classroom. Teachers were appreciative of learning outcomes arising from engaging in musical improvisation with the potential for enhancing engagement in future lessons. Teachers' concerns focused on the social aspects of learning and the major challenges that their young people had in relating to each other. Young people making music together is a non-verbal first stage in building levels of social interaction in the classroom.

The Outcomes Music Therapy Star provided insights from music therapy assessment. This assessment tool devised for individual young people engaged in music therapy, proposes five core areas helpful in the development of therapeutic teaching practice. These are presented alongside the way the star focuses on measuring the level of achievement for each of the core areas:

TABLE 1

Drawn from www.outcomesstar.org.uk (2015)

Core area within music therapy		Music therapy stages
Relating to other people	Each core area is assessed for each of the music therapy stages	Readiness for non-verbal communication
Use of the voice for self expression		Connecting – finding a reflection in the world
Attention and awareness to focus on an activity		Initiating – emerging sense of self
Learning as fun through play and creativity		Exploring – strengthening sense of self
Emotional wellbeing, being at ease and expressing feelings		Resilience – strong sense of self

The core areas outlined above draw upon the psycho-socio-cultural theory of learning (Bandura, 1977; Vygotsky, 1978). Most valuable for the young people in this project is the importance of positive first relationships in order that secure attachment patterns occur (Bowlby, 1988). The impact of trauma or disability can inhibit the child's capacity to build secure attachments and lead to delays in learning and growth. Close analysis of the interactions between mother/primary care giver and child have emphasised the importance of playful interactions – physical, verbal, gestural, visual, and musical – that build attachment. This empathic communication called «communicative musicality» by Trevarthen (2000) is an innate process occurring between the primary care giver and young infant. Music making employed in this therapeutic way can rebuild secure attachments. The core areas of the Outcomes Music Therapy Star relate to the Flow variables *focused attention*, *clear-cut feedback*, *clear goals*, *pleasure* and *control of the situation.* The value of relationships to the music, to the musical instruments and to other peers or adults contribute to the developing sense of self presented in the Outcomes Star as music therapy stages (see above). A balance between social and psychological perspectives was sought.

The work of psychologist and psychiatrist Daniel Stern explores social interaction as animation between the young person and practitioner as it occurs when they shape and establish their relationship. This animation process Stern explored as «forms of vitality» drawing upon musical improvisation specifically through the work of Tony Wigram. Wigram (2004) writes about how matching in musical improvisation can become the dynamic experience from which relationships are built. Musical dialogue, call and responses, games involving taking turns, leading improvisations are all part of non-verbal social interaction. Stern writes that these dynamic forms of vitality are valuable for both psychological and social reasons as they support empa-

thetic understanding between people that allows social recognition and interaction. Dynamic forms of vitality help one to adapt to new situations that arise thus support people in fitting into their world (Stern, 2010b). Such therapeutic practice builds towards the capacity to emotionally regulate oneself and develop a strong sense of self. Stern (2010b) acknowledges that music listening and making is one of the dynamic forms of vitality and as such provides a safe, holding and containing space for non-verbal interactions. In the LINK Project the medium of music making became the main tool in developing therapeutic teaching practices.

These educational and psychological insights were woven together in the development of the statements that accompanied the Flow variables identified. The statements also drew upon the further writings of Csikszentmihalyi (1996) and Custodero (2005). The final 26 statements supported the observers to be more accurate in their judgments when completing the schedule and are seen below: the statements (operational description of each variable) are as from Addessi et al. (2015), with slightly adaptations to child-child and child-teacher interaction (instead of child-machine interaction). Furthermore, as from Addessi et al. (2015), the LINK Flow observation schedule also use three levels of intensity for each variable: that is that for each variable the observer can indicate high (3), medium (2) or low (1) level of intensity. According to Csikszentmihalyi, it is assumed that the Flow is present when all the variables are registered at the higher level of intensity (that is level 3). By means this technic, it is possible not only to observe, but also to measure the presence of the Flow state in children.

TABLE 2

The Flow observation schedule

Focussed attention	**Start**	**End**
looks carefully at the musical instrument and/or other object used during the activities		
observes, s/he is careful and systematically explores some parts of the instrument or other objects: for example, plays only the black keys, or all the keys from the lowest to the highest, etc.		
systematically explores some gestures to producing sounds, carefully gazing at the hand, fingers, etc., repeats the same gesture, changes it, etc.		
is focused on particular (musical) idea, thereby perpetuating activity with concentration: for example, he/she plays a particular rhythm pattern, listens carefully to the teacher's response, then continuing to repeat and/or elaborate the pattern		
listens attentively to own productions and the production of the partner(s).		
Clear cut feedback	**Start**	**End**
listens carefully and reacts to the instrument by self-correction, smiling, showing expressions of puzzlement, joy, surprise, saying something		

learns to respect the turn-taking with the partner		
changes its musical proposal/response according to the response received from the partner, for example, plays something that sounds similar but is a little different from the response of the partner		
Clear Goals	**Start**	**End**
shows herself/himself to have the aim of exploring the parts of the instrument. For example: sh/e gazes and plays firstly all the white keys and then the blacks, or all keys from first to last, or more keys together or press the buttons on the keyboard, etc.		
shows herself/himself to have the aim of exploring the different gestures to produce sounds: beats the keys with one finger, with an open hand, with elbow, arm, head, producing glissando, etc.		
shows herself/himself to have the aim of exploring the "sounds" of the keyboard and/or developing a musical idea: for example, plays systematically all white keys listening carefully, or all keys on the low register		
shows herself/himself to have the goal of teaching to the partner(s) a particular musical patterns, such as a rhythmic pattern, or a way of playing, for example, more or less frenetic, agitated, funny, repeats this sequence until he/she hears and understands		
has the goal of discovering the rules of interaction and musical dialogue with the partner/s and teacher.		
Control of situation	**Start**	**End**
understands that he/she can start/interrupt the performance when he/she wants; cf «self-assignment» (Custodero, 2005)		
the activities (exploration, invention, performance, etc..) are started by the person; cf «Deliberate gesture» (Custodero, 2005)		
the movements are well controlled, both during the listening and playing		
explores and uses spontaneously, independently and with agility the instrument or other objects involved in the activity		
in the music making with other persons, s/he knows how to use/manage the rules of the interaction with the other musicians, for example s/he respects the turn-taking, invents new rules of interaction and playing, etc.		
he/she plays, stops, listens to the response of the partner(s) and responds by repeating/chang-ing/ proposing new musical ideas		
collaborates with the partner to invent «games», creating situations of «collaborative playing»		
Pleasure	**End**	**Start**
smiles and/or laughs		
he/she is calm		

shows no displeasure		
repeats an action that he/she likes to do, for example: exploring a musical idea, doing a particular gesture, playing sounds s/he likes		
«produces» exclamations of pleasure		
speaks with the teacher/partner(s) and shares with him/her/them the joy through words and ges-tures		

Notes: Figures are the highest score possible e.g. overall state of Flow would be 26 x 3 = 156
Overall State of Flow/156=%; Start Point/78=%; End point/78=%
Start Point: Sensory Integration=/42=%; Relationality=/36=%
End Point: Sensory Integration=/42=/100%; Relationality=/36=%

The time intervals for recording a score on the schedule varied according to the activity being observed. The intervals were decided upon directly after the session through discussions between the two observers. There would always be a score measurement at the start and end of the active music making and sometimes one in the middle. The scoring system employed ranged between 0-3. 0 was to represent no engagement at all, 1 – low level of intensity and frequency of engagement, 2 – medium level and 3 – high level.

At the time of the implementation of the observation schedule the school was exploring ways in which the damage of early trauma on the developing brain might be repaired and restored. This work centred in neuroscience where studies are showing that the brain is able to repair early damage through the concept of neuroplasticity (Perry & Hambrick, 2008). When neurons are damaged then other neurons in the brain are able to create new stimuli in their place. Music has a unique ability to promote neuroplasticity (Stegemöller, 2014) valuable for young people who have experienced early traumatic experiences and damage to brain development. Bruce Perry proposes that any variety of patterned, repetitive somatosensory activities like music, movement and drumming, support the reorganization of neural pathways and connections (Perry & Hambrick, 2008). When sensory and social engagement occurs there is also the potential for higher levels of emotional self-regulation.

Consideration of these sensory and social perspectives encouraged the observers to re-examine the 26 statements in the Flow observation schedule. They recognised that several of the statements referred specifically to sensory engagement and others to social interaction, here termed relational engagement. The variables on the observation schedule were then highlighted as follows in Table 2: sensory engagement – 14 statements (gray) –, and relational engagement – 12 statements.

The Flow observation schedule was now able to measure levels of sensory engagement and relational engagement separately while still providing an overall measure of optimal Flow

state in young people. We envisaged that these scores could not be used to make comparisons between individual young people as results would relate to the young person's current state and behaviours and our own appraisals of what could be expected. Thus the scores are contextually bound but still useful in gradually portraying each young person's case, in understanding the impact of LINK activities on individual's emotional/social states and in reflecting upon the nature of the activity facilitated.

Application of the Flow observation schedule

Anonymity was achieved by coding the classroom context and the young person observed. The process was initially trialed in the autumn term and early January with seven young people. The details are recorded below:

TABLE 3

Observations made of young people

Class	Young Person	Number of Observations completed	
2	YP11 – male 17 years old	10	2 autumn term (Nov 16, 30) 8 spring term (Jan 11, 18, 25; Feb 1, 7, 22; March 1, 8)
2	YP16 – female 18 years old	4	1 autumn term (Nov 30) 3 spring term (Jan 11, 18; Feb 7)
4	YP42 – male 18 years old	6	6 spring term (Jan 18; Feb 1, 7, 22; March 1, 8)
4	YP37 – female 13 years old	4	1 autumn term (Nov 30) 3 spring term (Feb 1, 7, 22)
7	YP40 – male 15 years old	3	3 spring term (Jan 25; Feb 1, 7)
7	YP60 – female 12 years old	7	1 autumn term (Nov 16) 6 spring term (Jan 25; Feb 1, 7, 22; March 1, 8)
8	YP31 – male 16 years old	6	6 spring term (Jan 18; Feb 1, 7, 22; March 1, 8)
4 classes	7 young people	40 observations in total	

The observers would corroborate over the scoring of each observation measured, on some occasions with an audio recording of the session. To further support the scoring process two

external professionals visited the school, namely Anna Rita Addessi, professor of music education with deep knowledge of the Flow schedule, and Julia Mikardo, a child psychotherapist. They both acted as external moderators by visiting the classrooms and themselves becoming participant observers in the process. Following the classroom visits they engaged in lively discussion with the observers about their justification for the scores allocated. This cross moderation process added validity to the scores attributed during the observation period.

Results of the Flow observations

The scoring of the 26 statements in the observation were calculated into a percentage score for the start and close of the activity. Figures could be calculated for overall state of Flow and for levels of sensory and relational engagement at the start and end of the music making experience. Table below present data from six sessions recorded between January and March for two young people from different classroom contexts.

Young Person 11 is male aged 17 years. His attendance for LINK sessions was consistent so we were able to record several sessions. We are presenting here the final six sessions calculated to demonstrate his overall state of Flow and also his levels of sensory and relational engagement. His music making took place in the morning as young people arrived into their classroom and lasted 15-20 minutes.

TABLE 4

Young person 11-17 years old male

Date	Oserv.	Overall Flow Start	Overall Flow End	Sensory Flow Start	Sensory Flow End	Relational Flow Start	Relational Flow End
Jan 25	**NC/JT**	55%	65%	64%	80%	44%	47%
Feb 1	**NC/JT**	61%	70%	71%	66%	41%	80%
Feb 7	**NC/JT/ARA**	67%	97%	80%	100%	47%	94%
Feb 22	**NC/JT**	75%	93%	83%	100%	66%	86%
Mar 1	**NC/JT**	87%	77%	95%	81%	78%	75%
Mar 8	**NC/JT/JM**	82%	89%	90%	97%	72%	89%

Note: Some preliminary conclusions for this young person can be explored from these figures.

Overall states of Flow

The range of overall states of Flow varied from 58% to 97%. In five out of six cases the end scores were higher than the start score. In the case where the Flow levels had reduced there were factors that caused this – fatigue from an illness on the day of the observations. It is noted in the narrative accounts of March 1 that he was «subdued today».

The overall pattern of measurements for states of Flow improved over the period of six weeks – with scores in the 50% margins in the first week and 80% margins in the 6th week.

Sensory aspects of Flow

The scores attributed to sensory aspects of Flow were relatively high and improved over the six week period. The sensory score on March 1 was low as a result of the illness mentioned above. However, Y11 achieved even a score of 100% on two occasions, one of them cross moderated by an external observer (ARA).

The end scores for sensory aspect of Flow generally improved over the six week period. The lowest end score for the end state of sensory aspects of Flow were recorded on the day when the activities were designed to improve his relational engagement.

Relational aspects of Flow

The overall scores for relational aspects of Flow were relatively low, falling within the margins of 40%-80%.

The end score for relational aspects of Flow improved considerably from the start scores on days when activities that prompted relational engagement were introduced for example from 41%-80%.

The highest score (97%) for relational aspects of Flow were on the day when a big instrument was introduced. This was a mandolin introduced by the external observer Anna Rita Addessi. This was in spite of his earlier statement (the previous week) that he did not want to meet with an Italian or any migrants.

The overall scores for relational aspects of Flow improved over the 6 week period – particularly the start scores. This may indicate his own improved expectations of the LINK sessions in providing a safe environment for interactions.

Recommendations

Continue with these activities ensuring that there opportunities for both sensory and relational engagement. To introduce big instruments that may further stimulate his engagement.

Young person 60 is a female aged 12 years who engaged with enthusiasm in the music making activities. We were able to record seven sessions using the observation schedule. Sessions for this young person took place in the classroom just before the break for lunch. She would frequently lead the class group to sett out the chairs in a circle in anticipation for when the instruments. Sessions lasted 15-20 minutes ending as the young people transitioned to the house group for lunch with care workers. The care workers were often invited to listen to the music making or join in on some occasions.

TABLE 5

Young person 60-12 years old female

Date	Oserv.	Overall Flow Start	Overall Flow End	Sensory Flow Start	Sensory Flow End	Relational Flow Start	Relational Flow End
Jan 25	**NC/JT**	75%	80%	78%	78%	80%	83%
Feb 1	**NC/JT**	79%	82%	85%	85%	72%	75%
Feb 7	**NC/JT/ARA**	82%	83%	95%	95%	66%	86%
Feb 22	**NC/JT**	75%	77%	76%	76%	75%	78%
Mar 1	**NC/JT**	87%	97%	95%	100%	72%	94%
Mar 8	**NC/JT/JM**	79%	89%	85%	92%	72%	80%

Note: Some preliminary conclusions for YP60 can be explored from these figures.

Overall states of Flow

The range of overall states of Flow varied from 75% to 97%. In all cases the end scores were higher than the start score.

The overall pattern of measurements for states of Flow improved over the period of six weeks – with scores in the 80% margins in the first week and 90% and high 80% margins in the 5th and 6th week. In the 4th week the overall scores were relatively low. On this day she was finding it challenging to relate with others within the framework of the group activity. This had been the pattern during the earlier part of the morning. Her high scores in session five result

from her very sensitive engagement in the later stages of the session when she played the balaphon. She had been anxious during the morning before this session but was able to talk positively with her teachers following the music making saying that music «slowed her head down». Relatively high scores in session three relate to her enjoyment of meeting a visitor from Italy who played the mandolin.

Sensory aspects of Flow

The scores attributed to sensory aspects of Flow were relatively high and improved over the six week period. The sensory score on February Feb 22 (Session 4) was low as a result of difficulties described above. However, Y60 achieved even a score of 100% on one occasion during session five when she played the balaphon in spite of experiencing difficulties during the morning. As recorded above she was able to talk with her teachers immediately afterwards. The teacher later said

> That was like a magic trick. That was the most constructive chat we have ever had with her. Oh yes we asked her what the music did for her. She said she thinks at about a thousand miles an hour and the music slows her head down. She said that she can appear frenetic in the music session but in fact it is slowing her down.

It has been noticeable that she has enjoyed these sessions as a sensory experience. One bit of evidence of this is that she likes to play several instruments at the same time – e.g., a blowing instrument as well as an instrument that she can strike

Relational aspects of Flow

The overall scores for relational aspects of Flow were relatively high, falling within the margins of 70%-90%.

The end score for relational aspects of Flow improved during each session. On two occasions this was by 20%.

The highest score (94%) for relational aspects of Flow were during session five, the day when she had been particularly anxious during the earlier stages of the morning as described above.

The overall scores for relational aspects of Flow remained fairly constant during the six week period. This may be because she enjoys these sessions and sees them as a social occasion. For example she always likes to help put the chairs into a circle and always greets the leaders of the session.

Recommendations

Continue with these activities ensuring that there opportunities for both sensory and relational engagement. Introduce new instruments that may further stimulate her engagement.

Discussion of data collected through the observation schedule

The observation schedule has enabled the observers to measure the impact of the group music making sessions on seven young people. These quantitative data set alongside details drawn from the weekly narrative accounts of the music making activities provide a rich portrayal over the six week period. The data evidence shows that from the start to the end of the session there is an increase in overall state of flow for both young people presented here, complementing the teachers' independent report that young people usually move into learning situations more easily following the music making sessions.

Except in one of the 12 records presented here, the scores for relational engagement show an increase between the start and end of the activity. Relational engagement can be broadly understood as pertaining to the young person's relationship with others in the group or with the instrument. More usually it is applied to the social dimension of the playing – and in these two cases invariably so.

It would be valuable to record the state of the young person's engagement in the period following the session, but this has been difficult to achieve systematically. Thus, we only have occasional narrative reports as recorded for YP60 on March 1st when her teachers were struck with her capacity to talk with them calmly about difficulties that had arisen earlier in the morning.

In some cases it is observable that high levels of sensory engagement correspond with raised levels of relationality. However, the reverse can be the case when a young person can engage in sensorial play that could, if not managed, lead to increased levels of isolation. There was a risk of this happening in the first recorded session for YP11.

Generally, the scores recorded on the schedules match the data recorded in narrative accounts. Additionally, the numerical scores presented in a table for the six-week period, can be quickly understood. These numerical data are appropriate for inclusion within school held databases as complementary data about individual young people's wellbeing and engagement.

The data are also useful for the purposes of supporting the evaluation of the music and arts-based activities offered. It has been noted that low scores for either sensory or relational engagement may indicate that the activities need to be adapted in subsequent sessions. An

example has been provided above in the report on March 1st for YP11. Higher scores provide evidence of the appropriateness of the activity for these purposes. This use of the data to support activity evaluation can inform teachers in planning musical experiences that enhance sensory and/or relational engagement.

Reflective discussions with teachers revealed that they were very interested in the data collected as it provided additional evidence of the impact of their work in the classroom. It was being noted that higher levels of sensory and relational engagement – and a general experience of Flow – were contributing to young people's capacity for self-regulation. This is a finding that teachers wanted to explore further as self-regulation enables young people to engage more effectively as learners.

During the LINK Project Joint Staff Training Event in Porto, Portugal in April 2017, we trialed the use of a simplified version of the observation schedule in order that it would be easier for teachers themselves to use in the classroom. The statements were reduced to 12 whilst ensuring coverage of the identified Flow variables and maintaining a balance of statements about sensory and relational engagement. The group of teachers, trainers and therapists took part in a 20 minute music making session and then were asked to assess themselves using the simplified form of the observation schedule. The version can be seen below

Table 6

Simplified version of the observational schedule

Focussed attention	**5**	**10**	**15**
looks carefully at and explores the musical instrument and/or is focused on particular musical idea, thereby perpetuating activity with concentration;			
systematically explores some gestures to produce sounds, carefully gazing at the hand, fingers;			
listens attentively to own productions and the production of the partner(s).			

Clear cut feedback	**5**	**10**	**15**
listens carefully and reacts to the instrument by self-correction, smiling, showing expressions of puzzlement, joy, surprise, saying something;			

Clear Goals	**5**	**10**	**15**
shows herself/himself to have the aim of exploring the parts or sounds of the instrument or of developing a musical idea;			
shows herself/himself to have the aim of exploring physical gestures to produce sounds;			
has the goal of discovering the rules of interaction and musical dialogue with the partner/s and/or of teaching a particular musical pattern.			

Control of situation	**5**	**10**	**15**
understands that he/she can start/interrupt the performance or exploration when he/she wants;			
the movements and or exploration are well controlled, both during the listening and playing;			
he/she plays, stops, listens to the response of the partner(s) and responds by repeating/changing musical ideas, engaging collaborative playing, learning to respect the turn taking;			

Pleasure	**5**	**10**	**15**
smiles and/or laughs, is calm, shows no displeasure, repeating actions she/he likes;			
speaks with the teacher/partner(s) and shares with him/her/them the joy through words and gestures.			

Notes: gray highlight represents aspects of sensory integration; the others represents aspects of relationality
State of Flow: Start Point=/36=%; End point =/36=%
Sensory Flow: Start Point=/18=%; End Point=/18=%
Relational Flow: Start Point=/18=%; End Point=/18=%

Teachers felt that they would be able to manage the simplified schedule independently in the classroom and have been using it recently. It has been valuable in generating data for their school management systems. It is a useful tool for justifying the new music and arts-based activities through providing an evidence-base for these practices. The simplified observation schedule also enabled teachers to alter their pedagogical practice to enhance and deepen sensory opportunities and to further develop young people's capacity for relationality. A focus on these two aspects in the classroom has been understood as contributing towards therapeutic practice within their normal teaching practices.

Conclusions and next steps

This tool measuring overall Flow, together with sensory and relational levels of engagement provides useful data to justify the further development of music and arts-based experiences in the classroom. Vulnerable learners with disturbed social and emotional responses need to be supported by teaching and learning approaches that are systematically tested by such tools. This study has already begun to present findings that demonstrate the value of musical improvisation for young people to enhance levels of emotional regulation and deepen their capacities for social interaction. It is noted within the report that new measurable longer term enquiries need to be established that incorporate findings about the process of neuroplasticity – the repair of early brain damage. In the meantime the introduction of such measurements using the Flow variables can create a climate in which regular and relevant classroom enquiries are valued.

The arguments and proposals contained in this paper are most relevant to the themes of *Education, Society and Cultures.* A significant *societal* issue being addressed – the tendency for the needs of young people with developmental trauma to be misunderstood in schools across the European region. What is being suggested here is that deep psychological resources are available for teachers and therapists to support this group. These take the form of Flow constructs that can be used to evaluate young people's engagement and at the same time portray their sensory and relational engagement that contributes to their capacity for self-regulation. Moreover the means through which such restorative processes may be initiated are also readily available within our *cultural reservoirs* – our music and arts traditions that can now be purposefully applied within classrooms on behalf of this target group. A key advantage that arises from this paper is the development of a simple measurement tool that has already been trialed *in schools* during an ERASMUS+ funded project and which has been adapted for teachers to use with short preparation time.

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