Art Making Promotes Mental Health: A Solution for Schools That Time Forgot

Brittany Harker Martin
University of Calgary

S. Mitchell Colp
University of Calgary

Abstract

This article presents art as a tool for promoting mental health in schools by examining the effects of art making in a sample of 104 school-based mental health professionals. It unites findings from unrelated disciplines to derive and test a new conceptual framework proposing that active engagement in a visual-tactile process over time mediates a shift to healthy mental states and that regular engagement in such process builds mental health capacity. Four hypotheses are tested through psychometrics with statistically significant findings for all ($p < .05$). Through this study, we advance Flow Theory in identifying a new causal mechanism for accessing Flow; and we make a novel, interdisciplinary contribution to the

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field of mental health in providing psychometric evidence that making visual art promotes mental health.

Keywords: mental health, effects of art making, psychometrics, flow theory

Résumé

Cet article présente l'art comme un outil pour promouvoir la santé mentale dans les écoles. Il examine les effets de la création artistique auprès de 104 professionnels de la santé mentale en milieu scolaire. Il réunit les résultats de diverses disciplines afin de dégager et de tester un nouveau cadre conceptuel proposant que l'engagement actif dans un processus visuel tactile au fil du temps facilite une bonne santé mentale, et qu'un engagement constant dans un tel processus renforce la capacité de santé mentale. Quatre hypothèses sont testées au moyen de mesures psychométriques, et elles obtiennent toutes des résultats statistiquement significatifs ($p < .05$). Grâce à cette étude, nous faisons progresser la théorie du flux (*Flow Theory*) en identifiant un nouveau mécanisme causal pour accéder à ce flux ; et nous apportons une contribution novatrice et interdisciplinaire au domaine de la santé mentale en fournissant des *preuves psychométriques que les arts visuels favorisent la santé mentale*.

Mots-clés : santé mentale, effets de la création artistique, psychométrie, théorie du flux

Introduction

The mental health crisis needs new thinking—now—especially in schools. In Canada, mental health issues affect nearly half of the population by the age of 40, and youth are notably at risk with levels of anxiety and depression on the rise (Allen, 2019; Findlay, 2019; St-Onge, 2019). A nationwide empirical study found that the majority of students in schools were bored, apathetic, or anxious (Dunleavy, 2012). This means that more than half of the students are disengaged or unwell: a serious and urgent problem, not only in Canada, but around the World (American Psychological Association, 2020; UNESCO, 2020). On a global scale, depression is one of the leading causes of illness in adolescents, with suicide as the third leading cause of death (World Health Organization, 2020). Considering that half of all mental health conditions start by age 14 (Kessler et al., 2007), there is an urgent need to disrupt what we are doing in schools, including the way we approach mental health.

The goal to reform mental health practices in education is shared by many educators and school-based mental health professionals alike, not only for the students they serve, but also for their own wellness (Gray et al., 2017). There is growing concern for educators' well-being (Simmons et al., 2019) and the high demands of the profession lead "many teachers [to] experience high levels of stress contributing to burnout" (Gray et al., 2017, p. 203). Likewise, school-based mental health service providers also experience high levels of stress and burnout (O'Connor et al., 2018; Tsai et al., 2020), and there is a need to consider development strategies aimed at reducing stress and promoting mental well-being across the system (Gray et al., 2017; Green et al., 2014). Thus, there is a case to disrupt the current models of school-based mental health that, to date, are "overly focused on conventional definitions of mental health practice" (Atkins et al., 2010, p. 47). Part of this disruption requires leveraging what we know from psychology and enhancing it with knowledge from other disciplines to generate new hypotheses and identify solutions outside traditional mental health frameworks.

The arts are underutilized in this regard, and they offer a relatively untapped wealth of knowledge on the relationship between art and mind (Andreasen, 1987; Csikszentmihalyi & Robinson, 1990; Eisner, 2002; Gardner, 2008; Martin, 2019; Zeki, 2001). There is much to be learned from artists, arts educators, and arts scholars on psychological perceptions (the mind) and physiological responses (the body and brain) to the arts

(Andreasen, 1997). However, to date, very little of this knowledge has been quantified in ways that policy makers and educational ministries require in order to make data-informed, evidence-based decisions. Without this data, mainstream psychology has yet to consider the arts as anything other than tools for creative expression or art therapy (Curry & Kasser, 2005; Haeyen, 2019; Haeyen & Hinz, 2020; Kapitan, 2012; Lee, 2015; Sandmire et al., 2012; Zhang et al., 2015). The lack of quantitative data raises the question: Is there measurably more to the relationship between art and mind than just creativity and therapeutic intervention?

Near the end of the last century, there was a deliberate, empirical focus on artists and their mental states. Two scholars studying creativity in unrelated disciplines identified different positive mental states that seemed to arise out of art making (Edwards, 1979; Csikszentmihalyi, 1975). Yet, as these scholars' careers ended up focusing more on perception and creativity, the trail investigating the connection between art making and positive mental states went cold. To date, most of the research on art within the context of applied psychology has focused on art therapy, using art as an intervention against mental illness. There is a dire need for more empirical investigation on art as a tool for mental wellness and well-being (Haeyen et al., 2018). To inform this, we turn to research outside the field of psychology to exhume findings from art education and Betty Edwards's (1979, 1998) research on art and the brain.

Art Making and Positive Mental States

Edwards's work is prolific in the field of art education for its practical use of brain-based principles for learning how to draw realistically (Edwards, 1998). As an art teacher and scholar, Edwards investigated the relationship between art and the brain, and she was intrigued by a perceptual shift experienced by artists during art making, from a symbolic/analytic mode to a relational/visuospatial mode. According to Edwards, during art making, artists shift into the second mode of thinking and feel mentally engaged as they holistically manage complex patterns, space, and visual relationships. In this second mode, Edward's observed that concentration is completely on the visual task to the point of losing track of time and the mind and body feel connected, as one.

Although conceptually these ideas are relevant to psychology, Edwards explained them through neurocognitive science of the day, grounding her work in the research of Nobel Prize winner Roger Sperry (1968, 1969, 1975). Sperry found that the left and right hemispheres of the brain perceive differently and serve different functions. Edwards aligned her work with Sperry's to explain the perceptual shift as a switch in processing from the left hemisphere of the brain to the right, triggering an alternate mode of perception that she termed *Right-Mode*, or *R-Mode*. Through this work, she proposed the right hemisphere to be the location for R-Mode and creative thought (Edwards, 1979, 1998).

Although Edwards is considered a pioneer in creativity research, these largely theoretical left/right brain models have since been replaced by more sophisticated neuroscience (Dietrich & Kanso, 2010; McGilchrist, 2010). However, what also seems to have been dropped is the line of inquiry studying the perceivable shift from one mental state to another, somehow caused by making visual art. This shift in mental states echoes similar phenomena observed in artists studied in the field of positive psychology, and the happiness studies of Mihaly Csikszentmihalyi (1975).

In researching happiness, Csikszentmihalyi was particularly intrigued by the phenomenon of visual artists who seem to work hard all day, and yet emerge feeling mentally refreshed (Csikszentmihalyi, 1975; Csikszentmihalyi & LeFevre, 1989). Csikszentmihalyi and colleagues noticed that when artists were ultimately engaged, they entered into a novel, mental state in which they were completely absorbed in their process, so much so that they would lose track of time. Then, rather than be exhausted by such work intensity, they would emerge from their artistic process feeling mentally energized. In interviews, Csikszentmihalyi's research participants referred to this experience as "being in the flow," which he later simplified into the construct of "Flow" (Csikszentmihalyi, 1997).

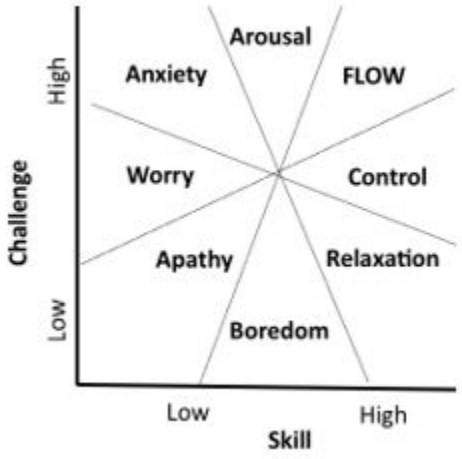
Csikszentmihalyi (2008) has described experiencing Flow as being completely involved in what you are doing; feeling totally focused and concentrated; experiencing ecstasy and serenity outside of reality; sensing great inner clarity without worries about oneself; and feeling intrinsically motivated to do the task at hand. This experience has been likened to "being in the zone," when a person is so engaged and focused that performance is enhanced (Chen, 2007; Kotler, 2014). Indeed, Flow has been termed *the ultimate state of engagement*, and since the original findings, there have been decades of theoretical development on Flow Theory and Flow as an optimal state for focus, motivation,

and attention (Csikszentmihalyi, 1997, 2014a; Csikszentmihalyi & Csikszentmihalyi, 1990; Nakamura & Csikszentmihalyi, 2014,).

Flow Theory provides a causal explanation for Flow that conceptually relates it to a variety of other mental states, namely: boredom, apathy, worry, anxiety, control, arousal, and relaxation (Csikszentmihalyi, 2008). As illustrated in Figure 1, Flow Theory proposes that different mental states will occur when tasks are designed with different levels of perceived challenge and skill.

Figure 1

Csikszentmihalyi's (2008) Model of Flow as Mediated by Levels of Challenge and Skill



As illustrated above, Flow Theory explains that Flow can be achieved through a specific matrix of high challenge and high skill, and that less optimal states can also be elicited through less-optimal matches. In this way, Flow provides a causal mechanism for accessing Flow: designing tasks for perceived high challenge and high skill. Flow research has been connected to creativity and, like Edwards, Csikszentmihalyi is also considered a pioneer in creativity research (Csikszentmihalyi, 2014b). Meanwhile, Flow Theory has focused heavily on high challenge/high skill contexts (Kotler, 2014; Seligman et al., 2005), and although Flow has continued to be a research interest in relation to the arts (Chilton, 2013; de Manzano et al., 2010; Kapitan, 2012; Lee, 2015), the challenge/skill model has been assumed to be the only causal explanation. Again, we find another

dropped line of inquiry, in seeing challenge and skill as the only model for Flow, ignoring the fact that Flow was first observed during art making.

The overlapping similarities between R-Mode and Flow are evident: both describe access to a positive mental state originally arrived at through the process of making art, with multiple similarities such as losing track of time, mind–body oneness, attention as cognitive engagement, and more. The fact that both were found arising from the same context suggests that they may be related. Could it be that these constructs, from two different fields, are actually two sides of the same coin? If so, Flow Theory may help fill some of the gap where Edwards's R-Mode research left off, while Edwards's notion of perceptual shifts through visual art may inform another causal model for Flow.

Theoretical Development: Another Route to Flow

In terms of positive psychology, we know that art making can induce a meditative state (Drake et al., 2014; van der Vennet & Serice, 2012; Sandmire et al., 2012) and that this state seems to be related to the visual-tactile process of art making (Curry & Kasser, 2005; Kimport & Robbins, 2012; Monti et al., 2006); but there is a notable gap in our knowledge of the association between art making and healthy mental states. In fact, there is shockingly little empirical data on the psychological processes that occur during art making, and most psychometric data is on the efficacy of art making as intervention through art therapy.

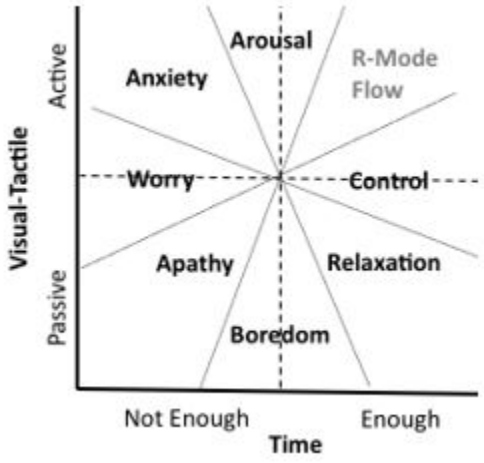
Although Flow Theory explains why professional artists might be able to achieve Flow, it does not explain a phenomenon commonly witnessed in the art classroom: when relatively unskilled individuals working on low challenge tasks appear to be in Flow (Kapitan, 2012; Lee, 2015). Think about finger painting, paint-by-numbers, or stringing beads, for example. A common response is to enter into a calm state as the mind settles into the simple process. Is there something in the visual-tactile process of art making that facilitates Flow, and that art making itself offers another causal mechanism, beyond Csikszentmihalyi's challenge and skill matrix, to induce a Flow state?

If we are open to the possibility that there could be another route to Flow, it makes sense to reconsider the similarities between R-Mode and Flow, and recognize that they are both positive mental states experienced by engaging in a visual-tactile process. Could

it be that engaging in visual-tactile process engages the mind in such a way that facilitates the shift to positive mental states? Further, in studies of R-Mode and Flow, the artists being observed worked over a sustained period of time in a way that they also lost track of it. Time is a central component to both theories. Could it be that time, itself, plays a role in the shift between mental states? This relationship between visual-tactile process and time can be seen in Figure 2, an adaptation of Csikszentmihalyi's model for Flow that predicts the same cognitive responses through a different causal mechanism.

Figure 2

Authors' Model of Flow as Mediated by Engagement in Visual-Tactile Process and Level of Time



As we see in Figure 2, active engagement in visual-tactile process, combined with enough time, is predicted to elicit a Flow state. Of course, time is a relative construct and at this point we cannot accurately say what amount of time is required. Thus, the model predicts that the engagement needs to be *long enough* for the shift between states to occur. Curry and Kasser (2005) found that individuals engaged in visual art activities (colouring mandalas, patterns, and blank paper), reported a decrease in anxiety after 20 minutes; and, without precedence this can serve as a logical starting time for investigation. Although we acknowledge that such a time frame may not be universal, and that individual differences may come into play, what Figure 2 suggests is that there is a certain

amount of time required in order for individuals to make the shift from one mental state to another, and that when this happens, it is a shift from perceivably negative mental states to positive ones.

Further, in our model there is a deliberate intersection, demarcated by the dotted lines, representative of the perceptual shift. We propose this is a time of cognitive struggle (Kotler, 2014) when the mind toggles between boredom and arousal, worry and control, as it switches from negative to positive states; and that this cognitive struggle is related to Edwards's (1979) perceivable shift between modes.

Thus, we propose that committing to a visual-tactile task for the right amount of time frees the mind from negative mental states and assists with the shift to positive ones, such as Flow. In this way, anyone can create the shift if they can endure the cognitive struggle until their mind lets go and they get to the *other side*. By this logic, people who fail to achieve R-Mode or Flow may lack the mental resilience required to push through negative mental states long enough to arrive at positive ones; or, perhaps, they simply have never been taught to do so. To better explain this, we draw upon the analogy of learning to swim. As illustrated below, it is common practice for children to learn how to swim by first learning how to float (Red Cross, 2021).

Figure 3

Toddler Learning How to Float

Note: Permission for child's photo has been acquired by the author.

When learning how to float, children are encouraged to fill their lungs, spread their weight, and calmly submit to a position on top of the water that is absolutely counterintuitive to their experience with gravity and bodyweight. They have to mentally submit, calm the mind, and slow the breath in order for their lungs to remain full enough of air, and their limbs to stretch wide enough for buoyancy. During this submission, there is often a cognitive struggle as the mind and body urge them to move their legs and arms before they sink…but as they are coached to push beyond these instincts and remain with the task, they can learn to submit to the process and, consequently, learn how to float.

Returning to our topic of inquiry, we posit that learning to control the shift between negative and positive mental states is like learning to mentally float, and that this in-between state is antecedent to a Flow state. What is of theoretical distinction here is that our model of Flow has nothing to do with challenge or skill: one only needs to engage actively in visual-tactile process for a certain amount of time to experience the positive effects. It goes to reason, then, that if R-Mode and Flow are indeed two sides of the same coin, theoretically R-Mode could be plotted in the same quadrant as Flow, thus shown in Figure 2. In this model, anyone can achieve Flow if they are willing to engage in art making long enough to cognitively push past anxiety, apathy, worry, and boredom. In this, we come to our first, testable hypothesis:

> H1: Active engagement in visual-tactile process for a set time will mediate access to healthy mental states, such as R-Mode and Flow.

We can test this hypothesis by designing simple, art-based exercises (that offer little challenge and require little skill) for participants to engage in for a set amount of time. In testing this, we will also be answering the question: Can visual art exercises for a set amount of time lead to healthy mental states? If so, we will identify a new causal mechanism for engaging the mind in Flow that has nothing to do with challenge or skill.

Given the similarities between the constructs of R-Mode and Flow, and the fact that both are proposed to arise out of art making, it is reasonable to suggest that these two variables are associated. Although one construct is brain-based from arts education, and the other is mind-based from psychology, there are enough similarities between them that there is a likelihood they are correlated. In capturing data on R-Mode and Flow, we have the opportunity to test whether or not there is a relationship between them. Thus, we arrive at our second hypothesis:

H2: When art making leads to R-Mode it will correlate with Flow.

We can test this hypothesis through a Pearson correlation analysis and in doing so will also be answering the question: Are R-Mode and Flow related constructs? If findings are positive, we will unite two streams of unrelated research for further interdisciplinary investigation on the arts, brain, and mind.

So far, we have put forward hypotheses that test mental states before and after art making, but we are also interested in the shift between states and the relationship with visual arts in assisting individuals to mentally float. Figure 2 illustrates that there are critical levels of visual-tactile process and time required for this shift when the mind struggles between states. During this shift, we propose individuals undergo a process of mental submission, similar to learning how to float, that requires awareness of one's mental state in order to sustain the task at hand actively and push through the cognitive struggle to reap the mental benefits. We can capture this as a new variable, *Float*: the perceivable mental shift, as one becomes calm, mentally relaxes, changes focus, feels worries and cares fade away, and allows the mind to release. Thus, we arrive at our third hypothesis:

H3: Active engagement in visual-tactile process for a set time will mediate Float.

We can test this hypothesis by asking participants to be aware of their mental state throughout the exercise, and in the event that they become aware of a negative mental state, encourage them to work through it by sustaining active engagement in the visual-tactile task for the full time. In testing this hypothesis, we will also be answering the question: Can sustaining a Flow-inducing activity, despite cognitive struggle, assist with the shift between positive and mental states? If so, we will identify a powerful cognitive-behavioural mechanism for self-regulation of mental states (Bandura, 1991, 2001).

Returning to the study purpose, we propose that visual arts can be used as tools for the promotion of mental health. Here, we go further to propose that regular engagement in art-based, visual-tactile process can provide an opportunity for individuals to learn how to mentally float through experiential learning (Kolb, 2014) in a way that they acquire techniques for self-regulation of their own mental states. In doing so, they can use visual arts to build a capacity for managing their mental and emotional well-being (Alberta Health Services, 2020).

Alberta Health Services articulates five domains of mental health capacity: intellectual/cognitive, psychological/emotional, social development, physical management, and behavioural management (Alberta Health Services, 2020). Using visual arts for building mental health capacity is not the same as art therapy, because it is not using the arts for intervention of illness. Likewise, it is not the same as arts education, because it is not using the arts to create products or develop artistic skills. Using visual arts for building mental health capacity focuses on using visual arts process to create experiences that inform one's ability to understand, engage in, and self-regulate aspects related to mental health. Art has never been used like this before! Through this, anyone (even perceivably untalented, non-creative people) can use visual art to learn how to access positive mental states; and if they do so regularly and reflectively, they can build mental health capacity. Thus, we come to a fourth, testable hypothesis:

> H4: Regular use of and reflection on art-based, visual-tactile process will have a positive effect on Mental Health Capacity across time.

We can test this hypothesis by measuring effects of regularly scheduled art-based exercises for a set duration (20 minutes), frequency (daily), and time frame (across a week) on mental health capacity. In testing this hypothesis, we will also be answering the question: Do visual arts exercises used across time increase mental health capacity? If yes, we will empirically validate visual art as a tool for promoting mental health.

Empirical Investigation

To test hypotheses empirically, the Principal Investigator designed a series of art-based exercises that involved making a simple pattern (low challenge) through intuitive brush strokes (no technical training) for 20 minutes, working on a special canvas that could be painted with water (as the water dries, the marks slowly vanish). Each exercise was facilitated in a synchronous online session and included instructions for participants to make marks for the entire duration while being aware of their mental state. In the event that negative states arose, such as anxiety (e.g., self-talk such as, *this is wasting my time when I have important things to do*), or boredom (e.g., self-talk such as, *this is too boring*), they were encouraged to remain active by continuing to make marks. To enhance focus and

avoid distraction, participants were instructed not to speak during the exercises (Christenfeld & Creager, 1996; Drake et al., 2014; Kimport & Robbins, 2012; Sandmire et al., 2012). Once the initial pattern was taught (such as concentric circles or basic plaid as in Figures 4 and 5) individuals were instructed to make brush strokes until time was up.

Figure 4

Author's "Circling Circles" Exercise Output

Figure 5

Author's "Glad for Plaid" Exercise Output

Each exercise was followed by a five-minute debrief discussion to enact self-awareness and reflect on the experience. Participants were offered daily 20-minute sessions for five consecutive days, and received a workshop on the research that informed the exercises.

Method

Participants and Procedures

This study employed a one-way within-subjects quasi-experimental design. This design was used because it allowed us to measure changes in individuals before and after the session. The sample was 104 school-based mental health professionals who work in one of 85 sites across the province as part of the Mental Health Capacity Building in Schools Initiative by Alberta Health Services. Participants were given the option to register for a training session on art-based exercises as part of their role providing mental health services in schools for grades K–12. As is typical in community mental health services and education, the overall sample was gender biased, with only 2.88% of the obtained sample

representing the male population (n = 3). Forty-two participants completed both pre- and post-assessments on which conclusions of treatment outcomes are based. It is important to note that the training sessions were offered online during the COVID-19 pandemic, when face-to-face interaction was not considered safe. Instead of sessions together, participants were mailed their art supplies (canvas and brush) and provided a link to sign on and attend a virtual session using Zoom technology.

Measures

All participants completed a 48-item online survey before and after the training. A series of demographic items was followed by measures of R-Mode, Flow, Float, and Mental Health Capacity. For all items, participants rated their level of agreement to statements using a 4-point Likert scale. The survey was framed by the prompt "Based on my experience, art can be used to…" followed by each item. Thus, the scales used could be adapted to other frames of reference. All change-based analyses utilized the total score for each domain that was obtained from the summation of individual items.

Flow was measured using an 8-item scale based on the theoretical model proposed by Csikszentmihalyi (2008). Although other Flow scales exist (Jackson & Marsh, 1996; Nakamura & Csikszentmihalyi, 2014), it was deemed necessary to reduce items and create a scale that could accurately capture the mental state while avoiding participant fatigue. Items include using art to: concentrate completely on an artistic task; know what they want to make and see it happen; experience time as though it passes quickly; engage in activities that are their own reward; engage so fully that the task seems effortless; create a complex pattern as a manageable challenge; feel like the mind and body are connected as one; and feel like they have a sense of control over what they are doing.

R-Mode was measured using an 8-item scale based on the theoretical model proposed by Edwards (1979, 2008). Items include using art to: access a visual state of mind that is rewarding; manage complex patterns, space, and visual relationships; experience making art and seeing what I make as one process; concentrate completely on the visual task before me; forget about the clock; control a shift from a logical/analytical to a visual/spatial state of mind; understand that visual process is easier than it seems; and simultaneously process what the body and mind are doing at once.

Float was measured using a 5-item scale based on descriptions of perceptions of artists during the shift in between Edwards's L-Mode and R-Mode (Edwards, 1979). Items include using art to: feel the mind release, sense a shift in my focus, notice my cares fade away, begin to mentally relax, and feel myself become calm.

Mental Health Capacity (MHC) was measured using a 27-item scale based on the Mental Health Capacity Building Framework, a theoretical model adopted by Alberta Health Services (2020) with five different domains represented by subscales: (1) intellectual/cognitive ("…to understand non-art concepts"); (2) psychological/emotional ("… to calm myself down when I am emotional"); (3) social development ("… to create a group so we feel closer to our peers"); (4) physical management ("…to relax"); and (5) behavioural management ("…to share power with my clients").

Analysis

Prior to engaging in any analytic data analysis, an examination of missing data and parametric assumptions was required. This also included an evaluation of reliability for our novel scales. Analyses of internal consistency were performed in IBM SPSS (Version 28) using Coefficient alpha to determine whether the proposed instruments demonstrate adequate rigor (important given the sample size was limited for factor analytic techniques). To examine the relationship between the constructs of R-Mode and Flow, a Pearson correlation was performed on the total scores of the pre-treatment data. Further, to examine whether the treatment effects resulted in a statistically significant change across the participants, a series of dependent samples t-tests was employed.

Results

The obtained data were examined to determine whether the underlying assumptions of the proposed statistical techniques could be inferred and warrant their utilization. This included the evaluation of univariate normality at the individual item and total score levels for all instruments. No outliers were identified to occur within the obtained sample. The total score for all factors examined in this study demonstrated acceptable central tendency, skew and kurtosis properties, and warranted the use of parametric approaches. Frequency analyses were performed to examine the percentage of missing values found

within the obtained data. Missing data were minimal and constituted less than 5% of the obtained sample. The overall pattern of missing data appeared mostly random, with no logic to the exclusion of information. Due to the limited sample size, multiple imputation methods were not utilized, and all analyses were performed on available data.

The reliability of the individual scales utilized within this study was examined using Coefficient alpha (α_c). The results of these analyses showed that all scales that were employed demonstrated appropriate levels of reliability for research purposes, as depicted in Table 1.

Table 1

Coefficient Alpha Values for the Individual Scales

Factor	α_c
Flow	.93
R-Mode	.93
Float	.89
Mental Health Capacity (MHC): Overall Scale	.97
MHC: Intellectual/Cognitive Subscale	.88
MHC: Psychological/Emotional Subscale	.89
MHC: Social Subscale	.90
MHC: Physical Subscale	.91
MHC: Behavioural Subscale	.85

Participation in the art-based exercises demonstrated significant increases in Flow ($t(39) = -3.28$, $p < 0.05$, $d = .52$), R-Mode ($t(39) = -4.92$, $p < 0.05$, $d = .77$), and Float ($t(40) = -5.08$, $p < 0.05$, $d = .79$). Results of the Pearson correlation analysis indicate that there was a strong and statistically significant positive association between R-Mode and Flow ($r(98) = .74$, $p < .05$). Additionally, there was a statistically significant increase in Mental Health Capacity ($t(39) = -3.33$, $p < 0.05$, $d = .53$) observed over the treatment timeline. Regarding MHC subscales, participants appeared to demonstrate most change in behavioural management ($t(40) = -4.16$, $p < 0.05$, $d = .65$) and intellectual/cognitive constructs ($t(41) = -3.70$, $p < 0.05$, $d = .57$). Significant differences were also observed to occur in physical management ($t(41) = -2.68$, $p < 0.05$, $d = .41$), psychological/emotional

states ($t(40) = -2.61$, $p < 0.05$, $d = .41$), and social development ($t(42) = -2.09$, $p < 0.05$, $d = .32$). Means and standard deviations have been provided in Table 2.

Table 2

Descriptive Statistics for Pre-Post Measurement

Factor	Time 1		Time 2	
	M	*SD*	*M*	*SD*
Flow	27.20	4.00	29.30	3.79
R-Mode	25.55	3.97	28.80	3.91
Float	16.02	2.85	18.19	2.48
MHC	91.32	11.18	97.80	9.97
MHC: Intellectual/Cognitive	19.97	2.55	21.35	2.48
MHC: Psychological/Emotional	20.73	2.94	22.17	2.30
MHC: Social	17.34	2.31	18.20	2.00
MHC: Physical	17.38	2.33	18.42	2.02
MHC: Behavioural	16.12	2.36	17.78	2.24

Discussion

Hypothesis 1 states that active engagement in visual-tactile process for a set time will mediate access to healthy mental states, such as R-Mode and Flow. Findings were statistically significant: participants who engaged in the visual art exercises for 20 minutes experienced R-Mode ($t(39) = -4.92$, $p < 0.05$, $d = .77$) and Flow ($t(39) = -3.28$, $p < 0.05$, $d = .52$). This result is promising, given the high reliability of both scales ($\alpha_c = .93$) and we are encouraged to continue testing this hypothesis with other demographics. To our knowledge, this is the first psychometric scale designed to capture perceptions of Edwards's R-Mode, and we make a unique contribution to this line of research by merging it with methods from psychology.

Findings also answer our question: Can visual art exercises lead to healthy mental states? The answer is yes—this visual art process mediates R-Mode and Flow. Moreover, it provides an alternate way to access Flow beyond Csikszentmihalyi's model of challenge and skill. Thus, we make a novel, theoretical contribution to Flow Theory in identifying and testing a new conceptual model that proposes visual-tactile process over time

and mediates Flow, regardless of challenge or skill. The art exercises assigned to participants required no artistic knowledge, skill, or ability. Anyone can teach them. Anyone can do them. This matters because it dispels the myth that one must be talented or artistic to engage in art, and reminds us that visual-tactile process offers cognitive benefits that are inherent in every human being.

In more general terms, our new model for Flow helps explain other visual-tactile behaviours, such as scanning and deleting email, or scrolling online platforms. According to our model, such visual activity that involves tactile actions like swiping, tapping, and clicking engages the mind in a way that assists with letting go of anxieties and worries, and as time passes, the mind floats into relaxation and a sense of control. In this way, our new model explains the societal predilection for mindless screen-time, gaming, and our addiction to smart phones. While technology might seem like another solution for accessing Flow, it also highlights the desperate need in society for the mental relief that engaging in visual-tactile process can achieve. We seek it and find it where it is offered.

Findings here support the proposition that there is a human need for visual-tactile stimuli, and without other options, we turn to the simple solutions that are readily available. Through this, we come to a moral imperative to re-prioritize opportunities for art-based activities, and time for visual-tactile activities, in schools and other knowledge intensive contexts. We need to move scheduled breaks beyond recess and coffee breaks, and acknowledge that our mental health can be strengthened through a willingness and ability to shift in and out of mental states. According to this research, taking a mental break doesn't mean pushing pause on cognition—it means disrupting it with hands-on activity.

Hypothesis 2 proposed a relationship between R-Mode and Flow, and our analysis found this to be significant ($r(98) = .74$, $p < .05$). Thus, we have the opportunity to merge these constructs into a more global construct that captures the essence of both: Art-Based Flow, a positive mental state that is achieved through active engagement in art-based activity over time. Through this, we unite two streams of research for new, interdisciplinary knowledge on the effects of art on the mind.

Hypothesis 3 proposed that active engagement in visual-tactile process for enough time will mediate one's ability to float mentally. Our analysis found this to be significant ($t(40) = -5.08$, $p < 0.05$, $d = .79$), to provide evidence that individuals who stick with the visual-tactile activity for the full time can perceive the shift between mental

states. Conceptually, this means that Float is antecedent to Flow and there is a strong case for pedagogy and professional development that teaches people how to access both. This aligns with the trending interests in mindfulness and meditation (Brown & Ryan, 2003; Cahn & Polich, 2006; Lazar et al., 2000; Zhang et al., 2015), and provides an evidence-based method for self-regulation: Art-Based Flow. Additionally, in articulating Edwards's perceptual shift as Float and defining it through psychometric terms, we are the first to create a scale designed to capture this effect, and thereby make another unique contribution.

Last, but arguably most important, there is also support for the fourth hypothesis, which states that regular use and reflection on art-based visual-tactile process will have a positive effect on Mental Health Capacity across time. Through daily art-based exercises, participants experienced a statistically significant increase in all five domains of Mental Health Capacity, with a statistically significant increase in the overall summary scale as well ($t(39) = -3.33$, $p < 0.05$, $d = .53$). Thus, we provide evidence that regular use of visual arts—that includes awareness of the mental states and reflection on the experience—builds knowledge and skills required to manage one's mental and emotional well-being. Given the fact that our participants were well-trained experts on models for the promotion of mental health, we were not expecting to find such a significant increase. To our surprise, we found that even this highly trained group benefitted significantly from the opportunity to set aside work and engage in their own regularly scheduled visual art exercise. This, in addition to our highly reliable metric ($\alpha_c = .97$), emboldens us to carry this work forward into other contexts, to address the mental health crisis by disrupting knowledge-intensive work with regularly scheduled visual arts breaks. In this way, we reposition practice in the visual arts as a healthy mental habit, as important as good dietary nutrition and daily exercise.

Limitations

Although this study provides new theoretical advancement and novel findings, we acknowledge its limitations. First, participants were invited as part of a scheduled training session on art-based exercises. As such, our sample size was predetermined, and randomized controlled clinical trials were not part of the design. These are limitations in terms of

interpretation; however, given the theoretical contributions put forward, we see them as acceptable, knowing the stage is set for imminent research.

Additionally, the art-based sessions were delivered online, which made it difficult for the facilitator to ensure full engagement of participants. It is probable that engagement and effects could have been even stronger with a facilitator present in the room. Nevertheless, we feel the COVID-19 context gives our findings an extra boost: during a time of notable mental health decline, our sample saw a statistically significant increase in mental health capacity.

Future Studies

We propose future studies tease apart the variables of the model, including experimenting with different time durations, frequencies, and time frames, with an underlying curiosity to identify what kinds of visual arts activities/processes/techniques/media are more conducive to Flow and building mental health capacity. We also propose experimenting with other artistic media and art forms, such as sculpting, creative movement, music, and more (Custodero, 2002; Hart & Di Blasi, 2015), to see if other mediators exist. We urge immediate experimental, controlled studies on hypotheses tested here, extending them to other contexts, such as front-line employees and schools, where they also seek evidence-based solutions to the mental health crisis.

Conclusion

This article presents the visual arts as a tool for promotion of mental health. It reviews somewhat forgotten relationships between art making and mental states and unites findings from different disciplines to derive a new model for accessing Flow that can be applied in practice to build mental health capacity. Findings are statistically significant, and we make multiple contributions to the field of mental health while expanding Flow Theory. It is unfortunate that the crisis had to get this bad for us to seek mental health solutions beyond psychology alone, but through this, we now know that the arts are not only good for us, they are an essential tool for naturally accessing healthy mental states. If we choose to ignore this fact, we turn our backs on the many people who could benefit from it: a choice that would be most negligent.

Appendix

Mental Health Capacity Scale

This scale measures the effects of an arts integrated program, or arts-based treatment, on the mental health capacity of adults. It measures the effects based on the five domains included in Alberta Health Services' Mental Health Capacity Framework (Alberta Health Services, 2020). The overall scale, and individual subscales, demonstrates acceptable levels of reliability based on the calculation of coefficient alpha ($\alpha > .80$).

Participants are presented a prompt which states, "**In my experience, [insert program/treatment name] can be used to…**" and may then rate their level of agreement to each item using a 4-point Likert scale. The Likert scale would be presented as: (1 = Strongly Disagree; 2 = Disagree; 3 = Agree; 4 = Strongly Agree).

Intellectual/Cognitive Subscale (6 Items)
• understand non-[program/treatment] concepts.
• learn how to follow routines.
• experience how disruptions can be managed.
• understand how to control mental processes.
• learn how to let certain thoughts go.
• learn how to sense when it is time to act and time to wait.
Psychological/Emotional Subscale (6 Items)
• calm myself when I am emotional.
• recognize and shift my state of mind.
• understand how the brain processes information.
• understand how the brain processes emotions.
• learn how to push past discomfort when trying something new.
• manage stress.
Social Development Subscale (5 Items)
• create in a group so we feel closer to our peers.

• foster patience.
• create a sense of shared success.
• communicate ideas without words.
• learn that waiting can be a worthwhile reward.
Physical/Behavioural Subscale (5 Items)
• release physical tension.
• practice healthy mental routines.
• to relax.
• engage in holistic practice that is good for the mind and body.
• express emotions.
Behavioural Management Subscale (5 Items)
• identify desirable and undesirable behaviors.
• help me be a positive role model.
• share power with [students, clients, peers].
• provide a variety of ways to cope with life's challenges.
• teach me how to take on a challenging task and stick with it.

Source: Martin & Colp (2022).

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