

# Exploring Creativity in Medical Students: Themes and Media in a Compulsory Humanities Student Selected Component

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## Abstract

**Background:** Humanities/arts modules are employed in medical education programmes with the aim of promoting reflection and creativity. The aim of this study was to examine media and themes chosen by students in a novel, compulsory, humanities Student Selected Component (SSC) with the aim of better understanding what influences students' project choice at this point in their training. **Methods:** We studied 430 SSC projects (weighting equivalent to 2.5 ECTS credits) undertaken by students who had completed the first two years of a 4 year graduate entry medical degree program. Students' work was qualitatively analysed, focusing on a number of themes and subthemes. Students have the option of a critique or producing an original work. **Results:** 99% of students produced original works (of which 85% were visual media, 10% written, 5% performing arts) while 1% were critiques. Descriptive analysis of the reflections identified six overarching themes as to why students chose particular projects: *Biological* (25.6%), *Mental Health* (11.9%), *Life of the Student* (14.4%), *Life of the Doctor* (15.8%), *the Patient Experience Perspective* (12.6%) and *Culture and Society* (19.8%). There was a significant association between gender and choice of theme ( $p < 0.001$ ) with female students more likely to choose *the Patient Experience Perspective* and *Culture and Society* as a basis for their project than male students. **Conclusion:** The study demonstrates that students chose creative expression over critiques in self-selected media and themes related to medicine when motivated by a compulsory credited module. Gender rather than educational background influences themes chosen.

## Keywords

Graduate Entry Medical Students, Humanities, Student Selected Component, Creativity, Art, Mental Health, Reflection, Patient Experience, Professionalism

## 1. Background

Humanities is the study of what it is to be human, beyond what science alone can provide and encourages exploring a deeper understanding of how medicine operates in society (Fins, Pohls, & Doukas, 2013) through the disciplines of philosophy (including ethics), anthropology, sociology, psychology, history, and the arts. The Medical (Health) Humanities explore and critique ideas in health and illness (Bleakley, 2015; Cole, Carlin, & Carson, 2015; Macnaughton, 2000).

The Humanities' role in medical education is to broaden reflection on its goals, values and priorities. It is also hoped it has a utilitarian value, refining thought, attitudes and behaviors that improve professional sensitivity, and empathy (Macnaughton, 2000) and with uncertainty (Ofri, 2013). There is also an additional potential agenda. Depression and "burn out" are unusually prevalent in medical students world-wide resulting in loss of empathy, motivation and meaning (Rotenstein et al., 2016). However, recent evidence from US students related exposure to or participation in the arts with less "burn out", higher levels of empathy, wisdom and tolerance of ambiguity (Mangione et al., 2018). This raises the question whether engagements in the arts (in conjunction with other interventions) might help buffer aspects of "burn out" by giving students protected time for creative sanctuary and reflection (Mangione et al., 2018). The integration of humanities and arts is now a priority of the American National Academies of Science Engineering and Medicine (Skorton & Bear, 2018).

Student Selected Components (SSC), formerly known as Student Selected Modules (SSMs) (Riley, 2009), are a pedagogical medium facilitating students to concentrate on an area of interest in the curriculum (Riley & Murphy, 2013). A wide range of taught modules have been reported including philosophy (Macnaughton, 2000), history of medicine (Arnott, 2002), visual arts (Bardes, Gillers, & Herman, 2001), theatre (Shapiro & Hunt, 2003), cinema and television (Glasser, 2001), literature (Kuper, 2006; Downie et al., 1997) and poetry (Shapiro, 2009) amongst others (Lazarus & Rosslyn, 2003; Biley & Champney-Smith, 2002; Kirklin et al., 2000). An alternative approach is to engage students in a self-selected creative project related to medicine in a branch of the arts or discipline of the humanities where students choose the theme and media themselves (Shapiro et al., 2016; Thompson, Lamont-Robinson, & Younie, 2010). The value of this approach is to stimulate curiosity which is related to reflection and mindfulness (Dyche & Epstein, 2011) providing an opportunity to ask questions rather than regurgitate answers.

Creativity and innovation amongst medical students have been little explored (Green et al., 2016; Thompson, Lamont-Robinson, & Younie, 2010) though its value has been championed by leaders of the profession (Darzi, 2009). There is much emphasis on consensus guidelines and protocols in contemporary practice risking the reduction of medical practice to a mechanical unreflective activity ignoring uncertainty, patient narrative or the purposes of health care. New paradigms, technologies and societal values require creative re-examination of estab-

lished views and practice. A self-directed humanities/arts SSC provides students the opportunity to explore these domains and be creative. How might medical students respond when faced with the challenge of thinking creatively to communicate issues of special interest to them in their emerging identity as a doctor? (Kumagai, 2012; de la Croix et al., 2011; Jackson, 2005).

## Objectives

The aim of the study was to document and analyze media and themes in a compulsory Humanities/Arts SSC in a graduate entry medical student cohort.

## 2. Methods

### 2.1. Programme Background

The University of Limerick Graduate Entry Medical School (ULGEMS) delivers a 4-year postgraduate MB, BCh. medical degree. Students must have a 2.1 honors degree or higher and have passed the Graduate Australian Medical School Admission Test (GAMSAT) or Medical College Admission Test (MCAT) for North American candidates. The first 2 academic years provide early patient contact and problem-based learning (PBL).

### 2.2. Description of Novel Student Selected Component (SSC)

At the start of Year 3, all students are required to undertake a compulsory Student Selected Component (SSC) in the Humanities as part of an assessed module with 2.5 credits European Credit Transfer and Accumulation System (ECTS) allocated to this module. By this time students will have encountered a wide range of biological, social, psychological and ethical issues in medicine. The aim of the SSC module is to provide students time to investigate and reflect on an aspect of their profession, be creative and resourceful, and manage a self-directed project. Students are expected to utilize their powers of observation, investigation and synthesis and to engage their aesthetic senses during the course of the module. As previously outlined, creativity and innovation amongst medical students has been little explored (Green et al., 2016; Thompson, Lamont-Robinson, & Younie, 2010) therefore this warrants further investigation.

Students are free to choose any discipline of the humanities to explore a theme in medicine. Students receive an introductory explanatory lecture with detailed guidelines and resources. They are required to submit their project proposal for approval to the module lead who provides guidance if there is any misunderstanding. Students can choose between an original work or a critique of another's work. They may choose any media: visual, written or performance. The SSC is marked on 4 criteria: relevance (10%), quality (30%), originality/authenticity (30%) and a 750 word written reflection (30%). Students are required to submit their work along with an additional written reflection. The latter should explain the origin and nature of the idea for the work, its meaning and relevance to the student, obstacles encountered and feelings on completing the work. The reflec-

tions and works are photographed and archived.

### 2.3. Data Collection and Analysis

All works and reflections available for 3 consecutive academic year third year cohorts of graduate medical students from 2014-2017 were reviewed. A descriptive analysis of each work and reflection was undertaken by two authors. Two authors analysed the themes independently. Each individual theme (and one secondary theme if thought present) was recorded on an Excel spreadsheet with comments both manually and using NVivo. Authors reviewed themes again before collectively reaching a consensus on a single dominant theme for each SSC. The themes were then discussed in an author group and themes subsequently refined into 6 major themes. From the reflections it was possible to identify whether the theme was based on personal experience. The evaluators were unaware of the student background demographics or marks awarded for the work. The study was approved by the Education and Health Science Faculty Ethics Committee (2017\_01\_05\_EHS) and written student consent obtained for public exhibition of the works. Data was analysed using SPSS 24, with descriptive analysis completed on all data. Chi-square tests for associations were also done to highlight any associations between categorical items. It is intended that the reflective essays will undergo qualitative analysis as part of a future study.

## 3. Results

### 3.1. Students

Over the 3 years all 460 enrolled students completed the Humanities SSC and submitted a work and reflection. 430 works and reflections were available to the investigators. The mean student age was age was 27 s.d. (3.128) years, 57% were female, 43% male. 286 students (66.5%) had a Science, Technology Engineering or Mathematics (STEM) primary degree (honors 2.1 or higher), 69 (16%) a non-STEM degree and 75 (17.4%) had an allied medical professional degree. 66% of students (n = 284) came from within the EU and 146 students (34%) originated outside the EU, mainly North America. Of the 430 SSCs 4 chose a critique while 426 (99%) choose an original work.

### 3.2. Media

**Table 1** summarizes media chosen. 365 (84.9%) of SSCs were visual, 45 (10.5%) written and 20 (4.7%) were performance works.

Chi-square tests revealed that there were no statistically significant differences in media selected by gender, primary degree or origin. Visual media included mixed media, painting, drawing, photography, photo-montage, photo essay, digital media, video, soft materials, illustrated books, board games and 3D printing. Written material included poems, short stories, and essays and photo essays. Performance works were original song (with accompaniment), music, sound recordings and dance (all video/audio recorded).

**Table 1.** Distribution of Media: Visual, Writing and Performance art (perform) in relation to: gender, degree (primary), STEM: Science, Technology, Engineering or Mathematics, Non-STEM primary degrees not STEM and not health professional. Health Profession: nursing or allied health profession. Origin refers to the geographical origin. % refers to within each category. Chi square analysis did not demonstrate statistically significant associations.

	Media			
	Visual Art	Writing	Perform	Total
	n (%)	n (%)	n (%)	n (%)
<b>Gender</b>				
Male	158 (43.3)	15 (33.3)	12 (60.0)	185 (57)
Female	207 (56.6)	30 (66.7)	8 (40.0)	245 (43)
<b>Degree</b>				
STEM	249 (68.2)	24 (53.3)	13 (65)	286 (66.5)
Non-STEM	56 (15.3)	12 (26.7)	1 (5)	69 (16)
Health Profession	60 (16.4)	9 (20.0)	6 (30)	75 (17.4)
<b>Origin</b>				
European Union	241 (65.6)	29 (64.4)	14 (70.0)	284 (66.0)
Non-European Union	124 (34.4)	16 (35.6)	6 (30.0)	146 (34.0)

### 3.3. Themes

The major themes of the works are documented in **Table 2** and their relationships to background characteristics.

Six major themes were identified: *The Biological* (the body, disease and its management, aging and death), *Mental Health* (illness, wellbeing and addictions), *Life of the Student* (identity formation, problem-based learning, skills/attitude acquisition, professionalism, stress, work-life balance, sacrifice), *Life of the Doctor* included cognitive, ethical, and emotional issues, specialization, collaboration, work life balance and burn-out. *Culture and Society* included education, culture, public health, history of medicine, attitudes affecting health, economics, political and religious issues, women's health, advocacy for change health inequalities, and commodification of health. The *Patient Experience/Perspective* included attitudes towards patients, empathy, communication, objectification, patient's narratives, children's experience and student's own experiences of illness.

#### 3.3.1. Gender

**Table 2** shows there is a gender difference in themes chosen with female students choosing the *Patient Experience/Perspective* and *Culture and Society* more frequently and males tending to choose the theme of *Life of the Doctor* more frequently ( $p < 0.001$ ). **Table 3** shows cross tabulation of themes and media, which did not have significant associations.

#### 3.3.2. Personal Experience

From the reflections, we recorded descriptively whether the inspiration for the

**Table 2.** Student Selected Component (SSC) Themes chosen by medical student by gender (%). Chi square analyses (on categorical variables) indicated that female student chose Medicine and Society and the Patient Experience more frequently ( $p < 0.001$ ) while males chose Life of the Doctor\*\* more frequently ( $p < 0.002$ ).

Theme	Female n (%)	Male n (%)	Total (total) n (%)
Biological	57 (51.3)	53 (48.6)	110 (25.6)
Mental Health	27 (52.9)	24 (47.1)	51 (11.9)
Life of the Student*	36 (58.1)	26 (41.9)	62 (14.4)
Life of the Doctor**	26 (38.2)	42 (61.8)	68 (15.8)
Culture and Society*	56 (65.9)	29 (34.1)	85 (19.8)
The Patient Experience/Perspective*	43 (79.6)	11 (20.4)	54 (12.6)

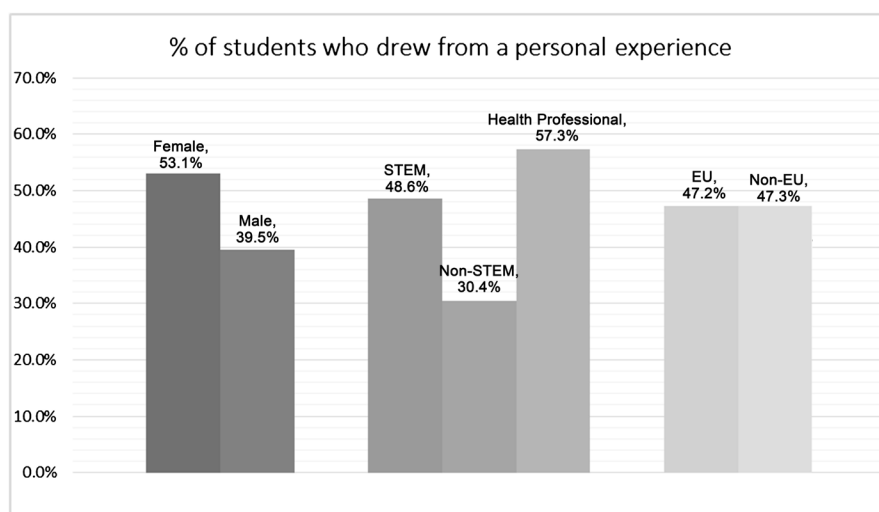
**Table 3.** Themes and media chosen. There were no statistically significant associations.

Theme	Visual Arts n (%)	Writing n (%)	Perform n (%)
Biological	94 (25.8)	11 (24.4)	5 (25.0)
Mental Health	43 (11.8)	5 (11.1)	3 (15.0)
Life of the Student	52 (14.2)	6 (13.3)	4 (20.0)
Life of the Doctor	60 (16.4)	5 (11.1)	3 (15.0)
Culture and Society	74 (20.3)	9 (20.0)	2 (10.0)
The Patient Experience/Perspective	42 (11.5)	3 (20.0)	54 (12.6)
Total	365 (84.9)	45 (10.5)	20 (4.7)

work was based on personal experience (Table 3). Students with a health professional background were most likely to draw from a personal experience in choosing a topic for their SSC (57.3%), non-STEM 30.4% ( $p < 0.005$ ). Overall 47.2% reported basing the SSC on personal experience, with female students doing so more frequently (53%) compared to males (39.5%,  $p < 0.005$ ). Female students and students with a previous allied medical professional degree were significantly more likely to base their theme on personal experience (Figure 1).

#### 4. Discussion

This is the first detailed report of a compulsory and credited Humanities/Arts SSC in a medical degree curriculum to the best of our knowledge. Findings suggest that the vast majority of students prefer to undertake a creative project over a critique with students engaging with a wide of themes and media despite limited or no experience in creative media. Female students tended to choose themes on *the Patient Experience/Perspective* and *Culture and Society* compared to male students despite having a similar degree background. Female students also based their work more frequently on personal experience. Male students opted more frequently than female students for *Life of the Doctor* as their theme.



**Figure 1.** Proportion of students basing their SSC on personal experience. STEM: Science, Technology, Engineering, Mathematics, Allied Health Professionals degree (Health Prof.). And origin EU = European Union, Non-EU = Non-European Union. Significant difference at  $p < 0.001$ .

#### 4.1. Creativity

There is no consensus on the definition of creativity or how to measure it, a simple definition from the [Oxford Dictionary \(2018\)](#) describes it as the use of imagination or original ideas; inventiveness. However, there is much debate on the elements of creativity and uncertainty on how best to measure it ([Kaufman & Steinberg, 2010](#)). There are few studies of “objective” measures of creativity in doctors and medical students. In a recent study of medical graduates, a commonly employed questionnaire measuring creativity suggested a link to the personality traits of Openness to Experience, but an inverse correlation to conscientiousness ([Patterson & Zibarras, 2017](#)). The majority of our students came from a STEM primary degree background which traditionally places limited emphasis on creativity or reflection. The importance of creativity in medical education has been acknowledged ([Baruch, 2017](#); [Bandaranayake, 2013](#)) but underexplored in medical students ([Green et al., 2016](#)) while its importance is obvious especially when it comes to innovation in medicine ([Darzi, 2009](#)). The integration of the Humanities and Arts into STEM university degrees is now being strongly advocated by the American Academy of Science, Engineering and Medicine ([Skorton & Bear, 2018](#); [Lachman, 2018](#); [Ness, 2011](#)). The engagement and quality of the work from many students surprised with some dedicating special afford.

Most students had no prior experience in a creative media though a minority utilized a medium they had earlier training in, e.g. dance, music, writing, arts media. The majority of students came from a STEM primary degree background. These degrees sometimes are characterized as lacking obvious creativity or reflection. The integration of the arts into STEM university degrees is now being advocated ([Root-Bernstein & Root-Bernstein, 2013](#); [Arnott, 2002](#)). The importance of creativity is underexplored in medical students ([Green et al.,](#)

2016), while its importance is obvious especially when it comes to innovation (Darzi, 2009). At the University of Bristol, medical students also chose a wide range of media and may have chosen creative works as a respite from the “fact” and memory-based dominance of the curriculum (Thompson, Lamont-Robinson, & Younie, 2010). The preference for an original work may be driven by emotions and ideas that could only be expressed through original work as has been highlighted in students who write poetry (Shapiro, 2009). The majority of humanities modules employ traditional taught programmes without taking into account student preferences. In our study, students undertook the risks in embarking on a creative work (especially those with limited or no prior skill), rather than the “safer” approach of submitting a critique of a “given” work. It has been suggested that assignments that challenge students to solve problems for which they may not have a background, training and knowledge may be one way of encouraging creativity (Bandaranayake, 2013).

#### 4.2. Media

There was a wide range of visual media approaches. Somewhat surprisingly, 85% of students presented a visual project with only choosing 10% writing and 5% performing arts. This differs from a U.S. study where 78% were written and a minority was visual arts (Shapiro et al., 2016). In our School, students used a wide range of natural materials such as wood (Circle of Willis fashioned from the flexible branches’ of the Willow tree, see Figure 2), metal (a copper cistern forged into a heart), paper and origami, e.g. one consisting of 1000 miniature elements representing dermal histology.



**Figure 2.** SSC Theme: *Biological*, Willow tree branches, tape and oil paint on board. Title: *Circle of Willow*. This portrays the cerebral circulation and Circle of Willis formed from coiled willow braches. The coiled branches reflect the neuro-radiological procedure of “coiling” for closing cerebral aneurysm coiling with a suggestion of aneurysms on the branches.

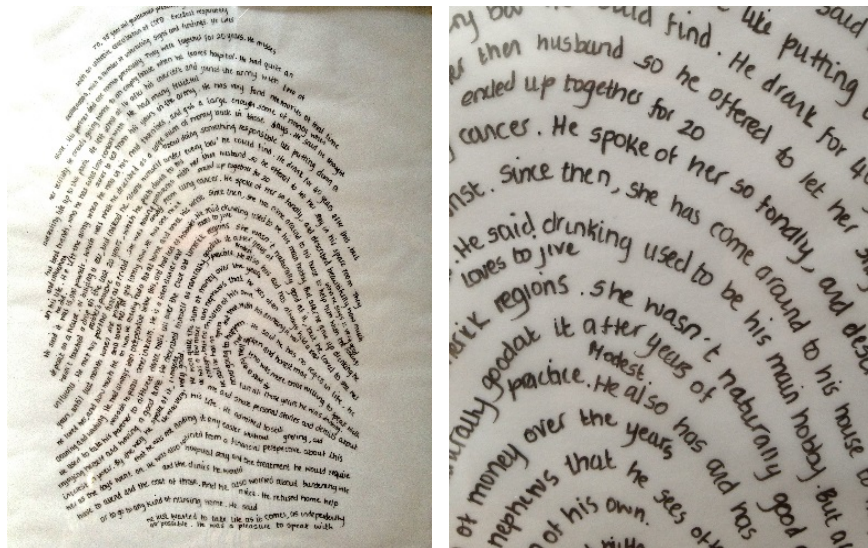


Soft media from wool to crochet were also creatively employed usually for representations of organs. Conventional painting and drawing were also employed (Figure 3 and Figure 4).

Traditional mixed media selected included paper maché, wire, and soft materials. Digital methods included audio, video, and 3D printing. Many students learned novel techniques such as silkscreen painting to specialized photography to convey their ideas. These often involved trial and error and repeated cycles of experimentation (and failure). Many students reported unexpected insight and engagement with the SSC and initial skepticism was replaced with satisfaction as reported in other arts based SSCs (de la Croix et al., 2011). We would have expected a higher proportion of projects to be written with the options of fiction,



**Figure 3.** SSC Theme: *Mental Health* painting (oil on canvas detail). Title: *Extreme Measures Series*, on the history of physical therapies in psychiatry illustrating electroconvulsive therapy on the left and pre-frontal leucotomy with trans-orbital approach on the right.



**Figure 4.** SSC Theme: *The Patient Experience*, Ink on Paper. Title: *Identity*. The left panel shows a thumbprint formed from miniature writing which on close up (right panel) provides a unique narrative of a patient's life and illness.

poetry, or essays as has been the trend in other studies (Shapiro et al., 2016). This might be because students were required to provide written reflections, which may have been sufficient to fulfill the students' need to explain their ideas in writing. The small numbers in performance media such as dance, musical composition and theatre (original compositions were required) may have reflected an absence of sufficient skill to provide a work that would guarantee a pass mark or a merit. There were no statistically significant relationship between media and themes but this could be because of smaller numbers in non-visual media. We can also speculate that students may have believed the greatest chance of obtaining higher grades in visual works.

### 4.3. Themes

*Biological* themes (26%) were the most commonly chosen. The majority of students had a STEM primary degree but the majority of STEM students (74.5%) chose a non-biological theme. Biological themes included envisioning anatomy, physiology, histology, the brain, diseases, aging and death in imaginative and novel ways beyond the textbook and the functionally representative. STEM students (11.2%) were as likely as non-STEM students (10.1%) to choose the *Patient Experience/Perspective* (Figure 4) but not unsurprisingly students with an allied health professional degree (20%) chose this theme significantly more frequently. These findings suggest STEM students in medical school are willing to explore areas outside the familiar, which was a pedagogical objective of the SSC.

There are few studies with thematic analysis in medical student art works. Shapiro (2009) examined 576 student poems identifying the following themes: the anatomy experience; becoming a doctor; becoming a patient; doctor patient relationships; language and culture, death and dying; society and medicine life and love (Shapiro, 2009). These themes were quite similar to those expressed by our students though most of our students conveyed the themes through visual media. Themes in a humanities SSM in a Californian pediatric clerkship demonstrated that students focused most frequently on the patient experience (Shapiro et al., 2016). Cox et al. (2016) analysed themes in art works from a wide group of health professionals, mainly medical students, who voluntarily submitted works to a conference (subject content is not documented). Interestingly, there is some overlap in their qualitative thematic analysis with those of this current study e.g. enhancing learning, balancing work and life, surviving medical school, self-care, patient experience, advocating change in medicine and society and escaping constraints. Cox et al. (2016) also emphasized the powerful positive effects of art making on the group however the participants were self-selected and from a wider professional body (i.e. not just medical students/professionals).

*Mental Health* was a theme in 12% of SSCs reviewed in our study and included addictions and common psychiatric conditions. Alcoholism featured in a number of themes including *Biological* (where it is associated with internal organ damage), *Mental Health* and associated attitude in *Culture and Society*.

Some works were inspired by experiences of afflicted relatives of students baring witness to personal anguish. *Life of the Student* themes also contained mental health issues focusing on personal stress, anxiety and depression associated with work intensity, sacrifice, burnout, mental health, social media addiction, assessment, work life balance, and the experience of PBL. This focus on mental health and addiction possibly reflects the relatively high prevalence of mental health difficulties in medical students compared to that of the general population (Rotenstein et al., 2016). Ensuring a work-life balance was a common theme and which has become a major issue for doctors (Rich et al., 2016). Many of our students SSCs explored the issue in supporting mental health in *Life of the Student*. A recent systematic review supports the evidence base for the beneficial effects of creative arts-based interventions in stress management (Martin et al., 2018) and is one of the additional missions of our SSC.

In our study male students tended to choose the theme *Life of the Doctor* for their humanities projects more frequently than female students. Students portrayed issues of professionalism, inter-professional working, life of the surgeon, the cognitive process in everyday practice and dilemmas relating to ethics and emigration. Some focused on negative sentiments including “burn out”, distressed work life balance, medical and future employment. There are few recent studies on medical students’ perceptions of the *Life of the Doctor* (Draper & Louw, 2007). This focus on *Life of the Doctor* may reflect the experience of observing their profession at close range that our students acquire through longitudinal early patient contact in the first two years of their medical degree programme.

Female students more frequently chose the theme of the *Patient Experience*. This included experiences such as fear, loneliness, objectification bewilderment, dependency and other forms of distress. This finding could be related to the fact that female medical students score higher than male students in measurements of empathy (Quince et al., 2016; Berg et al., 2015; Hojat et al., 2002). Empathy in the context of medicine has been defined as a cognitive attribute requiring understanding experiences, concerns and perspective of others with a capacity to communicate this and an intention to help (Berg et al., 2015). In this study neither primary degree nor origin predicted an association with choosing the theme of the *Patient Experience*. *Culture and Society* was also more frequently chosen by female students and included priorities in societal needs, education, public health, women’s health, the influence of law, religion and culture on health, health inequalities, commodification and health care access, advocacy, homelessness, HIV and other stigmatization. The focus on this theme may reflect the movement towards social responsibility and accountability that is becoming an emerging goal of medical education today (Reeve et al., 2017). Interestingly background degree and origin was not statistically associated with this theme. Whilst authors may speculate that differences in identity (ethnic diversity, socio-economic background for example) may result in differences in themes, these were not analysed in this study.

*Personal Experience* was also reported more frequently as a source of inspiration

for female students possible due to better insight in to the value and validity of experience in reflection. This could also reflect a more maturely formed medical professional identity. Furthermore *Personal Experience* was more likely to influence themes in students with an allied medical professional degree suggesting perhaps more awareness of the validity of their life experience in choosing a theme.

This SSC was compulsory. Macnaughton (2000) describes her experience with various humanities courses in medical education and emphasised that voluntary participation attracts the “converted”, but a compulsory course risks breeding resentment and apathy which may be the case depending on the stage of the curriculum. We believe that summative assessment in this SSC incentivised many students to achieve higher standards than would be achieved than in a non-assessed SSC (Wormald et al., 2009).

#### 4.4. Limitations

One possible limitation is that students' choice of project was influenced by works presented by students from earlier years. There may also have been unidentified external factors influencing themes chosen e.g. belief that certain ideas were “safer” or more likely to score highly however marks for previous. However, SSC projects are not published so there is no objective evidence available to students, other than hearsay from other students, to support this belief.

This study was also confined to graduate entry medical students in a single institution and one might therefore argue that the findings are not generalizable. However, the purpose of the study was to describe a novel SSC (that might ultimately be used in other medical education curricula) and to explore the factors that might influence students' project choice. The authors therefore believe that this paper offers a very helpful foundation to future research in this area despite this limitation. Future work would include a deeper narrative analysis of student reflections and an exploration as to how students use art as a way of interpreting and understanding themselves, each other and the world. A randomized-control control with those who completed a SSC and those who did not to examine how this might increase medical students' creativity would also prove useful. As the SSC in our School was compulsory, authors were unable to adopt this methodology on this occasion.

#### 5. Conclusion

This report demonstrates that graduate entry medical students chose to engage creatively in a novel, compulsory, assessed Humanities-arts based SSC. Students explored and reflected on a wide range of topics: envisioning the body, disease and aging, the role of the doctor, the patient experience, ethical principles and social responsibility and expressed their reflective thoughts on these issues in a creative manner. Most undertook these original projects demonstrating initiative, skill and insight in their work and accompanying reflections. The SSC stimulated students to reflect and develop skills outside the conventional curricu-

lum. Female students chose themes more often related to the patient experience and medicine and society with male students tending to opt for the life of the doctor as their preferred theme. We are uncertain of the short or long-term value of such a SSC or its relationship to other aspects of academic performance but believe assessment may have positively influenced engagement in the Humanities and Arts but these issues deserve further investigation. It is anticipated that future work will focus on a deeper narrative analysis of students' accompanying reflections to investigate in detail individual meaning of these students' works and the relationship of aptitude of the SSC to general scholastic aptitude in medical school.

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### **Conflicts of Interest**

The authors report no conflict of interest. The authors alone are responsible for the content and writing of the article.

### **Ethics Approval**

The study was approved by the Education and Health Science Faculty Ethics Committee (2017\_01\_05\_EHS) and written student consent obtained for public exhibition of the works.

### **Availability of Data and Materials**

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

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