



Knit One, Play One: Comparing the Effects of Amateur Knitting and Amateur Music Participation on Happiness and Wellbeing

Alexandra Lamont¹  · Nellinne Antoinette Ranaweera²

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Abstract

Previous research suggests that engaging in creative and meaningful leisure activities enhances mental health, wellbeing and quality of life. However, studies often explore specific creative activities in isolation. We compared happiness and wellbeing in adults involved in knitting (835 amateur knitters) and musical activities (122 amateur musicians). Participants completed the Subjective Happiness Scale, the BBC Subjective Wellbeing scale, and open-ended questions about past and current engagement. Knitters scored significantly higher on happiness than musicians. No differences were found for subjective wellbeing. Older participants scored more highly on all wellbeing measures, with no effect of time doing the activity. Open-ended responses were grouped into four themes. Learning and teaching was oriented towards communities of practice for knitters and formal teaching for musicians. Process involved positive and negative emotions, grouped around subthemes of self-care and sensory experiences. Outcome was associated with connections to others, expressed through pride or anxiety. Purpose linked to a sense of fulfilment, identity, and obsession. Despite differences between the activities, participants experienced broadly similar physical, psychological and social benefits. Further research should explore more creative and non-creative leisure activities to establish if these effects can be generalised and what other unique features may be involved.

Keywords Music making · Knitting · Wellbeing · Happiness · Eudaimonia · PERMA

✉ Alexandra Lamont
a.m.lamont@keele.ac.uk

Nellinne Antoinette Ranaweera
nellinne.ranaweera@student.rncm.ac.uk

¹ School of Psychology, Keele University, Keele, Staffordshire ST5 5BG, UK

² Royal Northern College of Music, 124 Oxford Road, Manchester M13 9RD, UK

Contemporary industrialised society presents challenges to health and wellbeing, including stress, pace of life, and social isolation. Consumerism can compromise wellbeing by raising anxiety and stress in individuals and by commoditising arenas such as health, education, public space, culture and religion (Holt and Schor 2000). The ageing population places demands on health and social care with a range of mental and physical health challenges (Health and Social Care Information Centre 2013). Many adults choose to engage with leisure activities to help regain or sustain their sense of self, happiness and wellbeing (Argyle 1996), and research has begun to explore the effects of different types of leisure activity on these outcomes (e.g. Sellar and Boshoff 2006).

Recent theorising in positive psychology posits that to truly flourish, the conditions must exist for a person to lead not only a pleasant life (Aristotle's concept of hedonism) but also a good and meaningful life (eudaimonia). The relationship between happiness and wellbeing is somewhat contested. Diener et al. (1999) defined subjective wellbeing as including affective (positive emotions) and cognitive (life evaluation) components. Seligman distinguished between happiness (Seligman 2002) and wellbeing (Seligman 2011), but more recently has aligned the two (Seligman 2018). Based on the earlier separation of affective and cognitive components, others have argued that happiness is often conflated with hedonism, and thus use wellbeing as a way to distinguish the eudaimonic concepts of meaning, self-actualisation, and life satisfaction (Power 2016). While Lyubomirsky and Lepper (1999) broadly equate happiness and wellbeing, they argued that a rating of happiness does not map on to a simple sum of affect and life satisfaction, and thus developed an alternative measure to capture happiness as a separate construct.

Many approaches to wellbeing have focused primarily on eudaimonia. In his PERMA model, Seligman (2011) also included hedonism in the form of positive emotions, alongside four elements of eudaimonia. *Engagement* involves challenge, flow, and absorption with the given activity which leads the person to lose track of time and place. *Relationships* refer to direct connections experienced with other people, while *meaning* refers to a broader sense of purpose and significance in life, and *accomplishment* to the achievement of completing a task. These five elements are held to combine to enhance wellbeing, either contributing independently (Kern et al. 2015; Seligman 2018) or combining into a single underlying wellbeing dimension (Goodman et al. 2018).

The five elements of PERMA can be used to identify specific activities that might facilitate happiness and wellbeing (Seligman 2018). Csikszentmihalyi (2002) highlighted activities like making music, rock climbing, dancing, sailing, and chess as having potential for generating flow. Activities typically undertaken in groups, like music-making, drama or sport, have greater potential for supporting wellbeing by building direct social relationships. The arts also offer potential connections to culture, philosophy, religion and other kinds of meaning-making. Finally, accomplishment, like flow, can best be experienced through activities that present a complex challenge, such as running a marathon or completing intricate craftwork.

From a theoretical perspective, creative and artistic activities thus seem to embody the greatest potential to engender happiness and wellbeing. Empirical evidence supports this; for instance, Cuypers et al. (2012) found participation in arts and cultural activities related to higher self-rated health and life satisfaction and lower levels of anxiety and depression. Enhanced self-care, personal growth and building social connections was found from community pottery (Genoe and Liechty 2017), and artists (Reynolds 2009), knitters (Riley et al. 2013), quilters (Dickie 2011) and members of

singing groups (Clift et al. 2010; Judd and Pooley 2014) all experienced benefits of relaxation, stress relief, creativity, feelings of happiness, and higher cognitive function. For social interaction, group knitting (Riley et al. 2013) and group singing (Pearce et al. 2016) both helped enhance social contact and forge social bonds. Art and craft activities helped retired older adults regain occupational identity (Howie et al. 2004) and pleasure and purpose (Liddle et al. 2013).

Creative activities have also been studied with people dealing with stressful or difficult situations. In her study of quilt making, Dickie (2011) labelled this 'extreme' therapy in contrast to the 'mundane' therapy of coping with general life. In such situations, creative activities have considerable impact (Pratt 2004). For instance, knitting enhanced the coping abilities of carers of family members and those in pain (Riley et al. 2013), visual art evoked flow experiences for women diagnosed with cancer (Reynolds and Prior 2006) and enhanced coping in people with arthritis (Reynolds et al. 2011), and singing modulated mood and stress in cancer patients and carers (Fancourt et al. 2016) and enhanced positive affect in people with Parkinson's Disease (Abell et al. 2017).

Some research has begun to directly contrast different creative activities. Pearce and colleagues compared newly-formed singing, creative writing and crafting groups, finding more rapid social bonding in the music group (Pearce et al. 2015) but no group differences after 7 months on wellbeing measures (Pearce et al. 2016). Johnson et al. (2017) found higher levels of physical (but not psychological) quality of life in older adult choir singers compared to other older adults, including those involved in other hobbies. Similarly, older people involved in music projects scored more highly on wellbeing and perceived cognitive, health and emotional measures compared with those taking craft, yoga or language lessons (Hallam and Creech 2016). The music projects in this study were highly enriched and offered potential for working towards the end product of a performance, which participants valued greatly. Hallam and Creech concluded that active music-making provided more opportunities for multiple routes to wellbeing, a finding echoed by Lamont et al. (2018) with a choir for older people and by Perkins and Williamon (2014) with older instrumental learners. Music-making has been linked to Seligman's PERMA model by several researchers (Ascenso et al. 2017; Croom 2015; Lamont et al. 2018; Lee et al. 2017), and the evidence that all five components can be involved may explain the evidence for music's potential greater impact.

However, most research has not typically or systematically compared different activities, making it difficult to pinpoint the unique features responsible for engendering happiness or wellbeing. The current study thus compares two different creative activities, knitting and music-making, which are relatively popular amongst adults of all ages (Stannard and Sanders 2015; ABRSM 2014). In common, both knitting and music-making can be undertaken alone or in a group, accessed relatively simply but also requiring skill to achieve higher technical levels (Stanley 2002; Perkins and Williamon 2014); involve sequenced physical actions (Riley et al. 2013; Repp and Su 2013); follow existing patterns (patterns or scores) while also allowing for creativity in interpretation or originality (Stannard and Sanders 2015; Payne 2016); embody emotion through physical interaction with artefacts (Pöllänen 2009; Lamont 2012); provide 'therapeutic' potential (Reynolds and Prior 2006; Fachner 2014), the opportunity to build identity (Howie et al. 2004; Lamont 2011), and potential for social connections (Reynolds 2009; Pearce et al. 2015). However, there are some differences. Group knitting demands no co-

ordination or co-operation between knitters, while group music-making often requires substantial co-ordination and joint action (Repp and Su 2013). While both activities are self-evidently 'active' (cf. Small's 'musicking', 1980), the outcome of knitting is a physical object which has no temporal dimension and can be revised (Stannard and Sanders 2015), while music-making typically results in a performance in front of an audience which is temporally bounded, increasing the potential for errors and performance anxiety (Geeves et al. 2016; Kenny and Osborne 2006).

We address whether there are differences in overall levels of happiness and wellbeing amongst amateur knitters and amateur musicians, and explore what they say about how and why these activities are beneficial to them, additionally considering questions of access and inclusion. This thus combines the large-scale quantitative approach of surveys and controlled trials (e.g. Pearce et al. 2016; Riley et al. 2013) with that of more in-depth qualitative enquiries (e.g. Dickie 2011; Reynolds 2009; Lamont et al. 2018).

Method

Design

We compared levels of subjective happiness and wellbeing between two groups: amateur knitters and amateur music makers (henceforth 'knitters' and 'musicians'), with open-ended questions providing further insight into the differences and similarities in background, motivation, emotional impact and engagement between the two groups.

Participants

A total of 957 participants (835 knitters and 122 musicians) completed an online survey about their involvement with their chosen leisure activity (see Table 1 below).

The knitters were aged between 20 and 84 ($M = 55.08$, $SD = 12.20$), with 12 male and 823 female participants. 95.3% were white, with very small proportions of other ethnic groups; 45.3% had only completed college and 36.8% had completed higher education. Mean length of time engaging in knitting (counted to the nearest 3 months) was 34 years (range 0.25–73 years, $SD = 20.07$). 54.4% learned from family, 24.4% were self-taught, 12.9% learned from friends, 4.9% learned at school, and 3.2% had private tuition. 90% reported that they engaged in other activities while knitting (while watching TV, listening to music, talking to people, travelling and waiting for appointments). A large majority of the knitters engaged in other hand-crafts (88%): crochet, sewing, cross-stitch, needle-point, quilting and painting were the most popular. Many knitters (62.5%) stated that they gifted their completed items, 13% knit items for themselves, only 3% sold the items, and 21% of the knitters did a combination of gifting, donating, keeping and selling after completion. The most difficult and complex items that were completed by participants included socks, gloves, cable-knitted items, christening robes, jumpers and cardigans.

The musicians were aged between 18 and 74 ($M = 32.36$, $SD = 13.96$), with 52 male and 70 female participants. 61.5% were white, 26.2% Asian or Asian

Table 1 Demographic information about the samples

	Knitters		Musicians	
	<i>n</i>	%	<i>n</i>	%
Country of residence				
USA	529	63.40%	9	7.40%
Canada	76	9.10%	2	1.60%
UK	21	2.50%	75	61.50%
Rest of Europe (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Poland, Romania, Spain, Sweden)	122	14.60%	2	1.60%
Asia-Pacific (Australia, China, Hong Kong, Indonesia, Japan, Malaysia, Nepal, Pakistan, Philippines, Sri Lanka, South Korea, Thailand)	33	3.90%	30	24.60%
Central Europe/Middle East (Cyprus, Egypt, Iran, Israel, Qatar, Russian Federation, Turkey, Saudi Arabia, Syria, UAE)	32	4.80%	3	2.40%
Central and South America (Belize, Brazil, Barbados, Chile, Jamaica, Puerto Rico)	10	1.10%	0	0%
Other/not known	12	1.40%	1	0.8%
Ethnic origin				
White	796	95.3%	75	61.5%
Black or Black British	5	0.6%	4	3.3%
Asian or Asian British	6	0.7%	32	26.2%
Mixed	14	1.7%	4	3.3%
Other/not known	14	1.7%	7	5.7%
Educational level				
None at all	1	0.1%	0	0%
Primary school	5	0.6%	0	0%
Secondary school	144	17.2%	5	4.1%
College	378	45.3%	24	19.7%
Higher education	307	36.8%	93	76.2%

British, with very small proportions of other ethnic groups; 19.7% had only completed college and 76.2% had completed higher education. Mean length of time engaging in music was 20.43 years (range 0.75–66 years, $SD = 13.73$). All musicians played at least one musical instrument/singing and 83% of the participants played more than one instrument. 46.7% had private tuition, 23.8% learned at school, 18.9% were self-taught, 9% learned from family and 1.6% from friends. Musicians also listened to music, practised, attended lessons, wrote music, and played in ensembles.

A large number of musicians (47%) had over 10 years of formal training, 35% had 1 to 9 years of training and 17% had no formal training. 74.5% had taken graded examinations in music or a music qualification while 25.4% had not taken any examinations. 61.5% of the participants reported that they played classical music most often, 15% played jazz, and 10% played pop and rock, while 13% played other styles.

Materials

Two surveys were created, one for each group. Each survey had four parts, including demographics and history of involvement in the chosen activity, a measure of subjective wellbeing, a measure of happiness, and six open questions about the activity. The Music and Wellbeing survey asked participants how long they had been making music/taking lessons, which instruments they played, and any grades achieved. The Knitting and Wellbeing survey asked participants how long they had been knitting and the types of knitting and other craft activities they participated in. For both surveys, the second part comprised the 24-item BBC subjective wellbeing scale (BBC-SWS; Pontin et al. 2013) used to measure subjective wellbeing in three main domains: (1) psychological (e.g. 'Do you feel optimistic about the future?'); (2) physical (e.g. 'Are you happy with your physical health?'); and (3) relationships (e.g. 'Are you happy with your friendships and personal relationships?'), rated on a 5-point Likert scale. The scale has been found reliable and valid for online assessment of subjective wellbeing (Pontin et al. 2013). The third part comprised the 4-item Subjective Happiness Scale (SHS; Lyubomirsky and Lepper 1999), with statements about happiness (e.g. 'Compared to most of my peers, I consider myself more happy. To what extent does this characterization describe you?') rated on a 7-point Likert scale. This is a well-validated happiness measure for online administration (Howell et al. 2010). Each survey ended with six open questions about starting and continuing with the activity (e.g. 'Describe in your own words how you first came about starting to knit/playing a musical instrument') and the benefits and negative effects (e.g. 'Describe in your own words what kind of emotions you feel when knitting/playing music'). This gave participants the opportunity to express their own views around the impact of the activity on their lives.

Procedure

Ethical approval was granted by the University's ethical review panel. The survey was sent out initially to a convenience sample of family, friends and acquaintances of the authors in the UK and Sri Lanka, posted to local knitting and music groups in the West Midlands of the UK, and subsequently posted on social media sites (Facebook and Twitter) and targeted Facebook knitting and music groups (e.g. Knitting Daily, Knitting UK, Knitting for Beginners, UK Amateur Orchestras). All participants were invited to send on the survey via snowball sampling. Data collection spanned 12 weeks. The survey was preceded by an online information sheet, and informed consent was gained both at the start and end of the survey. Participants were also asked to consent to be quoted and were invited to provide a name or pseudonym. Some quotes are identified by researcher-given pseudonyms and others by participant-given names.

Results

The nature of the sampling procedure meant that participants came from the UK, US, Canada, Australia, New Zealand and Sri Lanka (see Table 1). The larger sample of knitters was explicitly sought in order to try to obtain sufficient male participants to be

able to use their data: previous research on knitting has experienced similarly extreme gender imbalances. Both knitters and musicians came from the various geographical regions in roughly equivalent proportions, and beyond discussion of the formal educational contexts of knitting and music there was little in the data that seemed to be culturally specific to any of the regions included.

Table 2 illustrates scores for the happiness and wellbeing measures. Means for SHS were high, towards the upper limit of the highest values obtained by Lyubomirsky and Lepper (1999) (for retired US samples). Knitters reported significantly higher levels of Subjective Happiness (SHS) than musicians ($t = 3.545, p < .001, df = 955$). Means for BBC-SWS were also high: higher than the equivalent scores for all but one of the items in Pontin et al. (2013). Analysis of variance revealed that the BBC-SWS data violated sphericity (Mauchly's $W = .887, p < .001$) so Greenhouse-Geisser corrections were used. The ANOVA indicated that irrespective of Group, there was a significant difference across the three BBC-SWS subscales ($F(1.798, 1715.005) = 29.119, p < .001, \eta_p^2 = .030$). Pairwise comparisons showed scores were significantly higher for physical and social wellbeing than psychological wellbeing ($p < .001$). There was no significant difference in BBC-SWS across Groups ($F(1, 954) = 0.42, p = .838$) and no significant interaction between Groups and Sub-scales ($F(1.798, 1715.005) = .590, p = .537$).

Due to snowball sampling the groups varied on two additional variables, Age ($t = 18.849, p < .001, df = 955$) and Years doing the activity ($t = 9.121, p < .001, df = 205.54$); knitters were older and had been doing their activity for longer than musicians (knitters' mean Age 55.08 and Years 33.43, musicians' Age 32.36 and Years 20.44). These two variables were also highly intercorrelated ($r = .674, p < .001, N = 957$). Linear multiple regressions were conducted to explore the relative effects of Age, Years and Group on happiness and wellbeing. For SHS, a significant regression was obtained ($R^2_{adj} = .052, F(3, 956) = 18.581, p < .001$) with the only significant factor being Age ($\beta = .251, t = 5.032, p < .001$). For BBC-SWS (total), a significant regression was obtained ($R^2_{adj} = .018, F(3, 955) = 6.89, p < .001$) with significant factors of Age ($\beta = .207, t = 4.089, p < .001$) and Group ($\beta = .102, t = 2.655, p = .008$). An ANCOVA comparing BBC-SWS scores by Group with Age as a covariate shows that Age was again the only significant predictor ($F(1, 956) = 42.593, p < .001, \eta_p^2 = .043$), confirming the earlier finding that there were no differences between knitters and musicians. Thus older participants experienced higher levels of happiness and wellbeing in general, and this was not related to either their activity or the length of time they had been engaging in it.

Table 2 Means and standard deviations for wellbeing and happiness scales

	Knitters		Musicians		Total	
	Mean	SD	Mean	SD	Mean	SD
Subjective happiness scale	5.47	1.206	5.06	1.138	5.42	1.228
BBC-Wellbeing scale total	3.66	0.707	3.67	0.648	3.66	0.700
BBC-SWS physical	3.75	0.761	3.73	0.711	3.75	0.754
BBC-SWS psychological	3.52	0.773	3.56	0.651	3.53	0.758
BBC-SWS social	3.70	0.812	3.73	0.816	3.71	0.812

As both activities can be undertaken in a group or individually, and group contexts often provide additional benefits for wellbeing (Haslam et al. 2014), participants were asked to choose their preferred context ('If you had to decide what do you enjoy most, playing/knitting on your own or with others?'). More knitters preferred to knit alone (72.5%), whereas musicians were divided on preferring group (51.5%) or individual (48.5%) contexts: this distribution was significant ($\chi^2(2954) = 24,884, p < .001$). However, no significant differences were found between this grouping variable on any wellbeing measure.

We analysed the data from the open-ended questions using Braun and Clarke's (2007) thematic analysis. After reading all the responses several times, we generated themes and codes independently before comparing the resulting analysis with one another and with the theoretical framework outlined at the start. Separate thematic maps were produced for music and knitting, before integrating the two. Four overarching themes were developed: learning and teaching, process, outcome, and purpose.

Learning and Teaching

While this theme might appear a little removed from the key question of benefits of creative activities, it is important to consider how these are accessed and to uncover the kinds of opportunities that help promote sustained engagement. Evidence for this theme came directly from the question about how participants came to begin and indirectly from questions about benefits, drawbacks, and regrets. Most knitters and musicians began learning in childhood, from about 2 or 3 years of age, and many who began later in life highlighted wishing they had begun in childhood. A variety of teaching methods was mentioned, with more emphasis on informal methods of teaching and learning for knitters and more formal methods for musicians.

Amongst knitters, most responses centred on 'being shown how'; typically being around adults, normally women, most frequently mothers and grandmothers, who were knitting led to a motivation to join in or do the activity that the adult was engaged in. Brianna Banks (F, 30) explained:

When I was a kid I used to sit by my grandmother's side and draw while she was knitting. I was always curious about what she was doing and asking questions. When I was about 5 years old she let me sit on her lap and hold the knitting needles with her while she knitted. Soon I was able to try on my own and I've been knitting ever since.

In addition to mothers and grandmothers, knitters learned from fathers, grandfathers, aunts, cousins, family friends, acquaintances at church, school and college friends, and colleagues. The process of engaging with others through teaching and learning knitting was seen as a powerful means of social bonding. Intergenerational links are clearly summed up by this vivid account from Angela (F, 60):

My grandmother started to teach me when I was a little girl. The Red Cross had taught her and her sisters during World War II. I always was very interested in her stories about them knitting for the soldiers overseas. I knitted throughout my life

just the way that my great aunts and grandmother did. I learned a lot from them and I have continued to learn more as the years have passed. I have a weekly knitting group and go as often as I can. Our granddaughter who is eight is going with me to the knit shop and is taking lessons on Saturday mornings. It is great fun for me and her. I want her to have fond memories of our time together. This is one way we can connect.

Formal teaching was not common amongst the knitters, and although some were taught at school, many had already been taught by family or friends. Some knitters, like Angela, attended classes at yarn shops, either regularly or on an ad hoc basis when they wanted to learn new skills. More knitters were self-taught, guided by 'how-to' books, magazines, and more recently YouTube videos. Musicians, in contrast, mostly had formal teaching of some kind. Often the prompt came from parents. For some this was more coercive: 'a trumpet was thrust into my hands at the age of seven and was not allowed to be removed again until the age of 21' (Rob, M, 44, trumpet/cornet), but more encouraging for others: as Viv (F, 48, violin) explained, she was 'encouraged to learn to play musical instruments by my mother who played the piano and played in a dance band'. Extended learning periods were described, contrasting with the relatively brief learning periods mentioned by knitters to acquire specific skills.

Although family was influential, many musicians began to learn to play or sing at school or with an independent teacher, and the importance of the relationship between learner and teacher was frequently emphasised. Many reported having rather strict teachers that put them off as beginners, and changed teachers several times. Hannah Storey (F, 24, piano) explained:

When I first started school, my parents paid for me to have piano lessons one day a week before school. I don't know exactly how long I stayed with this teacher, but I know I stopped for a while, then moved school and eventually got a new piano teacher in a 'music school'. Unfortunately, I did not get on very well here and began to dislike playing and see it as a chore. My parents noticed and so when I was about 12, they got me a new teacher who was incredibly encouraging and nurtured my enjoyment of playing. With her, I began working towards my grades. I continued with her for many years, but despite being very friendly and encouraging, she was slightly unreliable and in order to develop as a pianist I had to get another piano teacher. I was able to do so during 6th form, which focused nicely with my studies of A Level music. My teacher here was incredibly talented and with him I worked towards my grade 8, but unfortunately, I did not get long with this teacher as I moved away for university.

This illustrates the importance of the teacher-learner relationship and highlights that when learning a non-domestic activity like music where external teaching is the norm, it is possible to change teachers and approaches at different stages. For knitting, however, participants were more dependent on good family teaching (sometimes from fathers or other relatives where mothers were less skilled as teachers).

Process: Functions and Emotions

Engaging in the activity evoked many positive and negative emotions. Both knitting and music elicited the positive emotions of happiness, joy, delight, peace, stress relief, relaxation, calm, contentment, satisfaction, pride, accomplishment, connections to others, control, anticipation, excitement, absorption, and being more grounded. They also evoked negative responses: frustration, anxiety, stress, impatience, guilt, anger, annoyance, disappointment, despair, panic, and physical pain. Multifaceted expressions of the emotional impact of the activity were typical. For instance, Julia Cowell (M, 63, piano) provided a very detailed account of the different emotions experienced at different stages of learning a piece of music, referencing adventure, engagement, toil, learning, achievement, synergy or empathy, frustration about memory, disappointment, anxiety, and self-criticism.

We grouped the process into two sub-themes: self-care and sensory experiences. Comfort was a phrase used by many knitters, suggesting self-care. Participants in both groups were aware of the important mood regulation functions that knitting or music could bring, and used frequent therapeutic metaphors to explain this. Mrs. Benjamin (F, 43) described how knitting worked as therapy:

I'm usually relaxed, I go into knitting mind. I can just let my hands move and I am able to think about anything. There are no crises no malfunctions, just me and the fiber. I knit to cheer me, or to calm down. I knit when grieving and or happy. I'm at peace with the knitting.

Self-care was engendered in two ways. The first was an enhanced sense of focus or flow evoked through challenge. As Charlene (F, 48) explained, 'I get to challenge myself mentally. I think it keeps my mind sharp. I am able to focus on the project at hand and put whatever issues are going on in my life at the time on the back burner.' Similarly, Woobie von Fruitbat (M, 46, guitar) talked about practice: 'once I get started I am completely out of time and space and just living in the music. I can forget about everything else and just concentrate on what I'm playing, and what else is being played and just be in the moment'. This extreme focus seems beneficial in providing relief from everyday stressors. The second kind of self-care came from detachment through a repetitive activity, often associated with less demanding tasks. Jill (F, 59) explained: 'I sometimes do what I call "mindless knitting", a time to just sit comfortably, have a cup of coffee or tea and relax.' In music this detachment typically arose from solitary practice. Prashan (M, 19, guitar) described how, when practising, 'it feels free', and noted the absence of emotion: 'as for positive and negative emotions, I feel none when I play. Just the sound of music'.

Having discovered these regulatory functions, many practiced them extensively in adverse circumstances. For instance, Vicki W (F, 66) had knitted through her husband's illness and noted 'it keeps my sanity, especially over the last 4 years as my husband's health declined and at his death this past week'. Participants also managed their own emotions through the activity. For instance, Sandy (F, 68) highlighted frustration:

If I am undertaking a new pattern and have difficulty getting the pattern established quickly, I experience frustration and annoyance with myself. Once

the pattern has become “part of me”, those negative emotions leave and I feel a sense of accomplishment.

The sensory experience was also important. For knitters, the feel of the needles and the yarn, colours and patterns involved all contributed. Monica Crain (F, 63) explained: ‘I love colors and textures so my eyes are pleased and my fingers are pleased when I knit’. The quality of needles, yarn, and colour were frequently identified as providing a source of pleasure and wellbeing. Aunt Clara (F, 68) described a complex interaction with the physical materials:

I see the yarn and fibers as single strands that will morph into a completed work fashioned with time and patience. The colors and texture blend into something greater than their beginning. They speak to me.

Playing a musical instrument similarly involves interacting with a physical artefact and producing or reproducing patterns, and some musicians had been inspired by hearing others play particular instruments. For instance, w2f79 (M, 20, saxophone) described a school concert with visiting teachers where he first heard the saxophone: ‘I immediately fell in love with the sound and ... decided it was the instrument I wanted to play’.

However, musicians placed less emphasis on ongoing sensory experiences and more on emotional elements. As music can express and evoke emotion, musicians are more able to match, enhance, or change their own emotions in response to musical content or to choose music for emotional impact. Louise K (F, 38, piano) explained this clearly:

I get different emotions from the music ... With romantic music, I can get swept along by the feeling and beauty of the music. I can lose the sense of myself if the music is particularly captivating and engaging. My greatest response is with playing jazz, which I find really satisfying and connect with as if the music plays me, rather than me playing the music. - I can feel joy, beauty, happy, ecstatic, satisfaction.

Outcome: Products and Achievements

This theme relates to how outcomes are experienced by others. From both groups this evoked positive emotions of love, care, pride and achievement and negative emotions of anxiety and criticism. Knitting outcomes (e.g. scarves, mittens, socks, Afghan rugs, sweaters, baby clothes) have a physical presence and durability, unlike the ephemeral nature of a musical performance. This engenders a different sense of temporal orientation between the groups: knitters tended to orient to the future of their product, while musicians had a more present-focused perspective.

Knitters frequently mentioned outcomes as a way to pass on something of value to others. This could be to family, friends, or unknown people: many made items for specific charitable organisations or groups of people (baby blankets, cancer caps or items for the homeless). Barb Wilk (F, 55) summed this up as a motivation for engagement: ‘There is something about making something that will keep someone warm or bring someone comfort that is very powerful’. This extends the concept of self-care to provide potential links to others. Love is also involved, as Wheresmyjava

(F, 40) explained: ‘it allows me to create unique items for my loved ones. There is truly love in every stitch. As a natural caregiver/nurturer, I find the ability to create for my family incredibly satisfying’. The knitted product is thus a physical symbol of love and care to be passed on.

A sense of accomplishment and pride was also experienced, as Diane Prado (F, 58) noted: ‘I enjoy a feeling of pride when my work sells for a good price or when a friend or family member loves a hand knit gift I have made.’ For knitters this comes from acknowledgement from others. For musicians, some gained positive recognition from an audience: Tanmoy Masroor Rahman (M, 24, piano) explained ‘Playing the piano lets me demonstrate my skills to my friends and family and that makes me happy’. For others, the mastery of a particular challenge was sufficient: Chloe (F, 29, violin) noted ‘I think I feel a sense of achievement when I have learnt a new piece of music, probably enhancing my self-esteem, and making myself feel better about me in general’.

Fear of negative reception by others was involved in both activities. Knitters were often anxious about how their gifts might be received. Joan (F, 50) explained: ‘when people don’t wear something I have made for them I feel hurt, equally when I put something up for sale and no one wants it it can be soul destroying’. This emphasises how the value the recipient placed on the product could be at odds with the time, care, and emotion invested in creating it. For some musicians, fear of criticism was also apparent: music performance anxiety and self-criticism clouded their performances. Playing in public was often responsible for anxiety, associated with self-doubt or lack of confidence. Jenny G (F, 30, voice) explained:

I sang for fun, and never enjoyed performing. I still don't but I make myself. I guess I have a gift for singing, and people seem to love hearing me, so I persist and perform with choirs and bands, although it is not easy for me to overcome my performance anxiety.

Self-criticism also played a large role for performing musicians. Fran Higgs (F, 28, viola) outlined how she no longer played solo recitals due to the ‘constant inner monologue of criticism about what I played/phrasing/how do I look/wrong note’. For knitters, self-criticism was more frequently experienced earlier during the process, since unlike music, knitting can be undone and redone to eliminate errors. With fewer pressures on the final result, the only stress was about meeting deadlines or, as mentioned earlier, considering the reception of the item.

Purpose: Engaging across the Lifespan

Purpose reflected a sense of fulfilment, identity, and at times, obsession. Repeatedly engaging in the activity acted as a kind of redemption, often while dealing with difficult personal challenges. Redemption stories were more common amongst knitters, with many instances of dealing with circumstances from illness and bereavement to abuse. Betsy BB (F, 58) explained:

Two years ago I was diagnosed with breast cancer and my world was turned upside down. Knitting helped me to stay focused and grounded. During a month long stay in an isolation ward when suffering neutropenic sepsis after

chemotherapy, the only thing I could do was knit and this helped me through long days when I was too weak to do anything else. Since then knitting has become a big part of my day to day life and I have pushed myself to knit more and more complicated items. It has given me a great deal of patience and a sense of achievement and peace.

Knitting was described as a low-impact, easily portable, and ‘inoffensive’ activity useful in such circumstances. The multiple factors already identified as underpinning wellbeing (particularly challenge, flow, and the usefulness of the outcome) were also highlighted in these redemption stories. For instance, Eileen, (F, 57), undergoing cancer treatment, described how ‘knitting saved my sanity during this time’, enabling her to ‘feel as if I could still contribute to the world around me’. She went on to describe being ‘lost in the stitches’, which resonates with the emotional detachment and focus that many knitters referenced. Alongside self-care, being able to create for others and a sense of purpose was highlighted in redemption stories. This purpose is echoed in the pleasure that someone playing or singing can bring to the listener, and a few people mentioned this as a motivator, like Jenny G (referred to earlier). Personal purpose was also apparent, such as Sharon M’s (F, 57, voice) reference to singing being ‘something I do for me ... It gives me a sense of purpose’. There was often a clear shift in musicians from extrinsic to intrinsic motivation, as Wesley Wood (M, 19, trumpet) explained: ‘Looking back on it, I am glad my family strong armed me into playing an instrument. Without that, I would not have found my purpose in life’.

Many participants also had a clear sense of self and identity in relation to their activity. For instance, Judi (F, 69) ended her description of the benefits of knitting: ‘told my husband that when I die, he better place needles and yarn in the casket for me’. Peggie (F, 59), positioned herself in her family through knitting: ‘Knitting became the one craft item that I could do better than the other women in my life. It defined me in a family full of exceptional women’. Musicians also expressed strong musical identities: ‘music is probably one of the most important aspects of my day’ (Joss Town, M, 20, recorder), ‘Music is my life!’ (Jill, F, 19, singer), and ‘it’s a part of me’ (Mandira, F, 21, violin).

Knitters mentioned the frustration of not being able to knit in certain circumstances (rare, due to the portability of knitting) and the consequent effects on their mood, while musicians mentioned the ability to bring music into every part of their life through listening as well as playing. The obsessive nature of these high levels of engagement led to some spending extended periods of time on it. Christina H (F, 52) said ‘For me since getting back into knitting after a long break it has become something of an obsession rather than a hobby. I sometimes feel guilty for having so many patterns and so much yarn around me. It can so easily get out of control’. This often led to negative physical outcomes: ‘too much sitting’, arthritis and carpal tunnel for knitters, over-use of fingers, poor posture and RSI for musicians. Obsession also led to negative psychological and social outcomes, particularly neglect of housework and other family members. Thelma James Turley (F, 84) described how ‘knitting triggers an almost OCD reaction, as I sometimes find it difficult to stop knitting to go on to other required tasks - the compulsion to finish “just one more row” is great. I always prefer to knit over household duties.’ Knitters also mentioned cost, with money spent on a ‘stash’ of yarn that also took up space; often husbands were cited as complaining about this. Obsession with the activity is a potential drawback of the potential these activities

embody to provide a space to retreat into one's own world and close out external influences.

Discussion

Although knitters had higher levels of happiness than musicians, there were no differences in subjective wellbeing between knitters and musicians. This highlights subtle differences between the two concepts that require further research. For wellbeing, where there are existing studies to relate to, the lack of group differences found here contradicts earlier findings showing an advantage for music over other creative activities in terms of wellbeing and quality of life (Hallam and Creech 2016; Johnson et al. 2017), but supports the general lack of global differences on other measures related to wellbeing such as anxiety and depression (Pearce et al. 2016). Although fewer of our participants chose to knit in groups (17.5% compared to 50% in Riley et al. 2013), the lack of any influence of group activity on happiness or wellbeing also counters earlier evidence that group knitters experienced more positive emotions (Riley et al. 2013), while the clear positive relationship found here between age, happiness and subjective wellbeing confirms earlier findings that older participants report higher levels of happiness (Blanchflower and Oswald 2008; Diener et al. 1999; López Ulloa et al. 2013).

Themes developed from the open-ended data support the lack of activity-related differences by illustrating many key commonalities between the two activities. A wide range of positive and negative emotions were evoked by the process, from excitement through peace and relaxation to frustration, disappointment and anxiety. Both activities carry function as therapeutic, both in the mundane and extreme forms highlighted by Dickie (2011). Self-care arises through opportunities to engage in flow and to detach from everyday life, leading to stress relief (cf. Riley et al. 2013). The patterning of the activities provides opportunities for sensory and aesthetic engagement, and allows participants to express their own creativity within a structure in a similar way to that uncovered by Payne for music performance (Payne 2016). Both activities also provide opportunities to connect to others, through the activity itself in group settings (cf. Riley et al. 2013; Pearce et al. 2015) and the communication of the product to others (gifts for knitters and performances for musicians). This can result in positive affirmation, strengthening self-esteem and confidence, leading to a clear sense of pride and accomplishment, or a less positive reception evoking more negative emotions. Through this, both activities foster and facilitate identity and passion (cf. Howie et al. 2004; Lamont 2011), which can border on the obsessional.

Differences arise with learning and teaching, which is more formal and often externally prompted for music and more closely related to a community of practice in knitters (Wenger 1998). For musicians, the teacher-learner relationship typically goes beyond the family, while knitting is often within the domestic realm and strongly gendered (indeed Kelly 2014, has considered knitting as a politicised feminist project). Online forums such as Ravelry and resources such as Youtube provide a virtual community supporting interactions between knitters and musicians, particularly in learning and teaching, and this is seen more clearly in knitting.

While there are similarities in outcome in terms of the ability to connect to others and gain feedback, differences arise in timing of the emotions around the process of the

two activities. For knitting, more frustration is seen during the process, as knitters become annoyed with their own abilities and mistakes, having to rip out or redo pieces of work or find solutions to their errors. Conversely, most musicians refer to anxiety in a performance context as something to be overcome in order to connect with others. The widespread phenomenon of music performance anxiety (Kenny and Osborne 2006) is seen here to affect amateur musicians engaging in the activity for enjoyment rather than obligation. More research is required to explore this, but it seems that positive emotional and social outcomes outweigh the negative emotions of anxiety experienced during performance. Temporal orientation also varies in relation to outcome: knitters refer to the future uses of the items they produce, while legacy is not a feature of musicians' reflections.

Another key difference is in intrinsic emotional quality of the activity. Knitters bring their own emotions to their knitting: some participants noted that being in a bad mood prevented them from knitting, and 'angry' knitting could lead to undesirable levels of tension through winding yarn too tightly (cf. Riley et al. 2013). However, with the exception of imbuing emotions of love and care into the knitted product for a specific recipient the process is often described in an emotion-free manner. Conversely, music is infused with intrinsic emotions, both from composition and performance, which sometimes align with and sometimes contradict the player's own emotions. Louise K's point that 'the music plays me, rather than me playing the music' highlights that music can change as well as channel the performer's emotions (cf. Perkins and Williamson 2014).

The relationship between process and outcome merits further consideration. Most knitters and musicians placed a broadly equal value on both: only a few were unconcerned about either what happened to the end result of their knitting or performing. This contradicts earlier findings from Stannard and Sanders (2015) that people defined themselves as either 'process' or 'product' knitters (see also Genoe and Liechty 2017). However, it chimes with findings from cancer patients of the motive to engage in craft to be useful (Reynolds and Prior 2006), and from older adults that the impact of being in a choir or music group was enhanced by preparing performances (Hallam and Creech 2016; Lamont et al. 2018). The emphasis placed on process by many creativity researchers from Amabile onwards (Hegarty 2009) may need rethinking, particularly in relation to activities like knitting with clearly defined physical outputs.

All the PERMA elements (Seligman 2011) are found in the current data. Positive emotions arise throughout, and high levels of happiness are found in both activities. Engagement and flow are intrinsic to both, and the technique required for completing projects successfully is considerable: developing and learning skills is emphasised by both groups. Social relationships are important in the product: passing knitted items on to family, friends, and strangers through charity provides knitters with a means to connect, while performing with and for others is an important feature of music-making. However, the importance of the group for process (cf. Haslam et al. 2014) was not particularly emphasised in the current data: most knitters preferred to knit alone, and most musicians referred to the audience rather than co-performers. Finding one's place within society and extended family networks through a sense of identity also provides the mechanism for developing a sense of meaning and purpose. Finally, pride in accomplishment is an extremely strong narrative in both groups. The fit with PERMA supports earlier findings with professionals (Ascenso et al. 2017) and amateurs

(Lamont 2012) in music, and PERMA could provide a useful means for analysing future findings in the domain of crafts.

Seligman's (2018) proposal that PERMA could help guide people towards more rewarding activities had been applied in music education by Lee et al. (2017), who used the model to pinpoint areas needing improvement. However, PERMA does not explain any differences in the current data: all five elements are highlighted to broadly the same extent in both music and knitting. As it stands, the current data support a single general underlying construct of wellbeing (Goodman et al. 2018), and the model may thus need expanding to include finer distinctions.

One approach is to add a temporal aspect, which was particularly apparent in the present data. The themes illustrate a temporal progression from the initial phases of *learning and teaching*, through repetition of the *process*, which brings recognised benefits more obviously centred on positive emotions and engagement, to the *outcome*, including positive emotions, engagement, relationships and accomplishment. Repeated experience of the cycle of learning, practice and outcome leads to the generation of *purpose* or meaning through identity and connections beyond oneself. This includes both short- and long-term temporal engagement and moves PERMA from a static to a dynamic construct, uncovering more subtle differences. For instance, knitters and musicians experience strong social connections in the learning and purpose phases, but knitters experience greater social connections in the product while musicians have stronger social connections in the process. Repeated experience of positive emotions through learning, process and, in most cases, product helps both knitters and musicians experience the *build* effect (Fredrickson 2001) to develop resilience and enhance wellbeing over time. This new temporal dynamic way of understanding PERMA could be valuable in a lifespan perspective.

The current study is, like many, dependent on self-report and on volunteer participants. The combination of standardised happiness and wellbeing measures and qualitative data from a large sample provides useful credibility, and extends the scale of earlier mixed-methods approaches (e.g. Perkins and Williamon 2014). The rich open-ended responses suggest that participants are aware of the emotional benefits that knitting and music bring, and have a story ready to tell. This may be partly responsible for their relatively high levels of wellbeing and happiness, since both focusing on activities that increase subjective wellbeing and paying more attention to one's own levels of happiness and wellbeing enhance wellbeing (Lyubomirsky and Layous 2013). Nonetheless, although self-report provides a valuable retrospective perspective (cf. Greasley & Lamont 2011), future research would benefit from a combination of methods and measures to gather data contemporaneously over longer timespans.

More systematic sampling could also address the issues of age, gender, ethnic origin, education, and balance in the present sample. With increased age, people spend more time on activities they value, set themselves more realistic goals, and compensate for losses due to reduced physical or mental agility (Baltes and Baltes 1990). It is important to know more about life and leisure choices both over time and in context. What else might participants have let go, when and why? There may be a large group of unresearched would-be knitters who did not find a suitable family member or friend to teach them and who consequently did not or no longer engage in the activity. A more systematic sampling process could address these issues more fully. Participants were recruited here because of their active participation in either knitting or music, but

nothing is known about what else they do and how choices are made between competing demands. Although the current sample is similar to earlier work in the gender imbalance in knitters (1.4% male compared to 1.2% in Riley et al. 2013), and although sufficient musician participants were recruited to undertake the analyses reported here, it would be important to seek more balanced samples across different leisure activities and to compare with creative activities that are more male-dominated. Furthermore, it will be vital to consider how people access opportunities to engage in creative activities from a wider range of backgrounds, seeking samples from a broader socio-economic range and including different cultures which may place different values on various creative activities (cf. Pöllänen 2009).

It is encouraging that many people engage voluntarily in creative cultural activities in childhood and some continue throughout life. These activities are not restricted to the highly skilled or expert. Reynolds (2009) found that motivations to take up arts activities in later life were shaped by personal resources such as existing levels of skill, sensitivity to aesthetic experiences, and enthusiasm for learning and personal development, as well as social factors, occupational voids, and serendipitous chance encounters. Similarly, Lamont (2011) uncovered many motivations for taking up or returning to music-making in adulthood including elements of identity, social interaction, and opportunity. The current results support previous findings that identity is a clear motivator for knitters (Reynolds 2010) and musicians (Lamont, 2017). A strong sense of identity seems to promote continued engagement, and this may play a role in helping people immerse themselves in leisure activities when time pressures compete (Sonnentag 2012). The higher-than-average education levels of the musician group in particular, however, suggests that access to creative activities is not evenly distributed, and that opportunities need to be provided that do not require extensive funding so that more people can access the benefits. The clear sense of missed opportunities and regrets over not beginning sooner amongst many in the current data, also found by Lamont (2011) for music, highlights the importance of early and continued opportunities for people to engage with these kinds of powerful and beneficial activities.

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Compliance with Ethical Standards

Conflict of Interest We declare that there are no conflicts of interests in this research.

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