Nordic Journal of Arts, Culture and Health

Universitetsforlaget

RESEARCH PUBLICATION

Volume 5, No. 1-2023, p. 1–13
ISSN online: 2535-7913
DOI: https://doi.org/10.18261/njach.5.1.1

The impact of remote arts on prescription: Changes in mood, attention and loneliness during art workshops as mechanisms for wellbeing change

Nicola J. Holt
Associate Professor in Psychology, Department of Health and Social Sciences, University of the West of England (UWE)
nicola.holt@uwe.ac.uk

Abstract

Purpose: To assess the impact of art workshops delivered remotely, during the coronavirus pandemic, on the wellbeing of participants. To measure the impact of participating in art workshops on immediate experience (mood, attention and loneliness). To extend understanding of the mechanisms for wellbeing change.
Methodology: An observational, pre-post design, where 60 participants completed: (1) measures of global wellbeing and loneliness at the beginning and end of art on prescription programmes; and (2) 690 'in-the-moment' questionnaires assessing mood, loneliness and attentional absorption ('flow') at the start and end of each art workshop.
Findings: Participants were most commonly referred to help with stress and anxiety and low mental wellbeing. There was a significant increase in global wellbeing and a reduction in loneliness after participation in the programme. After each art workshop there was a significant increase in: hedonic tone (contentment) and energetic arousal (alertness) and a significant decrease in tense arousal (anxiety) and loneliness. Reduction in tense arousal and loneliness, and entering an absorbed attentional state, during art workshops, significantly predicted changes in global wellbeing across the programme.
Originality: The findings suggest that arts on prescription can be beneficial for wellbeing when delivered remotely. They suggest multiple mechanisms for wellbeing change: affective (reducing anxiety); cognitive (absorbed attention); and social (reducing loneliness), which has implications for delivery.

Keywords
wellbeing, flow, loneliness, anxiety, art on referral

Introduction

As the provision of social prescribing (SP) and art on prescription (AoP) expands (in the United Kingdom, Scandinavia, and beyond), there is increasing need, not only to build the evidence for the efficacy of programmes but also to identify best practice and 'what works', including the active ingredients that promote wellbeing (Holt et al., 2022; Husk et al., 2020; Jensen et al., 2017). The delivery of SP programmes adapted to meet the needs of the coronavirus pandemic, and provision of remote programmes has become increasingly common, due to the flexibility they offer (Morris et al., 2022; Wright & Caudill, 2020). Yet, little is known about the efficacy of remote SP programmes. This article reports on an AoP programme that was delivered remotely during the pandemic by Bristol Arts

on Referral Alliance in the UK. The aims were twofold: to evaluate the extent to which a remote programme could improve wellbeing and reduce social isolation and to extend understanding of the mechanisms by which engaging with AoP improves wellbeing. This was done by examining the impact of art workshops on mood (e.g., anxiety), attention (absorption in activities) and social bonding (loneliness). The impact of AoP on immediate feelings of social connection and attention has not been examined previously, and an important aim was to test whether these factors could explain improvements in wellbeing across the programme.

SP occurs when health professionals signpost individuals to engagement with community-based activities (e.g., nature walks, woodwork or dance classes) with the expectation that this will improve their psychosocial wellbeing (Fixsen & Polley, 2020). It recognises the social determinants of health, for instance, the role of social isolation in mental wellbeing (Drinkwater et al., 2019). The primary driver for referral is patient benefit (Bickerdike et al., 2017), but it is also hoped that SP will reduce the financial burden of patient care by decreasing visits to health professionals (Drinkwater et al., 2019). Evidence for the efficacy of SP is pressing since the need for, and costs associated with, mental health care are predicted to rise exponentially in future years, with depression becoming the main global cause of health loss (Crone et al., 2017).

AoP is one form of SP, where art is prescribed as an adjunct to any ongoing treatment. People are usually referred to help with experiences of loneliness, stress and anxiety, depression and low mood, as well as symptoms of chronic pain (Bungay & Clift, 2010; Holt et al., 2022). Individuals participate in visual art and craft activities in small groups, facilitated by a skilled arts practitioner (including clay work, mixed media, drawing, collage, felting). AoP differs from art psychotherapy, since art is not used as a vehicle to explore emotions, and from art classes, in that the focus is not on development of art techniques. Rather, the aim is to enjoy the process of making art in a non-judgemental and 'safe space' (Stickley & Eades, 2013). Participants are typically invited to attend a weekly two-hour-long art workshop for six to 12 weeks, after which there may be opportunities to be re-referred to the group or join community 'move on' groups.

Research on art and health more generally supports the view that art-making can promote mental health and wellbeing, including decreased depression, anxiety and stress (Holt et al., 2018; O'Donnell et al., 2021; Sayers & Stickley, 2018). However, specific research on AoP is limited. Qualitative outcomes suggest that participants benefit from AoP in numerous ways: through forming meaningful connections with others in the group; becoming absorbed in the art activities (thereby forgetting about health symptoms); and developing new and positive identities (of empowerment and 'being an artist') (Hughes et al., 2019; Stickley & Eades, 2013). Quantitative research has predominantly used pre-post designs, where significant improvements in subjective wellbeing have been reported, in addition to reductions in symptoms of anxiety and depression (Crone et al., 2018; Sumner et al., 2021; Van de Venter & Buller, 2014). Further work examining markers of change across AoP programmes has reported that relaxation during art workshops predicted improvements in wellbeing across programmes, suggesting anxiety reduction as a mechanism (Holt, 2021). However, further mechanisms may be important – in particular, developing relationships with others (social bonding) (Daykin et al., 2021; Stickley & Eades, 2012) and 'distraction' or becoming absorbed in meaningful activities, which may help with the management of health symptoms (e.g., pain and anxiety) (Holt et al., 2022; Hughes et al., 2019). Further work to identify the mechanisms by which AoP improves wellbeing, and how these might interact, is therefore required.

An additional need is to examine the impact of AoP on further health and psychosocial outcomes, beyond subjective wellbeing, including social isolation and loneliness. The impact of AoP on loneliness has not been previously assessed. Loneliness refers to a subjective appraisal of being unsatisfied with one's relationships with others and is associated with adverse health outcomes (Park et al., 2020). Research on SP has reported mixed outcomes, where programmes have differentially impacted social connectedness and loneliness, suggesting that more research is required (Pescheny et al., 2020). An understanding of whether and how SP can help to reduce loneliness is especially pressing, both because of the high prevalence of loneliness and its correlates with poor health, for which effective interventions are needed (Park et al., 2020), and to provide support for the thesis that AoP is a 'social cure' (Daykin et al., 2020; Wakefield et al., 2022). This was also pertinent to assess in the context of the pandemic when loneliness increased (Ernst et al., 2022).

The current study used a form of event-contingent sampling, where mood, attention and loneliness of participants was assessed before and after workshops throughout AoP programmes. In addition, wellbeing, satisfaction with relationships and loneliness were assessed at the start and end of programmes. This approach draws on best practice recommendations to assess both global and immediate aspects of wellbeing (Dolan & Metcalfe, 2021). The AoP programmes ran during the pandemic (June 2020 to March 2021) and art workshops and activities (as well as evaluation formats) were adapted to be delivered remotely, in common with other interventions at this time (Morris et al., 2022; Wright & Caudill, 2020). It was hypothesised that: (1) Global wellbeing scores would increase over the course of the art programmes, replicating previous findings (Crone et al., 2018); (2) loneliness would decrease over the course of programmes; (3) mood (calmness, alertness and contentment) would improve after participation in art workshops, replicating Holt (2020); (4) loneliness would decrease during art workshops; (5) mood, attention and social connection would improve over the course of the art programmes; (6) reductions in anxiety and loneliness, and increases in absorbed attention, during art workshops would predict improvements in global wellbeing; and (7) reductions in loneliness during art workshops would predict reduction in social isolation across the programme.

Methods

Participants

AoP was delivered by three artists from Bristol Arts on Referral Alliance (JM, BD and RL). The data was contributed by 60 individuals (55 females), aged between 18 and 71 (mean age = 49), who were all referred for multiple reasons, most commonly to improve wellbeing (96%), reduce stress (73%) and help manage chronic pain (38%). A high proportion of participants identified as 'White British' (77%) as having a disability (68%) and as being unable to work or unemployed (57%).

Design

This was a multi-level, repeated-measures design, with state reports of momentary experience (n = 690) (level one – 'the experiential-level'), and wellbeing scores, nested within participants (N = 60) (level two – 'the person-level'). The dependent variables were mood (hedonic tone, tense arousal and energetic arousal), state loneliness, the flow state, global wellbeing, satisfaction with relationships and loneliness. Predicting factors were time, either: (a) pre and post each art workshop; or (b) the start and end of the programme.

Materials

Warwick Edinburgh Mental Wellbeing Scale, WEMWBS (Tennant et al., 2007): a 14-item scale enquiring about psychological wellbeing over the previous two weeks, including connection to others, self-esteem, positive affect and clarity of cognition. The scale has excellent psychometric properties and is responsive to change (a minimum 'meaningful change' being one of 3 points across measurement points). A score of 40 or below has been interpreted as indicative of probable depression, and 44 or below of possible depression (Maheswaran et al., 2012; Tennant et al., 2007).

Campaign to End Loneliness Measurement Tool, CtEL (Campaign to End Loneliness, 2019). Co-designed with service users, this scale uses sensitive language to reduce distress. It is a three-item scale with a 5-point response scale from strongly disagree to strongly agree that asks about satisfaction with friendships and relationships. Low scores (of 5 to 8) are thought to indicate experiences of intense loneliness.

Direct Measure of Loneliness, DMoL (Office for National Statistics, 2020): a single-item measure of loneliness: "How often do you feel lonely?", with a five-point response scale, ranging from "often/always" to "never".

Short Mood Scale, SMS (Wilhelm & Schoebi, 2007): a six-item scale based on a three-factor model of the structure of mood that includes: hedonic tone (feeling happy and cheerful rather than sad or depressed); tense arousal (feeling anxious, tense and stressed rather than relaxed or calm); and energetic arousal (feeling active and energetic rather than sleepy and sluggish). This scale was designed to repeatedly sample individuals' mood and has been found to be reliable and sensitive to individual change (Wilhelm & Schoebi, 2007; Holt, 2020).

State Loneliness Measure, *STM* (Reissmann et al., 2018): a single item that has been used to measure current loneliness: "How lonely do you feel at the moment?" with a visual analogue scale ranging from "not at all" to "very much".

Flow Short Scale, *FSS* (Engeser & Rheinberg, 2008): a 10-item scale designed to measure phenomenological features of the flow state, an attentional state characterised by focused attention, without distractibility, with self-consciousness and perceptions of time passing absent. Items are responded to on a 7-point Likert scale from "strongly disagree" to "strongly agree". The scale has excellent psychometric properties (Engeser & Rheinberg, 2008).

Procedure

The programme consisted of twelve weekly art workshops led by a skilled arts and health practitioner. For 51 participants, these workshops were delivered via Zoom in small groups of five to eight participants (in eight groups). They were further supported by artist facilitators with phone calls and WhatsApp groups to help join sessions and communicate with the group. In the workshops, participants were invited by artists to take part in a range of accessible art activities (e.g., collage or mark making), some of which were made available online for the wider community (e.g., a crumpled paper activity: https://arnolfini.org.uk/art-and-wellbeing/). For nine participants without digital access, a postal intervention was developed, where participants communicated with the artist through phone calls and the artwork consisted of making joint pieces as a group (based on the 'exquisite corpse' process). Partially completed artwork was posted between participants (via the artist) and final pieces shared and exhibited at the end of the programme (https://arnolfini.org.uk/whatson/exquisite-corpse/).

Participants were invited to take part in the evaluation prior to the first workshop, through communication with the artists. They read a participant information sheet about

what the evaluation involved and signed a consent form. They were asked to complete a demographics form, the *WEMWBS, CtEL* and the *DMoL* at both the start and end of the programme. Participants were also invited to complete the *SMS* at the start and end of each art workshop (and state loneliness, for the Zoom groups only). The *FSS* was completed at the end of each workshop. Participants in the Zoom group were given links to questionnaires, at each time point, as online surveys (using Qualtrics). In order to reduce social desirability effects, participants were encouraged that all responses were acceptable and would not be viewed by the artist facilitators. Once submitted, participants could not see their previous scores for purposes of comparison. Participants in the postal group were sent a paper booklet with all questionnaires printed in it for each time point. All data was contributed anonymously. No names or other identifying details were recorded on forms. Data were cross-referenced with a unique code generated through responding to two questions with memorable answers.

Results

Screening the data and analysis

Multi-level modelling was used to account for the lack of independence in the data due to its nested structure (Heck et al., 2013). Multi-level modelling also allows for missing data across measurement points. The data consisted of 690 state reports (pre and post art workshops), and 105 wellbeing scores (57 completed at the start of the programme and 48 at the end). All participants completed state measures, with an average of twelve responses per participant (ranging from 2 to 24). The impact of missing data on analyses was found to be negligible, suggesting that data was missing at random. Residuals of mood and wellbeing were normally distributed, meeting requirements for multi-level modelling. Following standard recommendations, between-person predictors were centred around grand mean scores (Heck et al., 2013).

Wellbeing and loneliness scores across the art programmes

The first hypothesis was that wellbeing (*WEMWBS* scores) would significantly increase over the programme. Mean wellbeing levels rose across the programme, from 35.58 (SD = 8.06) to 41.12 (SD = 9.12), an average increase of 5.54 units. At the start of the programme, 63% of participants had *WEMWBS* scores below 40 (indicative of probable depression) and 11% had scores above 44 (out of the range of possible depression), compared with 36% reporting *WEMWBS* scores below 40, and 36% scores above 44, at the end of the programme. An increase in *WEMWBS* scores of 3 or above (indicative of a 'meaningful change') was reported by 64% of participants. A multi-level model was conducted, with a random intercept (allowing intercepts to vary by participant), and with wellbeing scores as the dependent variable, predicted by Time (start and end of the programme) as a fixed factor. The increase in wellbeing scores was statistically significant ($F_{(1,102)} = 33.64$, $p < .001$). The hypothesis that wellbeing scores would significantly increase over time was accepted.

The second hypothesis was that social isolation would decrease across the programmes. Mean scores on the *CtEL* (satisfaction with relationships) and *DMoL* (frequency of feeling lonely) were 8.82 (SD = 2.65) and 1.71 (SD = .845) respectively at the start of the programmes, increasing to 10.11 (SD = 3.06) and 2.78 (SD = .833) at the end. Both indicate a slight improvement but are still indicative of sometimes feeling lonely and dissatisfied with relationships. Only the increase in *DMoL* scores was statistically significant (*CtEL*: $F_{(1,74)} = 2.08$, $p = .153$; *DMoL*: $F_{(1,67)} = 4.22$, $p = .044$). The hypothesis that social isolation would decrease was partially

met, there being no significant change with relationship satisfaction but a significant reduction where participants felt lonely less often at the end of programmes.

Mood and loneliness scores before and after the art workshops

It was hypothesised that after engaging in the art workshops participants would report feeling happier (hedonic tone), less anxious and tense (tense arousal), more energetic and alert (energetic arousal) and less lonely. Multi-level models were conducted with each state as a dependent variable and with Time ('start' and 'end' of workshops) as a fixed factor. For each dimension of mood, and loneliness, there was a statistically significant change after the art workshop compared to baseline scores. Participants reported being significantly more: calm and relaxed ($F_{(1,591)} = 298.18$, $p < .001$); alert and energetic ($F_{(1,601)} = 83.65$, $p < .001$); content and well ($F_{(1,605)} = 178.13$, $p < .001$); and less lonely ($F_{(1,352)} = 93.67$, $p < .001$). These changes are illustrated in *Figure 1*, which shows mean scores at the start and end of the art workshops and illustrates that largest effect was for tense arousal, where participants reported feeling more relaxed after art workshops. The hypothesis that participation in AoP workshops would be associated with improvements in mood and social connection was accepted.

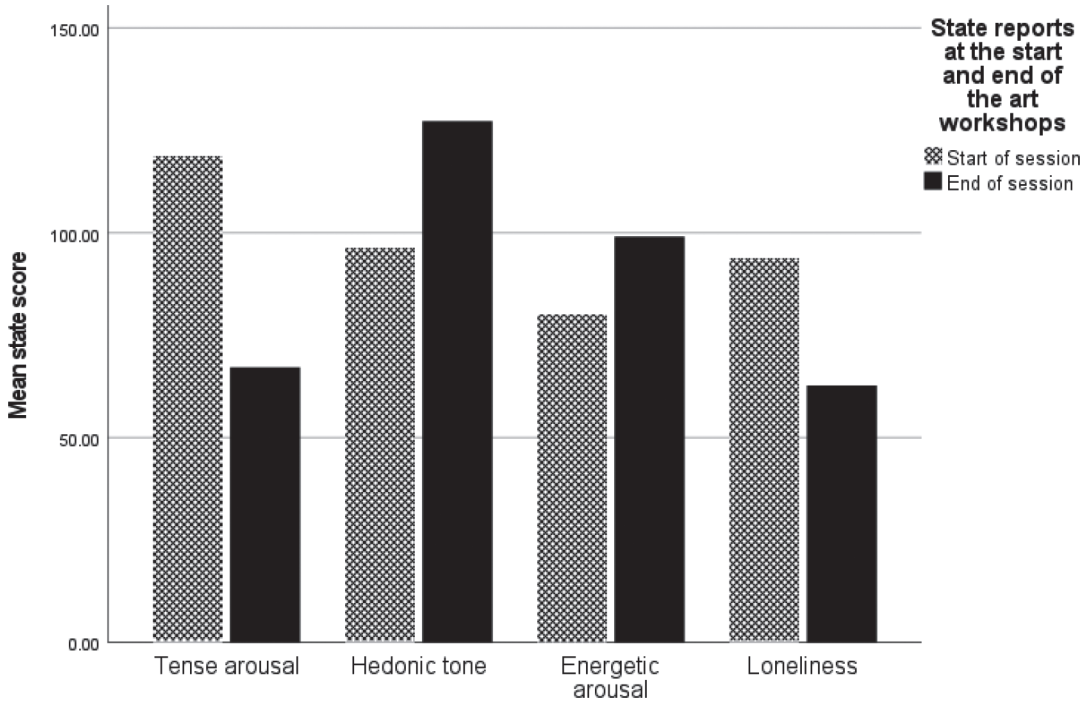

Figure 1. Mean mood and loneliness scores before and after art workshops

Changes in mood, flow and loneliness over time

The fourth set of hypotheses were that subjective mood, flow (absorbed attention) and loneliness would increase over the course of participation in the art programme. Week (chronological order of workshop) was added as a fixed factor to predict state changes. Mood was not significantly predicted by Week, although, as illustrated in *Figure 2*, there was a non-significant trend for tense arousal, which reduced across the programme: tense arousal ($\beta = -1.17$, SE = .631, $p = .06$, 95% CI = –2.42 – .066); hedonic tone ($\beta = .733$, SE = .433, $p = .09$, 95% CI = –118 – 1.585); and energetic arousal ($\beta = -.024$, SE = .561, $p = .96$, 95% CI = –1.129 – 1.074). However, feelings of loneliness reduced significantly over the programme, and the flow state significantly increased, where people entered a more absorbed attentional state while art-making as the programme progressed: flow

(β = .334, SE = .152, p = .029, 95% CI = .035 – .633); and loneliness (β = –.926, SE = .354, p = .009, 95% CI = –1.623 – –.229).

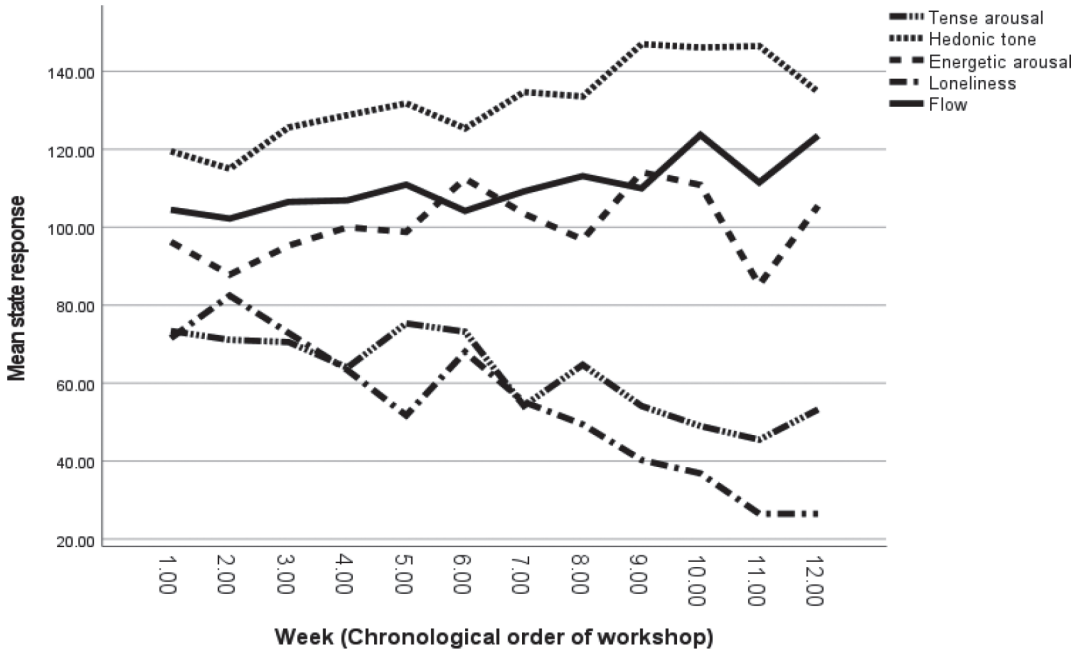

Figure 2. Mean mood, flow and loneliness scores across workshop weeks

Interactions between workshop experiences and wellbeing over time

The final set of hypotheses were that changes in state variables during art workshops would predict changes in longer-term wellbeing. Multi-level models were conducted, with a random intercept (allowing intercepts to vary by participant). Wellbeing scores were the dependent variable, with fixed predictors of: Time (pre and post programme); State Change (mean change across the art workshop on state variables for each participant); and the interaction between State Change and Time. By adding the interaction it was possible to test whether the relationship between wellbeing and Time differed significantly according to participants' average changes in mood, flow and loneliness during art workshops.

Reporting a larger reduction in tense arousal after art-making was associated with increased global wellbeing at the end of the programme (γ = –0.59, SE = .028, p = .035, 95% CI = –.114 to –.004). However, changes in energetic arousal and hedonic tone were not significant predictors of wellbeing change (γ = –.01, SE = .04, p = .88, 95% CI = –.08 to .07; and γ = –.114, SE = .07, p = .106, 95% CI = –.252 to .024, respectively). Reduction in loneliness during art workshops was a significant predictor of both wellbeing change (γ = –.192, SE = .078, p = .016, 95% CI = –.347 to –.037) and reductions in loneliness across the programme (γ = –.059, SE = .019, p = .004, 95% CI = –0.98 to –.020). Finally, entering the flow state while art-making was a significant predictor of wellbeing change (γ = .25, SE = .11, p = .023, 95% CI = .036 to .463). *Figure 3* illustrates that there was an increase in global wellbeing scores over time only for those participants who reported being in a state of flow while art-making. *Figure 4* illustrates how wellbeing increases more steeply across the programme for people who reported feeling less lonely after taking part in the workshops. The final hypothesis was partially met: reduction in tense arousal, reduced loneliness, and attentional absorption while art-making, predicted increases in wellbeing over the course of the AoP programmes.

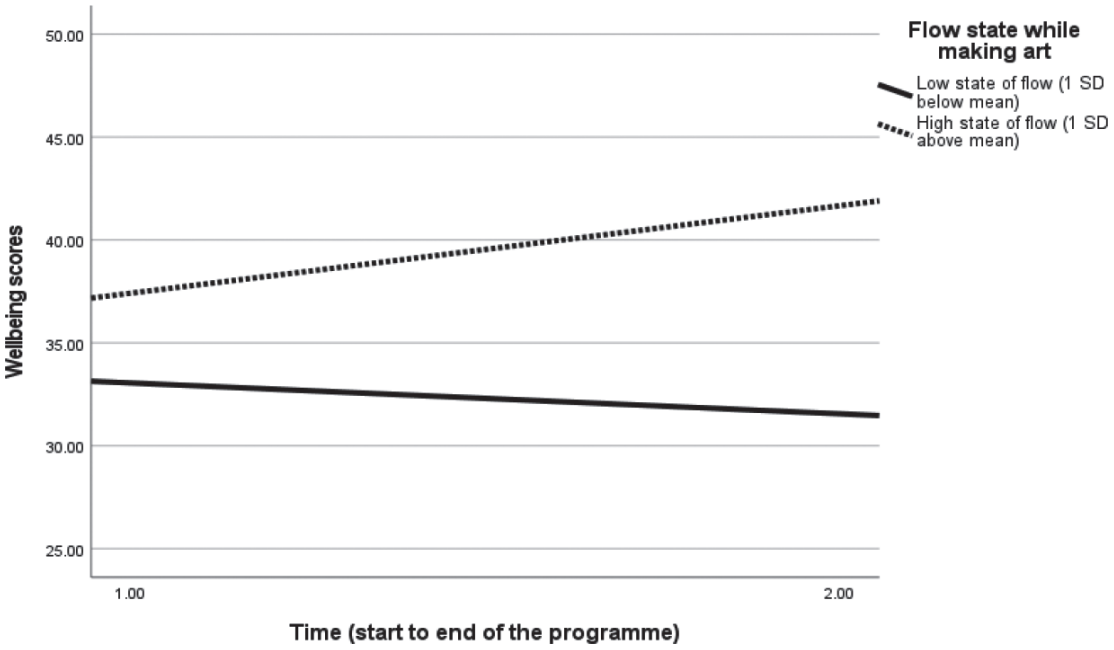

Figure 3. Association, with lines of best fit, between wellbeing change and time according to level of flow state during art workshops

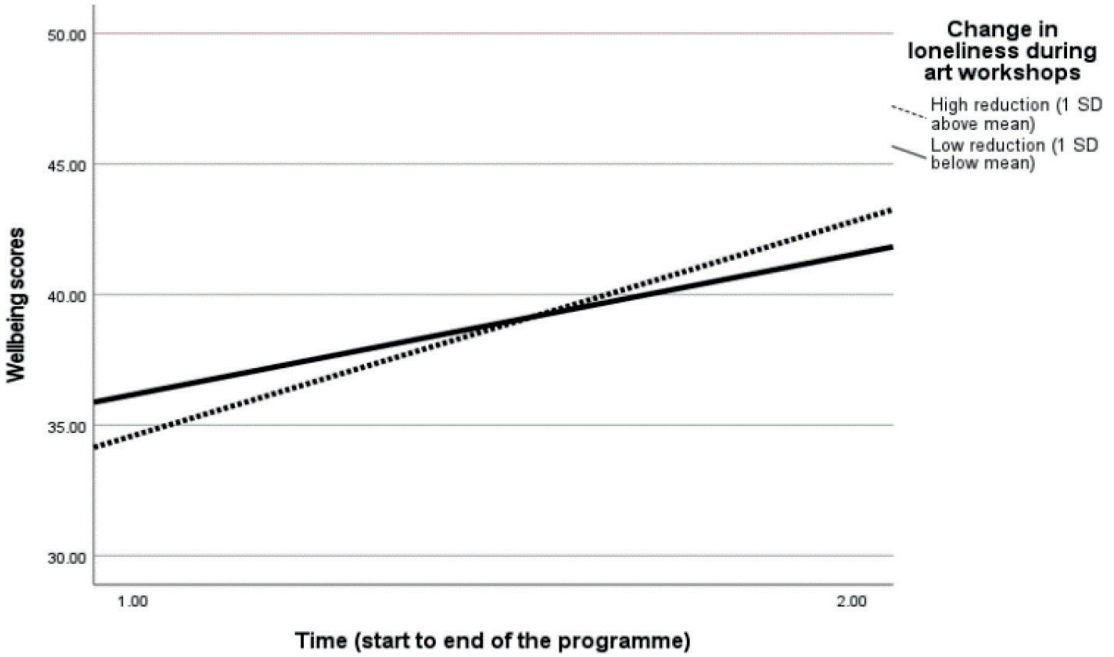

Figure 4. Association, with lines of best fit, between wellbeing change and time according to reductions in loneliness during art workshops

Discussion

The current research evaluated the impact of the remote delivery of AoP for the first time. The study extended previous research by assessing the impact of AoP on loneliness and by examining whether attentional absorption and social connection during art workshops predicted wellbeing change. The findings suggest that remote delivery of AoP can be beneficial for wellbeing and that multiple mechanisms facilitate this: emotional (reducing anxiety); attentional (focusing attention); and social (connecting with others).

The study replicated previous research reporting a significant increase in global wellbeing over the course of AoP programmes (Crone et al., 2018). Mean wellbeing scores rose from a level indicative of probable depression to levels above this threshold by the end of the programme. These findings support the efficacy of AoP programmes for improving wellbeing. However, according to normative scores, average wellbeing was still in the range of possible depression at the end of the programme (below 44) (Tennant et al., 2007). Although this is in line with previous research (Holt, 2020), it suggests that individuals may require further support, such as re-referrals or 'move-on' art groups.

The current study also found that people reported feeling significantly less lonely at the end of the programme. This provides support for the 'social cure' hypothesis, where one mechanism for wellbeing change is the support provided by connecting with others (Daykin et al., 2020; Wakefield et al., 2022). However, there was a non-significant increase in satisfaction with relationships. This suggests that, in the short-term at least, the intervention reduced the frequency with which people felt lonely but not their broader appraisals of relationship quality. Changes on this dimension may have been limited by the constraints of remote delivery, with reduced social opportunities, or may develop over a longer period of time.

The current study replicated previous findings demonstrating that participating in AoP workshops has impacts on immediate subjective wellbeing, with a reduction in tense arousal (tension, stress and anxiety), improved hedonic tone (contentment, happiness) and increased energetic arousal (feeling active and alert) (Holt, 2020). In addition, participants of the teleconference sessions reported feeling less lonely after the workshops. Most importantly, changes in momentary experience while art-making (reduced anxiety, reduced loneliness and increased attentional absorption) significantly explained variance in wellbeing change across the programme. These findings provide a direct link between experiences during art workshops and wellbeing change over time (suggesting that contextual factors and response biases alone cannot explain these wellbeing increases). They also improve understanding of the active ingredients of AoP workshops and suggest multiple mechanisms by which wellbeing can be improved: affective, cognitive and social.

In terms of affective mechanisms, the research builds on work suggesting that art-making can help to reduce stress and anxiety (both in a group and on one's own), evidenced through both mood reports and physiological indices (Holt, 2018; Kaimal et al., 2016). The findings also suggest that greater wellbeing benefits arise through entering an attentional state characterised by absorption in the moment: the flow state. The flow state involves an absence of habitual worries or preoccupations and predicts wellbeing and eudemonic happiness (a sense of having a meaningful life) (Engeser & Rheinberg, 2008; Holt, 2018). These two state factors are related, since the flow state involves an absence of anxiety. It is hypothesised to occur when there is a balance between a person's perceived skills in relation to a task and the challenges of a task or activity (Engeser & Rheinberg, 2008). When the activity is experienced as too challenging, anxiety or stress occurs; yet, if the task is not challenging enough, boredom ensues. If the flow state is an active ingredient for SP, then this has important implications for practice, since activities could be designed to facilitate entry into the 'flow channel', facilitators enabling an appropriate level of challenge for each individual, and scaffolding this as skills develop across the programme.

In addition to psychological mechanisms, social mechanisms appeared to improve wellbeing. Reductions in loneliness during art workshops significantly predicted both wellbeing and loneliness change across the programmes. This supports previous qualitative research suggesting that participatory art groups create social bonding (Daykin et al., 2020), and

group identification predicting wellbeing change (Williams et al., 2019). Awareness of how to facilitate social bonding in groups could help artist facilitators to enable this active ingredient (Wakefield et al., 2022). For example, how to best identify those who feel excluded and how to manage this (e.g., by reinforcing inter-group commonalities, such as a shared identity of artist). The role of the artist facilitator is key in this process.

In addition to the findings already discussed, there were significant growth effects, where social bonding and depth of attentional absorption increased over the course of the programmes. This suggests that some wellbeing effects build over time, which has implications for the optimal length of programmes, where shorter programmes might not enable these wellbeing benefits to accrue.

Overall, the findings of this study suggest that remote provision of AoP can help to improve wellbeing and reduce loneliness. They also suggest that anxiety reduction, absorbed attention and social bonding are mechanisms for wellbeing change. Nevertheless, the study had several limitations. As is common in these studies, there was a problem with attrition rates, with some missing data at the post-programme stage, meaning that the experience of people who dropped out was not represented. However, this was less relevant to analysis of mechanisms, which focused on the factors predicting differential wellbeing change amongst people who stayed on the programme. Since there was no post-programme follow-up, it is not known how long any wellbeing benefits lasted and what happened when the group, and the social bonds created there, disbanded. For example, it is not known whether, without the weekly sessions, feelings of loneliness increased.

Further consideration must also be given to the sample of the current study and the context in which the programme was run. As is the case with other research on AoP (Crone et al., 2018; Holt, 2020), the participants in the current study were over-represented by those identifying as female, white British, and being over the age of 45. Endeavours to widen participation in AoP are needed, perhaps creating specific programmes co-produced with people from underrepresented demographics. Secondly, the wider context of the coronavirus pandemic impacts interpretation of the findings. While participants were not referred due to experiences associated with the pandemic, but for prior conditions, it is not known to what extent external constraints (such as lockdowns and social distancing guidelines) impacted wellbeing and loneliness across the the programme. Wellbeing scores at the start of the programme had a mean score of 36 (compared with 38 in previous studies (Crone et al., 2018; Holt, 2018; van de Venter & Buller, 2015), rising to 41 (compared with 43, 44 and 46 in previous studies). It is not known whether these slightly lower levels of wellbeing in the current study are due to the wider context, random fluctuation, or to participants with lower levels of wellbeing feeling able to participate in a remote programme (for example, remote attendance, with cameras off, can be easier for participants with high social anxiety to engage with). Further research could explore these complexities.

Future research could also explore the longitudinal impact of participating in AoP. Reasons for any maintenance of wellbeing longitudinally could be explored, for example, retaining social bonds with people from the group. Further theoretically driven work could inform understanding of how multiple mechanisms could work together to enhance wellbeing, for example, whether social bonding enables relaxation (with low social anxiety) and entry into the flow state (Holt et al., 2022; Hughes et al., 2019). It would be useful to identify which social factors contribute to the 'social cure' approach (e.g., group identification, opportunity to socialise), since social bonding is a complex phenomenon. Further, it would be helpful to examine whether in-person delivery has greater impact on social bonding.

Finally, work is required to develop understanding of best practice, for example, how the flow state can be enabled and what practices contribute to social bonding. Identifying practices, in line with identified mechanisms, could potentially amplify wellbeing change in future deliveries.

Conclusions

The current research supports the efficacy of remote delivery of AoP programmes for improving wellbeing and reducing loneliness. Tracking momentary experiences across interventions proved to be a useful tool for understanding processes of change. Reductions in tense arousal (anxiety and stress) and loneliness during the art workshops, and absorbed attention, all significantly predicted global wellbeing change, suggesting multiple mechanisms for wellbeing change. This supports the social cure hypothesis for SP, but highlights that additional, psychological, mechanisms are important. The findings strengthen the evidence base for AoP. However, further work to understand how these factors interact and how they can be embedded in practice is required, as well as whether these factors have a longitudinal impact on wellbeing.

Acknowledgements

Thanks must go to Julie Matthews, Rebecca Lines and Barbara Disney, artists who led the AoP workshops, through CreativeShift, and to Donna Baber from Fresh Arts, who managed the AoP project. Both CreativeShift and FreshArts are part of Bristol Arts on Referral Alliance.

Funding Acknowledgement

The AoP interventions were funded by the Arts Council's Emergency Response Fund.

Ethical Approval Acknowledgement

The evaluation was approved by the University of the West of England's Research Ethics Committee (Reference Number: HAS.17.07.197).

Statement of interest

The author has no conflicting interests to declare.

References

Bickerdike, L., Booth, A., Wilson, P., Farley, K., & Wright, K. (2017). Social prescribing: less rhetoric and more reality. A systematic review of the evidence. *BMJ Open*, *7*(4), e013384. https://doi:10.1136/bmjopen-2016-013384

Bungay, H., & Clift, S. (2010). Arts on prescription: a review of practice in the UK. *Perspectives in Public Health*, *130*(6), 277–281. https://doi.org/10.1177/1757913910384050

Campaign to End Loneliness. (2019). *Measuring your impact on loneliness in later life*. https://www.campaigntoendloneliness.org/wp-content/uploads/Loneliness-Measurement-Guidance1-1.pdf

Crone, D., Sumner, R., Baker, C., Loughren, E., Hughes, S., & James, D. (2018). 'Artlift'arts-on-referral intervention in UK primary care: updated findings from an ongoing observational study. *The European Journal of Public Health*, *28*(3), 404–409. https://doi.org/10.1093/eurpub/cky021

Daykin, N., Mansfield, L., Meads, C., Gray, K., Golding, A., Tomlinson, A., & Victor, C. (2021). The role of social capital in participatory arts for wellbeing: findings from a qualitative systematic review. *Arts & Health*, *13*(2), 134–157. https://doi.org/10.1080/17533015.2020.1802605

Dolan, P., & Metcalfe, R. (2012). Measuring subjective wellbeing: Recommendations on measures for use by national governments. *Journal of Social Policy*, *41*(2), 409–427. https://doi.org/10.1017/S0047279411000833

Drinkwater, C., Wildman, J., & Moffatt, S. (2019). Social prescribing. *British Medical Journal,* 364: l1285. https://doi.org/10.1136/bmj.l1285

Engeser, S., & Rheinberg, F. (2008). Flow, performance and moderators of challenge-skill balance. *Motivation and Emotion*, *32*(3), 158–172. https://doi.org/10.1007/s11031-008-9102-4

Ernst, M., Niederer, D., Werner, A. M., Czaja, S. J., Mikton, C., Ong, A., Rosen, T., Brähler, E., & Beutel, M. (2022). Loneliness before and during the COVID-19 pandemic: A systematic review with meta-analysis. *American Psychologist, 77*(5), 660–677. https://doi.org/10.1037/amp0001005

Fixsen, A., & Polley, M. (2020). Social prescribing for stress related disorders and brain health. *International Review of Neurobiology*, *152*, 237–257. https://doi.org/10.1016/bs.irn.2019.11.005

Heck, R., Thomas, S., & Tabata, L. (2013). *Multilevel and longitudinal modeling with IBM SPSS*. Routledge.

Holt, N. (2018). Using the experience-sampling method to examine the psychological mechanisms by which participatory art improves wellbeing. *Perspectives in Public Health*, *138*(1), 55–65. https://doi.org/10.1177/1757913917739041

Holt, N. (2020). Tracking momentary experience in the evaluation of arts-on-prescription services: using mood changes during art workshops to predict global wellbeing change. *Perspectives in Public Health*, *140*(5), 270–276. https://doi.org/10.1177/1757913920913060

Holt, N., Matthews, J., & Elliot, C. (2022). Art on prescription: Practice and evidence. In P. Crawford & P. Kadetz (Eds.), *Palgrave Encyclopedia of the Health Humanities*. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-26825-1

Hughes, S., Crone, D. M., Sumner, R. C., & Redmond, M. (2019). Understanding well-being outcomes in primary care arts on referral interventions: a mixed method study. *European Journal for Person Centered Healthcare*, *7*(3), 1768. https://doi:10.5750/ejpch.v7i3.1768

Husk, K., Blockley, K., Lovell, R., Bethel, A., Lang, I., Byng, R., & Garside, R. (2020). What approaches to social prescribing work, for whom, and in what circumstances? A realist review. *Health & Social Care in the community*, *28*(2), 309–324. https://doi.org/10.1111/hsc.12839

Jensen, A., Stickley, T., Torrissen, W., & Stigmar, K. (2017). Arts on prescription in Scandinavia: a review of current practice and future possibilities. *Perspectives in Public Health, 137*(5), 268–274. https://doi.org/10.1177/1757913916676853

Kaimal, G., Ray, K., & Muniz, J. (2016). Reduction of cortisol levels and participants' responses following art making. *Art Therapy*, *33*(2), 74–80. https://doi.org/10.1080/07421656.2016.1166832

Maheswaran, H., Weich, S., Powell, J. & Stewart-Brown, S. (2012). Evaluating the responsiveness of the Warwick Edinburgh Mental Well-Being Scale (WEMWBS): Group and individual level analysis. *Health and Quality of Life Outcomes, 10*(156). https://doi.org/10.1186/1477-7525-10-156

McCrone, P., Dhanasiri, S., Patel, A., Knapp, M., & Lawton-Smith, S. (2008). Paying the Price: The cost of mental health care in England to 2026. London: Kings Fund. https://www.kingsfund.org.uk/sites/default/files/Paying-the-Price-the-cost-of-mental-health-care-England-2026-McCrone-Dhanasiri-Patel-Knapp-Lawton-Smith-Kings-Fund-May-2008_0.pdf

Morris, S., Gibson, K., Wildman, J., Griffith, B., Moffatt, S., & Pollard, T. (2022). Social prescribing during the COVID-19 pandemic: a qualitative study of service providers' and clients' experiences. *BMC Health Services Research*, *22*(1), 1–13. https://doi.org/10.1186/s12913-022-07616-z

O'Donnell, S., Lohan, M., Oliffe, J., Grant, D., & Galway, K. (2022). The acceptability, effectiveness and gender responsiveness of participatory arts interventions in promoting mental health and Wellbeing: a systematic review. *Arts & Health*, *14*(2), 186–203. https://doi.org/10.1080/17533015.2021.1894463

Office for National Statistics (2020). *Recommended national indicators of loneliness.* https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/compendium/nationalmeasurementofloneliness/2018/recommendednationalindicatorsofloneliness#:~:text=Direct%20measure,ever%E2%80%9D%20or%20%22Never%

Park, C., Majeed, A., Gill, H., Tamura, J., Ho, R. C., Mansur, R., Nasri, F., Lee, Y., Rosenblat, J., Wong, E., & McIntyre, R. (2020). The effect of loneliness on distinct health outcomes: a comprehensive review and meta-analysis. *Psychiatry Research*, *294*, 113514. https://doi.org/10.1016/j.psychres.2020.113514

Pescheny, J., Randhawa, G., & Pappas, Y. (2020). The impact of social prescribing services on service users: a systematic review of the evidence. *European Journal of Public Health*, *30*(4), 664–673. https://doi.org/10.1093/eurpub/ckz078

Reissmann, A., Hauser, J., Stollberg, E., Kaunzinger, I., & Lange, K. (2018). The role of loneliness in emerging adults' everyday use of facebook–An experience sampling approach. *Computers in Human Behavior*, *88*, 47–60. https://doi.org/10.1016/j.chb.2018.06.011

Sayers, T., & Stickley, T. (2018). Participatory arts, recovery and social inclusion. *Mental Health and Social Inclusion*, *22*(3), 149–156. https://doi.org/10.1108/MHSI-04-2018-0015

Stickley, T., & Eades, M. (2013). Arts on prescription: a qualitative outcomes study. *Public Health*, *127*(8), 727–734. https://doi.org/10.1016/j.puhe.2013.05.001

Sumner, R., Crone, D., Hughes, S., & James, D. (2021). Arts on prescription: observed changes in anxiety, depression, and well-being across referral cycles. *Public Health,* 192, 49–55. https://doi.org/10.1016/j.puhe.2020.12.008

Tennant, R., Hiller, L., Fishwick, R., Platt, S., Joseph, S., Weich, S., Parkinson, J., Secker, J., & Stewart-Brown, S. (2007). The Warwick-Edinburgh mental well-being scale (WEMWBS): development and UK validation. *Health and Quality of life Outcomes*, *5*(1), 1–13. https://doi.org/10.1186/1477-7525-5-63

Van De Venter, E., & Buller, A. (2015). Arts on referral interventions: a mixed-methods study investigating factors associated with differential changes in mental well-being. *Journal of Public Health*, *37*(1), 143–150. https://doi.org/10.1093/pubmed/fdu028

Wakefield, J., Kellezi, B., Stevenson, C., McNamara, N., Bowe, M., Wilson, I., Halder, M. M., & Mair, E. (2022). Social Prescribing as 'Social Cure': A longitudinal study of the health benefits of social connectedness within a Social Prescribing pathway. *Journal of Health Psychology*, *27*(2), 386–396. https://doi.org/10.1177/1359105320944991

Wilhelm, P., & Schoebi, D. (2007). Assessing mood in daily life: Structural validity, sensitivity to change, and reliability of a short-scale to measure three basic dimensions of mood. *European Journal of Psychological Assessment*, *23*(4), 258–267. https://doi.org/10.1027/1015-5759.23.4.258

Williams, E., Dingle, G., Jetten, J., & Rowan, C. (2019). Identification with arts-based groups improves mental wellbeing in adults with chronic mental health conditions. *Journal of Applied Social Psychology*, *49*(1), 15–26. https://doi.org/10.1111/jasp.12561

Wright, J., & Caudill, R. (2020). Remote Treatment Delivery in Response to the COVID-19 Pandemic. *Psychotherapy and Psychosomatics*, *89*(3), 130–132. https://doi.org/10.1159/000507376