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A mixed methods exploration of a pilot photo-reflection intervention for enhancing coping and well-being during COVID-19

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ABSTRACT

Restrictions enforced during the COVID-19 pandemic are associated with negative impacts on mental health and well-being. There is a need to support individuals to cope with these challenging circumstances. An embedded design mixed methods approach was employed to explore challenges experienced during the pandemic, the effectiveness of a photo-reflection intervention for enhancing coping, wellbeing, and resilience, and how this intervention functioned to impact on these outcomes. 108 participants were randomised to one of three photo-taking conditions; challenges experienced, coping strategies, or experiences and were assessed with measures of wellbeing, coping and resilience. In addition, open-ended survey questions were used to assess perceptions of experiences and of the effects of the intervention. There were no significant differences across the groups, however subjective psychological well-being, and emotional and functional well-being improved post-intervention regardless of intervention type. There was also an increase in planning and self-distraction coping for those whom the intervention elicited reflection. Qualitative data highlighted a range of challenges experienced and examples of both adaptive and maladaptive coping approaches. Photo-reflection intervention approaches may improve well-being and enhance coping during these challenging circumstances through providing opportunity to review and reflect on life experiences.

Stress and coping during the COVID-19 pandemic

On 11th March 2020 the World Health Organization declared the Coronavirus Disease 2019 (COVID-19) a global pandemic (World Health Organization, 2020). On the 23rd March 2020 lockdown restrictions began in the United Kingdom (UK) resulting in severe curtailment of day-to-day life with individuals only permitted to leave their homes for: shopping for basic necessities, one form of exercise per day, medical needs, or essential travel for work (Prime Minister's Office, 2020).

According to the transactional model of stress and coping, stress is a function of the interaction between individual characteristics and context and impacts on well-being via appraisal (Lazarus & Folkman, 1984). The COVID-19 pandemic is a traumatic stressor capable of eliciting PTSD-like symptoms (Bridgland et al., 2021). Restrictions placed during the COVID-19 pandemic have had detrimental impacts on health and well-being worldwide. Depression and anxiety levels increased (Rettie & Daniels, 2020; White & Van Der Boor, 2020) with levels of stress, anxiety and depression rising as lockdowns progressed

(Ozamiz-Etxebarria et al., 2020). Encounters appraised as stressful, such as the COVID-19 pandemic, activate a coping response (Lazarus & Folkman, 1984) and given the impact of these complex and challenging circumstances on well-being it is important to understand how individuals cope with these restrictions.

Coping strategies represent attempts to minimise distress in response to stressors (Carver, 1997). Survey evidence from Spain highlighted coping behaviours, including following a balanced diet, keeping to routine, restricting engagement with news about the pandemic, taking time to pursue hobbies, and staying outdoors or looking outside, as being linked to lower levels of anxiety during lockdowns (Fullana et al., 2020). In the UK, clinically high levels of distress were observed in those with avoidant coping approaches, while psychological flexibility was associated with greater well-being (Dawson & Golijani-Moghaddam, 2020). During lockdown, many of the coping strategies that individuals employ to access support and ease stress and anxiety were curtailed (Elmer et al., 2020). This reduction in coping opportunities means that it is important to understand whether other options may be

effective in reducing stress and facilitating well-being.

Therapeutic photography for stress and coping

Photography has long been recognised as a valuable tool for assessment and therapeutic intervention within counselling and psychotherapy, with potential to uncover both verbal and non-verbal representations of a clients' world (Amerikaner et al., 1980). Embedding 'Photo-Therapy Techniques' within therapeutic practice provides visual metaphors through which clients can remember, confront, imagine, and explore complex elements of their lives (Weiser, 2004). Such techniques have value as they can be used for a range of client groups regardless of age, culture, or setting (Weiser, 2004), and by any kind of trained mental health professional to improve their practice (Weiser, 2014).

Photographs, when used in therapy settings can help uncover information which would not be discovered through direct questioning (Weiser, 2004) and can be a valued therapeutic activity (Cosden & Reynolds, 1982). Reflective focus on a photograph, rather than direct experience, can provide an emotionally safe and comfortable space for self-disclosure (Kleckner, 2004) facilitating self-understanding and conflict resolution (Hunsberger, 1984). This facilitation of 'objectification' (Wadeson, 1980) can help a client to view themselves as separate from their thoughts and emotions enabling analysis of these without feeling threatened.

The process and use of photography therefore provides benefits when used in one-to-one therapeutic practice (Weiser, 1990, 2004, 2014). In addition, research has shown that self-guided photography interventions can have positive impacts. An ethnographic study by Brewster and Cox (2019) used observation and interviews to explore the experiences of individuals committed to taking a 'photo-a-day' and sharing this on social media. The interaction with online communities enhanced well-being for some, however the process of photography itself, through creativity and being mindful of daily events was experienced as a form of self-care with the potential to enhance well-being. Chen et al. (2016) also explored the value of photography for promoting positive affect. Students were allocated to one of three daily photography conditions: (1) taking a smiling selfie, (2) taking a photo of something that makes them happy, (3) taking a photo that would make another person happy and sending it to them. Happiness increased across all conditions and interview data indicated that those taking photographs for their own affect reported becoming more reflective, while those taking photos to send to others found the connection with family and friends helped to relieve stress.

The mechanisms of therapeutic photography

There is evidence that photo-taking modulates attentional processes and memory accuracy (Henkel, 2014), increases experiential engagement (Diehl et al., 2016) and potentially provides a protective coping effect to mental health in traumatic environments (Feinstein et al., 2020; Ramirez et al., 2019). Different forms of photo-taking therefore appear to have different impacts on experience (Chen et al., 2016; Diehl et al., 2016; Henkel, 2014).

Documenting coping through photography may activate mental rehearsal of successful performance and focus on past success, both valuable behaviour change techniques (Michie et al., 2013) which may help individuals cope with challenges. Furthermore, a focus on achievements through coping may facilitate a mindset shift from a negative view of lockdown restrictions towards an awareness of potential benefits, with positive implications for well-being (Crum et al., 2013). In addition, purposeful reflection on difficult past events through journaling can help to reduce rumination with potential for both biological and psychological benefits (Pennebaker, 1995) and this may be facilitated through reflection on photography. A directional focus on challenges experienced may therefore facilitate in moment reflection, offering the opportunity for objective consideration and mindfulness

around the challenge at hand (Diehl et al., 2016; Nardini et al., 2019; Ramirez et al., 2019). There is a lack of research into the most effective approaches to photo-taking interventions, and how these might function to influence well-being. Therefore, an exploration of different types of photo-taking and their impacts on psychological well-being is needed to inform the direction of future photo-reflection interventions.

The present study

This project aims to explore the effectiveness of a pilot photo-taking reflection intervention for enhancing well-being and coping during the COVID-19 pandemic to identify whether a simple intervention of taking and reflecting on photographs during lockdown can influence coping and well-being. The comparison of different forms of photo-taking will establish whether coping and well-being impacts are dependent on the photograph taken. In addition, qualitative reflections on the photographs taken and the intervention experience will be used to explore the challenges and coping strategies used during COVID-19 lockdown and how the creative process of photography may impact on coping and well-being. This exploration will help to better understand the value of photography as a therapeutic tool during times of unprecedented stress.

Method

Design

This research employed an embedded mixed methods design (Creswell et al., 2003). Quantitative data were collected as part of a between-subjects experiment to pilot and evaluate the effectiveness of a photo-taking intervention. Qualitative data in the form of participant photographs, reflections and responses to open-ended questions were gathered using online surveys as part of the intervention process. Ethical approval for this research was granted by Staffordshire University Health Science and Wellbeing Ethics Committee.

Conditions

Participants were allocated to one of three conditions. In condition one participants were instructed to capture images of coping strategies used. In condition two participants were instructed to capture images of the challenges experienced. In condition three participants were instructed to capture general daily experiences. Condition three acted as an active control condition which did not explicitly encourage conscious consideration of whether an event being captured was a challenge to them or a method that they were employing as coping mechanism.

Procedure

Study advertisements were circulated using a range of social media platforms including Facebook, Instagram, and Twitter. Participants had to be 18 years old or over, able to read and write in English, live in the UK, and have access to a photography device. Interested participants followed a direct link to an information sheet and consent form via Qualtrics. All were entered into a prize draw to win shopping vouchers.

Following completion of consent and baseline surveys, instructions for each condition were randomised and automatically displayed via Qualtrics and sent via email. Qualtrics automatically alternated the conditions for each participant. Participants were instructed to spend seven days collecting photographs and after one week they selected between four and seven of these images to send to the research team. Instruction wording differed by group: "Over the next 7 days, we would like you to be mindful of things that you are *(doing to help you to cope at the moment/finding challenging at the moment/experiencing at the moment)*. We would like you to take photographs of anything that you are doing/ experiencing *(that is helping you to cope/that is challenging/in your current day-to-day life)*. Ideally, try to take at least one picture a day".

Reminders were sent to send the photographs after seven days in addition to a second Qualtrics link to complete the follow up survey. As part of this survey participants were asked to reflect on the images chosen. This photo-elicitation approach (Collier, 1957) is an established method of exploring lived experience, with the potential to empower individuals to lead discussions about their own perceptions and experiences (Burton et al., 2017; Mansfield & Burton, 2020). For each photograph participants responded to open-ended questions asking them to: describe the photograph, explain what was happening, explain why the image was chosen, explain what it represents in terms of their coping/challenges/experiences, explain how they felt when taking the photograph and now looking back, and explain why it is important to help us understand their experience. Open-ended questions were also used to assess participants reflections on the intervention process. Upon completion debrief information was provided via Qualtrics.

Recruitment took place from 6th May 2020–17 th June 2020 with data collection for the 1 week follow up continuing until 27th June 2020. When data collection began full lockdown was in place and there were 3816 COVID-19 cases diagnosed per day (UK Government, 2021). At the end of data collection there were 602 cases diagnosed per day and lifting of lockdown restrictions was due to commence (UK Government, 2021). Due to the lifting of restrictions on 4th July potentially impacting coping and well-being we did not recruit further participants after this date.

Measures

WHO-5 Well-being: The World Health Organisation well-being index (WHO-5) is a 5-item measure of general subjective psychological well-being scored on a 6-point Likert scale (World Health Organization, 1998). The measure has a unidimensional structure and has good construct validity in both younger and older populations (Topp et al., 2015). For this sample Cronbach's alpha was.74 at baseline and.87 at follow up.

The Warwick-Edinburgh Mental Well-being Scale (WEMWBS): The WEMWBS is a 14-item measure of emotional and functional well-being scored on a five-point Likert scale. The scale is psychometrically robust with good test-retest reliability (Tennant et al., 2007) and is responsive to change (Maheswaran et al., 2012). For this sample Cronbach's alpha was.88 at baseline and.92 at follow up.

Brief COPE: The Brief COPE (Carver, 1997) is a 28-item measure assessing 14 specific problem based coping strategies. Each item is rated on a 4-point scale from 'I haven't been doing this at all" to "I have been doing this a lot". The Brief COPE has been shown to demonstrate internal consistency across a range of samples (Cooper et al., 2008; Eisenberg et al., 2012). For this sample Cronbach's alpha was.82 at baseline and.80 at follow up.

Brief Resilience Scale (BRS): The brief resilience scale is a 6-item measure assessing the ability to cope with and recover from stress, scored on a five-point Likert scale (Smith et al., 2008). The scale has been shown to have a single factor structure (Smith et al., 2008) and good internal consistency in a range of samples (Smith et al., 2008; Windle et al., 2011). For this sample Cronbach's alpha was.90 at baseline and.90 at follow up.

Reflection Elicitation: The final survey questions explored participants' perceptions of taking part in the research and engaging with the photo-taking activity: "What impact did taking the photographs have on how you responded/felt to any particular circumstances?", "Did being asked to take pictures change anything about your day to day experiences, if so how?", "How did you find taking part in the research process?". Responses were used to group participants into those who engaged in reflection (N = 43) and those who did not (N = 30) comprised of those who reported; "no impact" (N = 25), "other" (N = 4) or a "negative impact" (N = 1).

Sample justification

Sample size was determined a priori based on the only two quantitative academic papers in this area (Diehl et al., 2016; Nardini et al., 2019) both completed studies using undergraduate student cohorts ranging from 160 to 230 participants. The effect size in these studies range from 0.38 to 0.5. G*Power calculations support that a sample size of 175 would result in a power of 0.8 for p < .05. This justification is appropriate for the qualitative element which is recommended to have 50 + participants for a large qualitative survey (Braun & Clarke, 2013).

Qualitative analysis

Each photograph and associated survey response were reviewed by AB and coded using inductive thematic analysis (Joffe & Yardley, 2004). The content depicted was reviewed alongside the descriptive accounts, and codes were created to capture the experience being represented. A semantic data-driven approach was taken assuming that the images and accounts were representative of the participants explicit meanings.

For photographs where the image was representative of an experience, rather than capturing the experience itself the narrative of the participant was prioritised to understand the experience being portrayed. For some examples the narrative was suggestive of the image representing several types of experience, for these AB made a judgement on which appeared the most prominent issue in the account.

AB then reviewed initial codes and clustered these into broader categories. Once completed for each condition categories were reviewed across the conditions and a final coding frame was created by comparing, contrasting, and merging similar category titles and producing a short definition for each category.

JE was blinded to the coding conducted by AB and employed the coding frame using a deductive approach. Coding agreement was assessed using Cohen's Kappa and percentage agreement (Challenges:.74, 76 %, Coping:.72, 75 %, Experiences:.60, 64 %) and achieved good to excellent agreement across all conditions (Robson, 1993). Where disagreement was identified both authors reviewed the image and account collaboratively to agree the final code allocation. For a small number of cases (Challenges: N = 5, Coping N = 8, Experiences N = 13) it was agreed that the image and account equally represented two categories within the coding frame and coded under both.

Statistical analysis

Quantitative data were analysed using IBM SPSS version 27 and an alpha level of.05 was considered significant. Baseline differences between the three groups were examined using one-way ANOVA. Where baseline differences were reported, change from baseline scores were analysed. Due to changes in COVID-19 restrictions over the time of the study the timepoint of participant enrolment (day 1 – day 42) was included as a covariate. To investigate the effect of group on each of the well-being measures, mixed 2 (timepoint: pre and post task) × 3 (photo task: coping/challenges/experience) × 2 (Reflection elicited: photo task elicited reflection/no reflection elicited) ANCOVA were employed. A mixed 3 (photo task: coping/challenges/experience) × 14 (Coping Subscales) × 2 (Reflection elicited: photo task elicited reflection/no reflection elicited) MANCOVA on change from baseline data was used to analyse Brief COPE subscale data.

Results

A total of 108 participants were recruited at baseline, 35 were allocated to the challenges group, 36 to the coping group, 37 to the experiences group. At follow up 11 (31 %) participants were lost from the challenges group, 13 (36 %) from the coping group, and 11 (30 %) from the experiences group (total attrition 32 %) depicted in the CONSORT flow diagram (Fig. 1). Most participants were recruited in the first 2
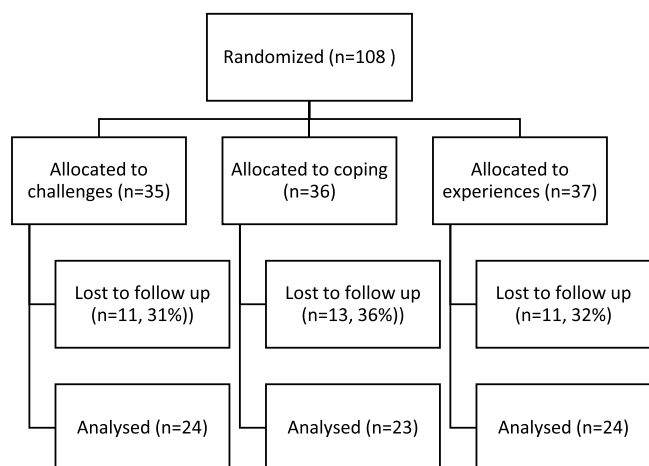
Fig. 1. Consort flow diagram.

weeks of data collection (week 1 n = 26, Week 2 n = 22, week 3 n = 8, week 4 n = 10, week 5 n = 3, week 6 n = 4). Demographic characteristics at baseline for each of the groups can be seen in Table 1. There were no significant between groups differences in any of the sample characteristics when analysed via one-way ANOVA and Chi Squared as appropriate. No significant baseline differences for any of the well-being and resilience measures were found in completing participants for the timepoint at which participants enrolled into the study.

Attrition analysis

Due to the high attrition rate, an attrition analysis was conducted. There was no difference in attrition rates across the intervention groups, age, gender, years in education or living situation. However, participants who did not complete the study had significantly lower well-being (WHO 5; $F_{(1,102)}$= 13.910, $p < .001$, $\eta_p^2 = .120$) and mental well-being (WEMBS; $F_{(1,)}$= 5.615, $p = .02$, $\eta_p^2 = .052$) at enrolment. There was no differential attrition between intervention conditions which would have posed a major threat to validity (Crutzen et al., 2015). See Table 2.

Perceptions of the intervention

For reference, data regarding changes in photo-taking behaviour are included in Table 1. No meaningful quantitative analysis could be conducted on this data due to violation of assumptions. Generally, participants reflected on the photograph taking exercise positively. Across the entire sample 43 participants (14, 61 % coping, 15, 63 % challenges, 14, 54 % experiences) expressed a statement that indicated the photo-taking exercise had encouraged them to reflect on their experiences. For example: "*It has made me think about all the people and things that are important to me and to dwell on these and appreciate them more. It also made me consider activities that make me happy.*", (Coping); "*I think taking a photo of otherwise normal things/activities made me take a step back and consider them more subjectively. (What am I doing? Why am I doing it? Why do I enjoy it? Why is it challenging at the moment?)*" (Challenges); "*Just gave me a reason to reflect more on my feelings, instead of ignoring them*" (Experiences). Only one participant, who was in the coping condition, highlighted that the exercise had a potentially negative impact as they

Table 1
Participant characteristics (M, SD/ Frequency, %).

	Challenges (n = 24)		Coping (n = 23)		Experience (n = 26)	
Age (years)	38.25	(15.81)	37.70	(17.01)	39.81	(14.69)
Gender						
Male	2	(2.7 %)	7	(9.6 %)	6	(8.2 %)
Female	20	(27.4 %)	16	(21.9 %)	20	(27.4 %)
Trans	1	(1.4 %)	0	(0 %)	0	(0 %)
Non-binary	1	(1.4 %)	0	(0 %)	0	(0 %)
Ethnicity						
White: British	21	(28.77 %)	17	(23.29 %)	22	(30.14 %)
White: Other	1	(1.37 %)	2	(2.74 %)	1	(1.37 %)
Mixed/Multiple ethnic groups: White and Black Caribbean	1	(1.37 %)	0	(0 %)	1	(1.37 %)
Mixed/Multiple ethnic groups: White and Black African	0	(0.00 %)	1	(1.37 %)	0	(0.00 %)
Mixed/Multiple ethnic groups: White and Asian	0	(0.00 %)	1	(1.37 %)	0	(0.00 %)
Asian/Asian British: Pakistani	1	(1.37 %)	1	(1.37 %)	0	(0.00 %)
Any other ethnic group	0	(0.00 %)	0	(0 %)	2	(2.74 %)
Preferred not to say	0	(0.00 %)	1	(1.37 %)	0	(0.00 %)
Highest Level of Education Completed						
School Leaver before 16 years	1	(1.37 %)	1	(1.37 %)	0	(0.00 %)
School leaver at 16 years (GCSE or equiv)	0	(0.00 %)	2	(2.74 %)	1	(1.37 %)
Further Education (A level or equivalent)	8	(10.96 %)	11	(15.07 %)	11	(15.07 %)
Higher Education (Degree or equivalent)	10	(13.70 %)	5	(6.85 %)	8	(10.96 %)
Post Graduate Education (MSc, PhD etc)	5	(6.85 %)	3	(4.12 %)	6	(8.22 %)
Preferred not to say	0	(0.00 %)	1	(1.37 %)	0	(0.00 %)
Living Arrangements						
Adults in household	2.42	(1.21)	2.61	(2.04)	1.92	(0.89)
Children in household	0.54	(0.78)	0.65	(0.88)	0.96	(1.00)
Photo-taking Behaviour						
No Change in photo-taking behaviour	9	(37.5 %)	10	(43.5 %)	16	(61.5 %)
Increased photo-taking	6	(25 %)	4	(17.4 %)	5	(19.2 %)
Change in type / purpose of photo-taking	8	(33.3 %)	6	(26.1 %)	3	(11.5 %)
Decreased photo-taking	0	(0.00 %)	0	(0.00 %)	0	(0.00 %)
Other/unclear	1	(4.2 %)	3	(13 %)	2	(7.7 %)
Impact of Photo-taking						
Engaged in Reflection	15	(62.5 %)	14	(60.9 %)	14	(53.8 %)
No Impact	8	(33.3 %)	6	(26.1 %)	11	(42.3 %)
Negative Impact	0	(0.00 %)	1	(4.3 %)	0	(0.00 %)
Other/unclear	1	(4.2 %)	2	(8.7 %)	1	(3.8 %)

felt reflecting on their photographs had "emphasised my separation from my family".

Experiences captured by participant photographs

A total of 416 photographs were submitted (Coping: 128, Challenges: 130, Experiences: 158). Examples are referred to in text with a theme title acronym and identifier number in brackets, these can be cross referenced to the data extracts in Table 3.

Coping strategies

Not all images and reflections submitted in the coping condition represented coping strategies, some captured other elements of the experience (e.g., an image of a workplace "*To show how my work life has changed*"). However, the majority represented five categories of coping: relaxation and self-care (33 %), hobbies and keeping busy (29 %), opportunities for quality family time (14 %), pets and companion animals (14 %), and maintaining social connections (10 %).

Relaxation and self-care: Relaxation and self-care were the most frequently discussed strategies within the coping group. Examples included exercise, spending time in nature and 'treats' such as ordering take away food (RSC1). This category was also found in the challenges and experiences groups. For the challenges group relaxation and self-care was often portrayed as a response to the challenging situation, and the majority depicted going for walks or exercising outside in nature (RSC2). In the experiences condition examples highlighted how relaxation and self-care was used to cope, for example one reflecting on an image of a woodland walk as allowing happiness in difficult circumstances (RSC3).

Hobbies and keeping busy: Participants in the coping condition enjoyed the opportunity provided by extra time at home during lockdown to engage in hobbies, some continued with old hobbies while others found new hobbies or skills to occupy their time. These activities helped participants to feel 'happy' and 'relaxed' and many expressed being 'proud' of their achievements. For example, reflecting on a photograph of her sewing machine and making masks for others one commented: "*I feel proud that I was able to do this for the people I care about and proud that I was able to remember how to sew!*" (HKB1). These activities provided a feeling of purpose during a time when other activities were curtailed. As with relaxation and self-care, participants in the challenges condition captured images representing hobbies and keeping busy as examples of how they overcame the challenges experienced (HKB2). Keeping busy also included house maintenance and voluntary work, for example one family had taken up litter picking in the local community (HKB3).

Maintaining social connections: For those in the coping group finding alternative ways to maintain social connections, such as through video chat services and, as lockdown eased, socially distanced visits were viewed as essential for coping with lockdown isolation. One participant explained how Zoom had enabled him to spend time with his friends in a way that was closer to 'real life' than text messaging (MSC1). Rather than illustrating social connection as a coping strategy the challenges group reflected on the difficulties of being separated from others and being forced to communicate virtually or at a distance. For example, one participant reflected on seeing a family member at a distance when meeting up in a park (MSC2). The experiences group captured similar images, several referring to virtual family quiz nights, one reflected on how this represented an increase in family contact and bonding (MSC3).

Opportunities for quality family time: The coping group highlighted how lockdown created extra time to spend with those in their household. This included quality time with children and partners within the household, opportunities viewed as a positive outcome of a challenging situation. For example, one participant reflected on the opportunity to spend more time walking with her partner (QFT1). The challenges group highlighted ways in which time with family still needed to go on 'as normal' despite the pandemic, in particular examples tended to illustrate the ability to spend more time with children (QFT2). Similarly, the experiences group captured the 'new normal' and the value of this for enhancing relationships within the household due to freedom to spend time together (QFT3).

Pets and companion animals: Pets or companion animals were mentioned often as a source of comfort, joy, distraction, and company during times of isolation. For the coping group animals represented coping through companionship in the absence of human contact (PCA1). The challenges group used images of animals to represent opportunities to cope, illustrations of the lack of human contact, and the potential impact of lockdown on the well-being of their pets (PCA2). The experiences group also highlighted the value of pets for comfort, coping and maintaining a sense of routine and normality (PCA3).

Challenges of the pandemic

Threats to mental health and well-being: The most frequently exemplified challenges recorded by the challenges group were illustrations of threats to mental health and well-being (37 images from 14 participants). Negative emotions discussed included anxiety, stress, sadness, frustration, loneliness, and anger. Events and situations that threatened mental health and well-being included anxiety about shopping, lack of sleep, disrupted routines, media reports about COVID-19, inability to engage in usual activities or hobbies, and separation from
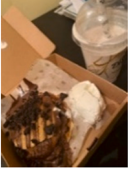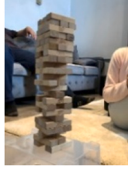
Table 2

Participant Baseline well-being and mental well-being characteristics (M, SD/ Frequency, %) and attrition rates of all participants that completed the baseline measures and were randomised to an intervention type.

	Challenges (n = 35)		Coping (n = 36)		Experience (n = 37)		Overall (n = 108)	
Attrition Rate	11/35	(31.43 %)	13/36	(36.11 %)	11/37	(29.73 %)	35/108	(32.41 %)
	Mean (SD)							
WHO-5[a]								
Non Completer	49.50	(15.73)	52.52	(16.15)	54.62	(17.56)	52.27	(16.44)
Completer	36.36	(16.53)	40.92	(18.55)	38.55	(24.35)	38.74	(19.49)
WEMBS[b]								
Non Completer	37.73	(11.43)	51.00	(19.38)	42.00	(13.94)	44.00	(16.15)
Completer	48.75	(20.34)	50.30	(17.40)	57.46	(17.51)	52.27	(18.61)
BRS								
Non Completer	3.32	(0.87)	3.44	(0.71)	3.24	(0.98)	3.34	(0.83)
Completer	3.08	(0.68)	3.20	(0.80)	3.31	(0.82)	3.20	(0.77)
BRIEF COPE OVERALL								
Non Completer	35.27	(12.54)	61.31	(7.32)	65.27	(8.11)	63.80	(9.40)
Completer	63.04	(10.65)	59.26	(10.46)	59.23	(9.47)	60.49	(10.20)

[a] p < .001.
[b] p < .05.

Table 3
Theme titles with example images and participant quotes.

Theme	Quote (identifier, group)*	Example Image
Relaxation and self-care (RSC)	It shows self-love and how treating yourself is deserved (RSC1, cop) I chose this photograph as I have attempted to exercise more often than I usually do during the lockdown (RSC2, cha) Enjoying our evening walks to bring a little happiness in difficult circumstances. **(RSC3, exp)**	
Hobbies and keeping busy (HKB)	Making masks is one way I feel I can help. With this virus I feel very out of control and unhelpful, but this is one way that I've been able to help keep my family and friends safe (HKB1, Cop) It shows that I have been attempting to make the use of my time being unemployed and "stuck" at home and turn it into something for my own benefit. I can cook a little bit but I'm not very confident in the kitchen and I usually stick to making the same things. I have been using this time to improve my skills and it has helped me to feel better about myself. (HKB2, cha) Me, (name) and (name) were provided with equipment to litter pick via a friend who got them from someone in the community. We cleared a whole area of litter behind the park…It was something that we would have not likely done under normal circumstances. It shows people finding purpose and being happy and useful **(HKB3, Exp)**	
Maintaining social connections (MSC)	The opportunity to properly catch up while seeing facial expressions, reactions and not just text was refreshing (MSC1, Cop) The two sides of the pandemic. The part of you that desperately wants to follow the rules for the safety of yourself and your family. Then the part of you who just wants to run up to relatives and hug them. It has been very hard for me to be around people and be unable to offer them hospitality or even sit down with them. I come from a close family and the terror of thinking I would never see my mother again was very hard **(MSC2, Cha)** We are coming closer together as a family. This is my partner's side of the family- who really, we only see at Christmas and weddings, however we are having weekly quizzes with bith(sic) my own and his family and we are really enjoying it. (MSC3, Exp)	
Opportunities for quality family time (QFT)	This represents the bonding time my husband and I have had since being locked own[sic] together. We take the dogs for a long walk everyday together. We have become closer because of this time together. We have also started working on our fitness together…Before lockdown, we would only take the dogs for walks on weekends or just one of us would walk them. Now we have the time to go as a family and just appreciate nature. (QFT1, Cop) It shows that life does carry on regardless of COVID-19. Also that it's still important to celebrate milestones, when we in a pandemic or not. Celebrating his birthday, masked what is still going on in the real world. (QFT2, Cha) It represents a new normal, more ways to pass the time, reverting back to traditional methods, instead of parents being at work all the time, now that they work at home, they have enough time to play games like this with myself and my siblings. **(QFT3, Exp)**	
Pets and companion animals (PCA)	Since the start of lockdown I have seen this lovely cat most days…The cat has given me something to play with during this time…Living on my own it it just nice to feel loved even if it is by a cat whose name you don't even know **(PCA1, Cop)** It's both a challenge and a comfort. Without my cats I would have found it much harder to be confined most of the day to the house and garden. The cats represent a very important part of my coping strategy (PCA2, Cha) It represents a bit of routine in the day as I have to get up for them and take care of them. And routine helps me cope throughout the day. If I feel sad I can go to the animals and it makes me relax (PCA3, Exp)	
Threats to mental health and well-being (TMW)	that has been the way I have had communicate over the last 8 weeks! I am a people person. I like to communicate face to face. I am not technologically minded and so struggle with the options that technology offers. Nothing beats talking to someone in the flesh, particularly at times of stress (TMW1, Cha) I have come to realise that I have been drinking too much during lock down […] It got to a point during the first couple of weeks where I was drinking almost daily, and my partner intervened told me that I need to take it easy. Life is not normal. Drinking daily is not (or was not) normal for me, but it started to become an unhealthy part of my 'new normal'. [Taking this photo I felt] Shocked, and a bit disgusted with myself. **(TMW2, Cha)** It represents the fact that I have been enjoying a glass of alcohol probably a little too much these last few weeks. It has been a topic of conversation and dark humour between my friends that we are all indulging a little too much […] I suppose it's another coping mechanism. (TMW3, Cop)	
Work and study (WAS)	I am in PPE during a shift at the doctors I work at. I chose this photograph because it shows the struggle of having to work in such an environment during these times. it depicts me doing my part to help save lives **(WAS1, Cha)** It represents the challenge of online learning (WAS2, Cha) Shows the challenge of picking up work after so long and meeting whilst abiding by government advice (WAS3, Cha)	
Childcare and home schooling (CHS)	Shows the challenge of picking up work after so long and meeting whilst abiding by government advice **(WAS3, Cha)** How much I appreciate school and teachers as I would never home school. It's really hard to get the children to do schoolwork in a home environment (CHS1, Cha) It shows that although we're in lockdown we can still keep on top of school work while learning new skills (CHS2, Exp)	

* Bold identifiers signify quotes linked to presented images.

Table 4
Mean and standard deviation for Well-being, Resilience and Coping scores pre- and post-photo intervention.

	Challenges (n = 24)		Coping (n = 23)		Experience (WHO 5, WEMBS & BRS n = 26 BRIEF COPE n = 24)	
	Pre	Post	Pre	Post	Pre	Post
WHO 5	49.50 (15.73)	52.00 (21.10)	52.52 (16.15)	58.61 (17.04)	54.27 (16.44)	63.85 (17.03)
WEMBS[a]	44.38 *(7.41)*	45.71 *(9.72)*	45.83 *(8.90)*	49.57 *(9.11)*	46.73 *(7.66)*	50.19 *(7.89)*
BRS	3.11 *(.90)*	3.15 *((0.65)*	3.20 *((0.72*	3.29 *((0.79*	3.02 *((0.85*	3.41 *((0.84*
BRIEF COPE						
Self-Distraction[b]	6.38 (1.31)	6.21 (1.50)	6.26 (1.48)	6.43 (1.20)	5.83 (1.63)	5.75 (1.92)
Active Coping	5.08 (1.44)	5.42 (1.84)	5.09 (1.98)	5.43 (1.78)	5.25 (1.07)	5.71 (1.73)
Denial	2.67 (1.34)	2.63 (1.41)	2.65 (1.23)	2.17 (0.49)	2.67 (1.24)	2.79 (0.98)
Substance Use	3.50 (1.72)	3.38 (1.84)	3.13 (1.46)	2.91 (1.56)	3.29 (1.65)	3.13 (1.45)
Emotional Support	5.75 (1.89)	5.08 (1.72)	5.13 (1.77)	5.22 (1.78)	4.83 (1.74)	4.92 (1.84)
Instrumental Support	3.83 (1.61)	3.75 (1.48)	3.43 (1.62)	3.91 (1.70)	4.00 (1.47)	4.54 (1.77)
Behavioural Disengagement	3.50 (1.74)	3.08 (1.44)	2.65 (1.19)	2.57 (0.90)	2.46 (0.98)	2.67 (1.01)
Venting	4.17 (1.66)	4.00 (1.35)	3.83 (1.30)	3.48 (1.20)	3.96 (1.40)	4.21 (1.77)
Positive Reframing	4.83 (1.61)	5.13 (1.70)	4.83 (1.92)	5.13 (1.84)	5.13 (1.45)	5.17 (1.71)
Planning[b]	4.79 (1.79)	4.67 (1.76)	4.96 (1.58)	5.04 (1.82)	4.88 (1.33)	5.17 (1.61)
Humour	4.58 (2.22)	4.46 (2.11)	4.43 (2.04)	4.26 (2.16)	4.83 (1.69)	4.92 (1.86)
Acceptance	6.83 (1.55)	6.79 (1.32)	6.43 (1.44)	6.91 (1.16)	6.25 (1.48)	6.79 (1.22)
Religion	3.33 (1.88)	3.13 (1.36)	3.09 (1.90)	3.04 (1.87)	2.54 (1.38)	2.54 (1.32)
Self Blame	3.79 (1.74)	3.58 (1.77)	3.35 (1.50)	3.09 (1.31)	2.08 (1.06)	3.04 (1.33)

[a] Significant main effect of time.
[b] Significant coping strategy × reflection triggered interaction.

friends and family members (TMW1). For some participants these threats alluded to the development of risky or unhealthy coping strategies including excessive alcohol intake raised in both the challenges (TMW2) and coping groups (TMW3).

Work and study: While some participants highlighted the challenges of being at home and furloughed, others illustrated the difficulties engaging with work during the pandemic. Some were frontline healthcare professionals or key workers dealing with COVID-19 daily (WAS1). Others struggled to manage academic study and adapt to new ways of learning or keep up with the pace of work while abiding by restrictions (WAS2/3).

Childcare and home-schooling: Childcare and home-schooling was recognised as a challenge for many of the parents within the sample. This was evidenced in both the challenges (CHS1) and experience conditions (CHS2). No participants in the coping group captured this experience, perhaps because individuals did not perceive these as activities to cope or struggled to identify coping strategies to help with these challenges.

The impact of the intervention types on well-being, resilience, and coping

Well-being and resilience: Emotional and functional well-being as measured by the WEMBS increased significantly from baseline to post intervention (main effect of time: $F(1,66) = 7.687) = p = [0.007 \eta_p^2 = .104$). There were no significant effects on resilience as measured by the BRS or general subjective well-being as measured by the WHO-5 (Table 4).

Coping: The MANCOVA revealed a significant coping strategy × reflection triggered interaction ($F(13,54 = 2.060, p = .033, \eta_p^2 = .332)$, see Fig. 2. Those who engaged in reflection as a result of photo-taking reported increased self-distraction coping (which is comprised of the statements; "I've been turning to work or other activities to take my mind off things" and "I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.") at follow up than at baseline (p = .005). Those who engaged in reflection also reported increased planning coping (which is comprised of the statements; "I've been trying to come up with a strategy about what to do" and "I've been thinking hard about what steps to take"), at follow up than at baseline (p = .007).

Discussion

This paper evaluated the effectiveness of a pilot photo-taking and reflection intervention for enhancing well-being and coping during the COVID-19 pandemic, and whether photography focussing on coping, challenges, or experiences, would have an impact on these effects. There were no significant differences across the photo-taking conditions suggesting that the type of photograph taken did not have an impact. There were improvements across the sample in relation to emotional and functional well-being which improved over time regardless of intervention type.

Participants engaged for one week only, with most enrolled into the study in the first 3 weeks of recruitment. Whilst we cannot state definitively that the well-being improvements were due to the intervention, there were no baseline differences in the measures dependent on when participants took part. In addition, the timepoint at which participants enrolled into the study was included in the analysis as a covariate, supporting the case for this effect being due to the intervention rather than changes in COVID-19 restrictions and case numbers over time. More conclusively, there was an increase in planning and self-distraction coping strategies over time in those participants for whom taking part triggered reflection.

The lack of significant changes in resilience may reflect the measure employed or the more stable nature of resilience being unlikely to shift dramatically over a short period. The BRS has also been criticised for an exclusive focus on personal agency (Windle et al., 2011). The process of taking images may have helped participants become more aware of external influences on the ability to cope such as social relationships and opportunities to engage in enjoyable activities, as highlighted in the qualitative data, rather than factors central to personal agency.

The improvements in functional and emotional well-being and coping over time may reflect the sample adjusting to the restrictions posed by the pandemic as time progressed. However, research has suggested that depression and anxiety levels increased (Rettie & Daniels, 2020; White & Van Der Boor, 2020), and mental health impacts are likely to continue to increase during the pandemic (Kumar & Nayar, 2020; Yao et al., 2020). Furthermore, these negative impacts on well-being have been shown to rise as lockdown progresses (Ozamiz-Etxebarria et al., 2020). Therefore, the intervention may have
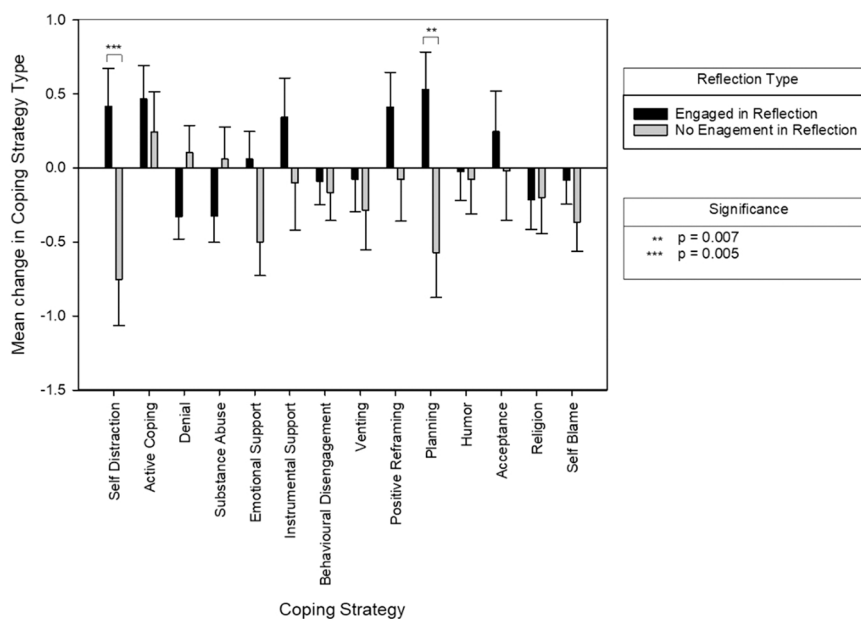
Fig. 2. Coping strategy × engagement in reflection interaction.

counteracted these negative impacts on well-being over time, regardless of the photograph type. This argument is supported by the qualitative data highlighting how engaging with the photo-reflection process had encouraged some participants to reflect on their experiences. Hence, the presence of changes in coping in those who consciously reported engaging in reflection when compared to those who did not suggests an intervention effect. These findings support previous research arguing for photo-taking resulting in well-being improvements (Brewster & Cox, 2019; Chen et al., 2016). Photography is proposed to have therapeutic benefits (Cosden & Reynolds, 1982; Weiser, 1990, 2004, 2014) and confirmation of this proposed effect could be achieved by repeating the study with the inclusion of a non-active control group.

For participants who reported that the intervention consciously elicited reflection there was a significant increase in the use of self-distraction and planning techniques over time. The specifics of how these techniques were employed was illustrated in the qualitative data with participants reporting engagement in distraction activities including relaxation and self-care, keeping busy and engaging in hobbies, finding new ways to be socially engaged with others, and the value of pets and companion animals. In some circumstances self-distraction may be viewed as maladaptive due to being perceived as an avoidant strategy, however when used in response to situations where individuals have limited personal control this approach can enhance well-being as an individual can gain control over the situation through their own actions (Hofmann & Hay, 2018). In the case of the COVID-19 pandemic this approach may reduce anxiety by distracting from the threat of ill health. Planning can include goal setting, action planning and prompts and cues all of which are important components of behaviour change interventions (Michie et al., 2013). It may be that the need to document activities through photographs acted as a prompt for some participants to plan enjoyable activities and carry these out.

Large numbers of the images related to engagement in physical activity, particularly out in natural environments. Government lockdown rules restricted the ability to leave the home unless for specific reasons, one of which was exercise (Prime Minister's Office, 2020) and some evidence has suggested a fall in physical activity during the pandemic (Rhodes et al., 2020). It is therefore reassuring that many participants were engaging in these activities. Though this data is unable to indicate whether the participants had increased or decreased physical activity when compared to prior to the pandemic. Time spent in natural outdoor environments is associated with, increased levels of physical activity,

increased social contact with neighbours and enhanced well-being (Kruize et al., 2020). Furthermore, spending time in green spaces has been illustrated to be beneficial for mental health and stress reduction (Triguero-Mas et al., 2017).

Participants also captured images reflecting their engagement with pets and companion animals. Engagement with animals can be beneficial for well-being, for example, pet ownership has been shown to act as a buffer against the negative psychological impacts of social losses such as bereavement or divorce (Carr et al., 2020), and dog acquisition (Powell et al., 2019) has been shown to reduce feelings of loneliness. Strategies to overcome isolation were also reported in relation to the use of internet mediated communication. These approaches helped participants to remain connected with wider social networks during the pandemic, some even commented that they were now more actively engaged with friends and family than they had been in the past. Perceived social support and number of social connections can be protective against the link between COVID-19 stressors and mental health and well-being (Nitschke et al., 2020; Szkody et al., 2020), and were reported as beneficial in this study.

In addition to positive coping, there were also coping strategies that raised cause for concern. Several participants reported the use of alcohol to cope which links to research indicating an increase in alcohol purchasing and consumption during the COVID-19 pandemic, particularly in individuals reporting high levels of stress (Callinan et al., 2021). In the UK, this increase in consumption is associated with depressive symptoms, poorer mental health, and reduced well-being (Jacob et al., 2021). Though research is largely conducted with adolescent and student samples, there is a known association between stress and alcohol consumption, particularly in individuals who have strong motivations to drink alcohol to cope with negative emotions (Corbin et al., 2013). The qualitative data illustrated concern about alcohol use, suggesting the opportunity to document through photography and reflect on this coping approach may enhance the ability of individuals to identify unhelpful coping strategies and therefore seek to change these behaviours. In a similar way to the effectiveness of self-monitoring of diet for weight loss (e.g. Wang et al., 2012), self-monitoring of experience and coping may also result in behaviour change and could be facilitated by photography. This is an area that warrants further investigation.

The photographs and qualitative data have also highlighted the types of challenges experienced during the COVID-19 pandemic. The most common included threats to health and well-being, engaging with work,

and for parents, engaging in childcare and home-schooling. These are all areas marked as research priorities for psychological science during the pandemic (Connor et al., 2020). The concerns of parents in our study echo research findings from around the world. For example, similar 'circuit-breaker' restrictions in Singapore, resulting in parents needing to juggle both work and childcare, have been shown to increase parental stress, in turn impacting on the child-parent bond and increases in the use of harsh parenting strategies (Chung et al., 2020). Similarly, in the US during early COVID-19 researchers found a link between caregiver burden and mental health and perceptions of child mental health with associated impacts on child-parent closeness and levels of conflict (Russell et al., 2020). However, our research has also highlighted approaches to coping with these stressors, including seeing value in the opportunities created for quality family time within the household. The cognitive appraisal theory of stress and coping (Lazarus & Folkman, 1984) highlights how stress responses are a dynamic interaction between an individual and their environment. Reflection on in the moment experiences, such as through photography, may have helped some participants appraise the situation positively through acknowledgement of benefits. This represents an adaptive response to the universal stressor of living through a pandemic with potential for enhancing well-being. This reflection and recognition of opportunities may be a valuable starting point to protect both parent and child well-being during times of intense stress and could be a valuable tool in therapeutic practice.

Limitations

While it seemed the intervention was effective, it is not possible to determine this conclusively due to the absence of a non-active control condition in this pilot study. In addition, sample size was relatively small and failed to meet our target of 175 participants due to lifting of lockdown restrictions forcing cessation of data collection at the end of June. Therefore, despite the evidence of reflection reported in the qualitative data and the use of time point enrolled in the study as a covariate, claims regarding the taking of photographs as influences on the outcome measures should be taken with caution. Further research including a non-active control are needed to verify these findings.

There are several factors which may underpin the high levels of attrition in this study. Online studies are more prone to higher levels of absolute attrition rates, as are technology assisted behaviour change research (Rosser et al., 2009). Health behaviour change (HBC) interventions also often elicit higher attrition rates, with the intervention demands being relatively onerous, in comparison to the perceived benefit (Crutzen et al., 2015). The higher attrition rate in those with lower well-being and mental well-being, suggests that this type of intervention may not be as beneficial to this population, with an online technology assisted self-guided intervention being potentially too onerous for their current state.

It should also be noted that all participants took part voluntarily knowing that photography would be required, it may be that the intervention effects are a result of the participants pre-existing interest in photography and desire to find ways to cope with the pandemic.

Qualitative analysis of the photographs taken illustrated similar images captured across the conditions, this lack of distinction between groups may be a function of the guidance given to participants. Further research instructing participants to take images of more specific types of experience may be of interest.

Conclusions

This research has highlighted the variety of challenges faced by individuals in the UK during the COVID-19 pandemic in relation to homelife, work, childcare and threats to health and well-being. The photographs collected highlighted several coping strategies including adaptive approaches such as keeping busy, relaxation and self-care, in addition to more risky activities including increased alcohol

consumption. Furthermore, this work has illustrated the potential for simple photo-reflection intervention approaches to improve well-being and enhance coping during these challenging circumstances through providing opportunity to review and reflect on life experiences. These findings are of value to therapists, illustrating how photo-taking can be an accessible and simple strategy for facilitating client well-being.

CRediT authorship contribution statement

Amy Burton: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Visualization, Writing – original draft, Writing – review & editing. **Jade Elliott:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Visualization, Writing – original draft, Writing – review & editing.

Conflict of interest

The authors declare no conflicts of interest.

Data Availability

Data will be made available on request.

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