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Assessing the engagement of participants at a pre-Christmas *son et lumiere* in Liverpool Cathedral: a study in the individual differences tradition

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ABSTRACT

Recent studies have drawn attention to the variety of events, installations, and activities within Anglican cathedrals that hold the capacity to attract wider publics into these iconic buildings where common ground and sacred space collide. In order to assess the engagement of participants at a pre-Christmas installation in Liverpool Cathedral, this project designed seven measures of engagement (styled as Christmas engagement, Cathedral engagement, Spiritual/religious engagement, Personal engagement, Imaginative engagement, Positive engagement, and Negative engagement). Data provided by 562 participants explored the effect of personal, educational, psychological, and religious factors on predicting levels of engagement across these seven measures. Two core findings were that the Luxmuralis installation, *The light before Christmas: The angels are coming* exerted its greatest impact on younger people and on those who did not attend church services. In this way, not only was the Cathedral extending its reach, but delivering an experience that enticed them to want to return.

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Introduction

In their report to the Association of English Cathedrals, *The economic and social impact of England's cathedrals*, ECORYS (2021) not only assessed the economic and social impact of cathedrals in their local communities, but also speculated that enhanced footfall recorded in recent years may be associated with the range of innovative events, exhibitions, and installations being hosted by cathedrals. In particular, the report drew attention to a couple of recent high profile and somewhat controversial installations: the Crazy Golf Bridges installed at Rochester Cathedral and the Helter-Skelter installed at Norwich Cathedral.

In order to map the extent to which the 43 cathedrals within the Church of England (including the Isle of Man) were actively engaged in promoting events, exhibitions, and

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installations with capacity to enhance footfall, McKenna, Francis, and Stewart (2022) undertook a systematic search of all 43 cathedral websites between January and March 2022 to identify reference to such activity between 2018 and 2022. The data thus generated were analysed within a conceptual framework drawing on Edward Bailey's (1997, 1998, 2002) theory of implicit religion. Two insights from this theory emerged as of particular relevance in framing the analyses.

First, the notion of implicit religion softens boundaries between the sacred and the secular, and this gives substance to one of the more evocative metaphors employed to describe Anglican cathedrals as 'sacred space and common ground' (see further Muskett, 2016, 2019). Events, exhibitions, and installations have the capacity to draw publics into the common ground and through the common ground to introduce them to sacred space. Within this first perspective, McKenna, Francis, and Stewart (2022) identified and exemplified eight categories of events: scientific exhibitions, festivals, musical events, art exhibitions, theatre, markets, community events, and installations. While few of the examples identified in the study rivalled the sensational appeal of the Helter Skelter or the Crazy Golf Bridges, many clearly held capacity to enhance footfall and to extend the reach of cathedrals into diverse publics.

Second, the notion of implicit religion draws attention to the themes and activities that generate meaning and purpose and that, by so doing, hold the capacity to direct and enhance human flourishing. Events, exhibitions, and installations not only have the capacity to draw publics into the common ground, but within the sacred space they have the capacity to offer experiences that may generate meaning and purpose and enhance human flourishing. Within this second perspective, McKenna, Francis, and Stewart (2022) identified and exemplified seven themes: social justice and social conscience, violence and reconciliation, remembrance, migration and sanctuary, COVID-19 and lockdowns, personal wellbeing, and nature and environment. Themes like these hold the capacity to stir the human heart, to anchor the human mind, and to promote engaged human flourishing.

While able to point to the potential importance and significance of events, exhibitions, and installations to enhance footfall within Anglican cathedrals, neither ECORYS (2021) nor McKenna, Francis, and Stewart (2022) had the brief and resources to assess the impact of such activities on those who crossed the threshold to engage with them.

Introducing an individual differences approach

The notion of systematic research into visitor motivation, expectations, and experience has been evident within Anglican cathedrals since the mid-1990s with diverse studies reported by Jackson and Hudman (1995), Winter and Gasson (1996), Williams (2007), Williams et al. (2007), Voase (2007), Gutic, Caie, and Clegg (2010), Hughes, Bond, and Balantyne (2013), and Francis, Annis, and Robbins (2015). While focusing on diverse aspects of visitor experience, some of these studies have introduced to the science of cathedral studies an individual differences approach, drawing mainly on sociological theories and perspectives, concerned for example with sex differences, age differences, and differences between churchgoers and non-churchgoers.

A second strand of systematic research concerned with visitor motivation, expectation, and experience within Anglican cathedrals has introduced an individual

differences approach drawing on psychological theories and perspectives. In particular psychographic segmentation theory, drawing on Jung's (1971) notion of psychological type as operationalised by the Francis Psychological Type Scales (Francis, 2005, Francis, Laycock, and Brewster, 2017), has been reported by Francis et al. (2008), Francis et al. (2010), Francis et al. (2012), Francis, Robbins, and Annis (2015), and Francis and Mansfield (2022). For example, in the most recent of these studies, Francis and Mansfield (2022) reported on the psychological type profile of 1,082 visitors to four cathedrals. Comparison with the population norms provided by Kendall (1998) demonstrated that extraverts and perceiving types were significantly underrepresented among cathedral visitors.

Drawing on this tradition of systematic research among cathedral visitors, two studies have specifically set out to explore the responses of visitors to an event, exhibition, or installation. In the first of these two studies, Francis et al. (2023) reported on the psychological type profile of 196 visitors to Brecon Cathedral during the period when this cathedral was actively engaged with the annual Brecon Jazz Festival. Comparison between the profile of these 196 visitors and the 1,082 visitors to four cathedrals reported by Francis and Mansfield (2022) found that in Brecon there were significantly more intuitive types (41% compared with 28%) and significantly more perceiving types (27% compared with 20%). These findings demonstrated that a specific type of event had the capacity to widen the psychographic appeal of cathedrals.

In the second of these two studies, Kirby, Francis, and Village (2023) reported on the demographic and religious profile of 283 visitors to the installation, *Space, the Universe and Everything* that was live in Liverpool Cathedral between 18 and 27 February 2022. This installation promised to take visitors back to the start of everything, whether conceived as creation or as the big bang. Here, the visitors were immersed in a cosmic constellation of stars, using thousands of beams of reflected light to convey the unimaginable number of stars in the universe. If the threshold of at least six attendances a year is an acceptable definition for a churchgoer (Francis and Richter, 2007, Richter and Francis, 1998), just under one-third of the participants in the survey would qualify as churchgoers (31%).

In an attempt to assess the personal impact of attending the installation, *Space, the Universe and Everything*, Kirby, Francis, and Village (2023) included in the survey a measure designed to reflect the conceptualisation of spiritual health or spiritual well-being advanced in a series of studies by Fisher (1998, 2004, 2010, 2011, 2016). According to Fisher, spiritual wellbeing is reflected in the quality of relationships that individuals have with the self (the personal domain), with other people (the communal domain), with the world around them (the environmental domain), and with a personal or impersonal transcendent other (the transcendental domain). In response to the prompt, 'Spending time in Liverpool Cathedral has helped me to', 69% reported that it had helped them to feel less stressed about themselves (personal domain), 59% reported that it had helped them to feel better about their relationships with other people (communal domain), 57% reported that it had helped them to connect better with the natural world (environmental domain), and 36% reported that it had helped them to connect better with God.

Research aim

While the study reported by Kirby, Francis, and Village (2023) provided an overview of the response of the 283 participants in their survey, they did not draw on the individual difference approach to interrogate their data further. It is against this background that the present study was designed to build on the work of Kirby, Francis, and Village (2023) by creating a different kind of survey to assess the engagement of participants at another event in Liverpool Cathedral, a pre-Christmas *son et lumiere*, and to employ the individual differences approach to this survey.

The *son et lumiere* installation, *The light before Christmas: The angels are coming*, was live in Liverpool Cathedral between 2 and 9 December 2022. This was a light and sound show created by Luxmuralis, drawing on the skills of sculptor Peter Walker and composer David Harper, designed as an immersive experience to embrace the iconic space of England's largest cathedral, constructed during the twentieth century and completed in 1978 (Kennerley, 2008, Thomas, 2018). Immersed within this installation, participants were guided through three phases of the light and sound extravaganza. Entering at the west end of the cathedral, phase one was stationed in the great well with projection focused on the majestic west window and wall. Here were sounds and images of secular Christmas celebration, including Santa's reindeer and sleigh floating across the night sky. Phase two drew participants into the main space with projection focused on the walls, the lofty ceiling, and the ornamental reredos behind the high altar. Here were flying angels and clocks ticking down to the holy nativity. Phase three channelled participants into the ambulatory and walkways hidden in the shadows around the cathedral and focused their attention on iconic images of the holy nativity, before releasing them back into the main space and offering personal engagement by lighting their own votive candle.

In order to employ the individual differences approach effectively in this study, we needed to consider and to design appropriate outcome measures and to determine the range of individual differences that we wished to explore against these outcome measures. In terms of outcome measures we needed to create a new set of measures designed to reflect the various aspects of engagement with the pre-Christmas *son et lumiere*. Conceptually, we wanted to distinguish among seven aspects of engagement that we termed: Engagement with Christmas, Engagement with the Cathedral, Spiritual/religious engagement, Personal engagement, Imaginative engagement, Positive engagement, and Negative engagement. Conceptually, the distinction between positive engagement and negative engagement reflects the classic model of balanced affect, as introduced by Bradburn (1969) and recently operationalised in The Index of Balanced Affect Change (TIBACH) proposed by Francis and Village (2021). This model of psychological wellbeing recognises that positive affect and negative affect are not opposite poles of the same continuum but reflect partially independent affect systems.

In terms of predictor variables, we were concerned to take into account personal factors (sex and age), educational level, religious background (assessed by frequency of church attendance), and personality as assessed by the Francis Psychological Type and Emotional Temperament Scales (FPTETS) proposed by Village and Francis (2023a, 2023b).

Method

Procedure

When people booked to attend the *son et lumiere*, they were invited to give assent to receiving from the team at Liverpool Cathedral a follow-up survey to assess their experience of the installation. On 7 February 2023, 3,862 emails were sent inviting participation in the online survey. All participants were 18 or over and gave their formal consent by clicking a box that gave access to the rest of the survey. By the end of March and after two reminder emails, 978 responses were received, making a participation rate of 25.6%.

Participants

Although a total of 978 people started the online survey, not everyone completed all the sections. For this analysis, 562 participants had completed all the necessary items (Table 1). These were largely women (80%), with a majority (61%) in their 50s or 60s. On the whole, these were not churchgoers, with 63% indicating they either never went to church (apart from weddings, baptisms, or funerals) or went less than six times a year. Around half (52%) had a bachelor's degree or higher university qualification. In terms of psychological type, there was a preponderance of preference for introversion over extraversion, sensing over intuition, feeling over thinking, and judging over perceiving.

Instruments

Scales assessing seven different types of engagement were developed from items in various parts of the questionnaire. Items were scored on five-point scales which varied from either 'strongly disagree' to 'strongly agree' or 'much less' to 'much more' depending on whether or not the item was asking about change as a result of attending the installation. Items were grouped initially on a conceptual basis to examine seven different aspects of how people might have engaged with the installation and how they might have reacted to it:

- (1) *Engagement with Christmas*. Since the installation was designed to draw on the Christmas story and wider images associated with Christmas, there were items in the survey that related to this particular theme.
- (2) *Engagement with the Cathedral*. Items related to this theme were designed to test how far attending the event might have encouraged participants to return to the Cathedral for other services or events.
- (3) *Spiritual/religious engagement*. Items related to this theme were designed to test the extent to which the event may have changed belief (in God, Jesus Christ or Angels), and whether it had helped participants feel closer to God or had moved them spiritually.
- (4) *Personal engagement*. Items related to this theme concerned ways in which the event may have drawn in participants and affected them. Some of the items were derived from the original publicity for the event (e.g. 'it invited families to enjoy the most wonderful time of the year' or 'It was a breath-taking experience').

Table 1. Profile of the sample.

	%
<i>Sex</i>	
Male	19.9
Female	80.1
<i>Age</i>	
18–29	0.5
30s	7.8
40s	16.5
50s	28.1
60s	32.7
70s	13.3
80s +	0.9
<i>Attendance</i>	
Never	33.3
At least once a year	29.2
At least six times a year	10.3
At least once a month	6.9
Nearly every week	13.3
More than once a week	6.9
<i>Education</i>	
No formal qualifications	2.1
School-level	17.1
Certificate/diploma	28.8
University (bachelor) degree	34.5
Masters degree	15.8
Doctorate	1.6
<i>Orientation</i>	
Extraversion	42.5
Introversion	57.5
<i>Perceiving</i>	
Sensing	76.9
Intuition	23.1
<i>Judging</i>	
Thinking	38.4
Feeling	61.6
<i>Attitude</i>	
Judging	87.9
Perceiving	12.1

N = 562.

- (5) *Imaginative engagement*. This theme focused a specific subset of personal engagement items that related to the idea that the event captured the imagination or raised questions for the participant.
- (6) *Positive engagement*. This theme drew on two sets of items, one looking at whether the event had changed general positive affect (e.g. creativity, excitement or happiness), and the other related to specific positive affect response to the event (e.g. ‘Warmed my heart’ or ‘Put me in a Christmassy mood’).
- (7) *Negative engagement*. This theme also drew on two different sets of items, one looking at whether the event had changed general negative affect (e.g. exhaustion, stress, fatigue), and the other related to specific negative affect response to the event (e.g. ‘Confused me’ or ‘Made me angry’).

The seven pools of items were then subjected to exploratory factor analyses to identify those that related most closely to the central construct.

Psychological type was assessed using the revised version of the Francis Psychological Type and Emotional Temperament Scales (FPTETS), which comprises the four components of psychological type theory and a measure of emotional temperament (Village and Francis, 2023a, 2023b). The scales assess preferences in five components: orientation (extraversion, E, versus introversion, I), perceiving (sensing, S, versus intuition, N), judging (thinking, T, versus feeling, F), attitude toward the outer world (judging, J, versus perceiving, P), and emotional temperament (calm, C, versus volatile, V). In each case, scores for the two preferences are complementary and sum to ten. Scores for introversion, intuition, feeling, judging and emotional volatility were used for these analyses. Alpha reliabilities were: I, .81; N, .68; F, .71; J, .76; and V, .81.

Other independent variables were sex (0 = male, 1 = female), age (by decade, 1 = 18–19, 2 = 20–29, to 8 = 80+), church attendance excluding occasional offices (1 = never to 6 = more than once a week), and highest education qualification (1 = no formal qualification to 6 = doctorate).

Analyses

The first step was to create summated rating scales for the seven different types of engagement. Each pool of items was subject to an exploratory factor analysis, where items not relating to the principal component were removed. Reliability of the resultant scales was tested using Cronbach's alpha (Cronbach, 1951). Scores for the selected items were summed to give a measure of the level of that particular type of engagement.

The second step of the analysis was to examine bivariate correlations. This was done for the dependent variables (the seven engagement scales), for the independent variables (sex, age, attendance, education, introversion, intuition, feeling, judging, and volatility), and then between the dependent variables and the independent variables.

The third step of the analysis used multiple regression to test the effects of each independent variable on the engagement scales after allowing for the effects of other independent variables.

Results

The items in each of the seven engagement scales are shown in Table 2 together with correlations between the individual items and the sum of the other items, the item endorsement (the percentage 'agreeing' or 'strongly agreeing', or percentage identifying 'more' or 'much more' change), and the alpha coefficient (Cronbach, 1951). These data demonstrate that each of the scales reported a satisfactory level of internal consistency reliability, with alpha coefficients ranging from .76 to .93. The majority of the item correlations confirm the homogeneity of these seven sets of items, with only one correlation falling below .50. The item endorsements display a good range of discrimination within each of the seven scales. It is sound, therefore, to proceed with exploring the individual differences associated with variance within these scales.

Scores for the seven types of engagement were, as might be expected, all significantly correlated with one another (Table 3), although the correlations were not so close as to suggest the different types of engagement were entirely equivalent to one another. In general, those that had a positive experience in terms of affect also tended to show higher levels of

Table 2. Details of the seven engagement scales.

	CITC	DA %	NC %	AG %
Christmas Engagement: Alpha .92				
It brought the nativity to life	.80	11	19	70
It brought extra sparkle to the city's Christmas	.65	3	5	92
It took me on an incredible journey through the nativity story	.85	14	21	64
The installation was inspired by the first Christmas	.74	7	28	65
It prepared the way for my own Christmas celebrations	.74	14	14	73
I lost myself in the wonderful story of Christmas	.85	17	20	63
It reminded me of the true meaning of Christmas	.85	16	19	65
Keeping Christmas as a RELIGIOUS festival*	.51	3	60	38
Attending church on Christmas Eve/Day*	.35	3	75	22
Cathedral Engagement: Alpha .83				
Attending a carol service in the Cathedral*	.59	2	50	49
Keeping in touch with the Cathedral*	.60	1	48	51
This event made me want to come back for the Carol Services	.71	13	20	67
I felt welcome and at home in the Cathedral	.55	3	4	94
It made me to want to come to other events in the Cathedral	.62	2	6	92
It made me to want to come to services in the Cathedral	.60	18	35	48
Spiritual/Religious Engagement: Alpha .76				
Belief in God*	.55	1	87	12
Belief in Jesus Christ*	.53	1	89	10
Belief in Angels*	.52	2	79	20
Moved me spiritually	.64	17	18	65
Helped me feel close to God	.69	27	28	45
Personal Engagement: Alpha .93				
It was a stunning display of lights	.76	2	3	94
It invited families to enjoy the most wonderful time of the year	.67	3	6	92
The music was beautiful	.78	5	11	84
It was a breath-taking experience	.82	8	8	85
Kept my interest throughout	.84	8	5	88
The music stirred my heart	.72	11	18	70
The images kept my attention	.79	5	6	88
Delighted my senses	.82	8	6	87
Imaginative Engagement: Alpha .87				
Fired my imagination	.69	9	20	70
Gave me food for thought	.76	12	31	56
Sparked ideas in my mind	.79	15	30	55
Made me curious	.63	20	36	44
Positive Engagement: Alpha .92				
Creative*	.64	5	50	46
Excited*	.76	4	27	69
Calm*	.56	13	26	61
Happy*	.81	3	15	82
Thankful*	.83	3	23	74
Hopeful*	.81	3	31	66
Confident*	.52	2	66	32
Inspired*	.76	3	36	60
Warmed my heart	.73	7	6	88
Put me in a Christmassy mood	.66	7	7	86
Negative Engagement: Alpha .91				
Exhausted*	.60	61	34	4
Anxious*	.77	71	24	4
Stressed*	.79	75	20	6
Fatigued*	.74	65	31	5
Frustrated*	.79	69	25	6
Confused me	.64	81	10	9
Left me feeling cold	.69	92	4	4
Bored me	.69	92	4	4
Made me angry	.60	96	4	1

N = 562.

CITC = Corrected item-total correlation.

Most items had a five-point scale with responses collapsed here into DA Disagree, NC Not Certain, and AG agree. *These items asked about *change* as a result of the event and equivalent responses are 'Less' (Disagree), 'Same' (Not certain), or 'More' ('Agree').

Table 3. Correlation matrix.

		1	2	3	4	5	6
1	Engagement with Christmas						
2	Engagement with the Cathedral	.67***					
3	Spiritual/Religious Engagement	.76***	.62***				
4	Personal engagement	.78***	.59***	.58***			
5	Imaginative Engagement	.68***	.58***	.62***	.72***		
6	Positive Engagement	.70***	.61***	.62***	.78***	.74***	
7	Negative Engagement	-.70***	-.59***	-.57***	-.80***	-.65***	-.82***

* $p < .05$, ** $p < .01$, *** $p < .001$.

engagement with Christmas or the cathedral, and were more likely to show positive change in religious belief and spirituality.

Some of the independent variables were correlated with one another in ways that might be expected in a cross-sectional study using a convenience sample (Table 4). Women, for example, showed greater preference for feeling than did men and were more likely to be emotionally volatile, which is in line with studies of other populations. Similarly, those who attended church more often tended to be older and less well educated. Psychological type scores were correlated among themselves: for example, those who were more introverted tended to score lower on intuition and feeling but higher on judging and volatility. These correlations suggested it would be worth controlling bivariate correlations to identify the independent effects of each predictor variable on the seven engagement scales.

The bivariate correlations showed two main sets of correlations (Table 5). The first set of correlations related to demographic or personal factors. Here there were no significant

Table 4. Correlation matrix for independent variables.

	1	2	3	4	5	6	7	8
Sex (female)								
Age group	-.19***							
Church attendance	.03	.15***						
Education	-.01	-.15***	.06					
Introversion	-.02	-.14**	-.16***	-.03				
Intuition	.01	-.13**	-.01	.27***	-.15**			
Feeling	.19***	.08	.10**	-.12**	-.13**	.19***		
Judging	-.01	.07	.06	-.01	.20***	-.47***	-.34***	
Volatility	.15***	-.27***	-.07	-.06	.18***	-.08	-.06	.11**

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 5. Bivariate correlations between engagement and independent variables.

	Engagement						
	Christmas <i>r</i>	Cathedral <i>r</i>	Spiritual <i>r</i>	Personal <i>r</i>	Imaginative <i>r</i>	Positive <i>r</i>	Negative <i>r</i>
Sex (female)	.06	.07	.07	.04	-.07	.04	-.02
Age group	-.08	-.09*	-.07	-.12**	-.10*	-.20***	.10*
Church attendance	-.03	-.10*	.10*	-.16***	-.14**	-.07	.14**
Education	-.13**	-.06	-.09*	-.05	.04	.00	.06
Introversion	-.04	-.12**	-.08	-.02	-.04	-.07	.02
Intuition	.03	.07	.08	.03	.14**	.12**	-.02
Feeling	.10*	.14**	.14**	.06	.01	.10*	-.08
Judging	-.05	-.08	-.04	-.04	-.11*	-.13**	.06
Volatility	.10*	.05	.06	.09*	.02	.06	-.04

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 6. Multiple regression of engagement scales.

	Engagement						
	Christmas β	Cathedral β	Spiritual β	Personal β	Imaginative β	Positive β	Negative β
Sex (female)	.01	.02	.02	.00	-.09	-.02	.02
Age group	-.09	-.09	-.10*	-.10*	-.09	-.20***	.10*
Church attendance	-.02	-.12**	.10*	-.15***	-.13**	-.06	.14**
Education	-.14**	-.06	-.12**	-.05	.01	-.03	.05
Introversion	-.06	-.14**	-.07	-.06	-.06	-.08	.05
Intuition	.04	.04	.10	.02	.10*	.06	.01
Feeling	.09	.13**	.12*	.07	.01	.09	-.09
Judging	.01	.02	.06	.01	-.04	-.04	.01
Volatility	.08	.04	.05	.06	.02	.04	-.02

* $p < .05$, ** $p < .01$, *** $p < .001$.

differences between men and women, but older people consistently recorded lower scores (and generally significantly so) than younger people, apart from negative engagement, when they recorded significantly higher scores. Similarly with attendance, it was those who attended church most often who were least likely to show positive engagement (especially cathedral, personal, and imaginative) and more likely to show negative engagement. Education had little effect, apart from reducing scores for Christmas and spiritual engagement. This suggests it was the younger, non-churchgoers who were most engaged with the event. The second set of correlations related to psychological variables. Here, there was little difference between introversion and extraversion, apart from cathedral engagement, where introversion predicted less engagement. Preference for intuition rather than sensing was associated with greater imaginative and positive engagement. Preference for feeling rather than thinking was associated especially with more 'religious' types of engagement (Christmas, cathedral, and spiritual), while those who preferred judging rather than perceiving showed lower imaginative or positive engagement. Those with higher volatility scores recorded slightly higher scores for Christmas and personal engagement. These correlations suggest that psychological dispositions may have had some role in shaping how people engaged with the event.

Testing the correlations using multiple regression identified which of the bivariate associations may have been due mainly to correlations among the independent variables (Table 6). The key finding remained: it was younger people and those who attended church less often who may have engaged more strongly with event than older people who were more used to churchgoing. In terms of psychological dispositions, the key associations that remained were that introverts were less likely to want to engage with the cathedral, intuitive types were more likely to engage imaginatively, and feeling types were more likely to engage with the cathedral and in spiritual/religious terms.

Discussion and conclusion

This study was designed to create a set of measures to capture different aspects of the engagement of participants at a pre-Christmas *son et lumiere* installation in Liverpool Cathedral and then to explore how individual differences in levels of engagement related to personal factors (sex and age), educational level, religious background (assessed by frequency of church attendance), and personality (conceptualised in terms of

psychological type and emotionality). Drawing on data provided by 562 participants at this installation, the presented analyses allow the following conclusions to be drawn.

Assessing overall engagement

Overall engagement was conceptualised and operationalised through seven separate scales concerned with Christmas engagement, Cathedral engagement, Spiritual/religious engagement, Personal engagement, Imaginative engagement, Positive engagement, and Negative engagement. Three main conclusions can be drawn about these seven new measures. First, each scale demonstrates good properties of internal consistency reliability, item homogeneity, and item discrimination (Table 2). Second, although all seven scales are intercorrelated, the levels of these correlations suggest that the different types of engagement were not entirely equivalent to one another (Table 3) and the construct validity of their partial independence is further supported by the diverse pattern of associations with the predictor variables (Table 5). On this basis, these scales can be commended for further use in this and other studies. Third, the item endorsements recorded within these scales can provide practical insights into the engagement of participants at the pre-Christmas *son et lumiere*. Attention will now be drawn to these insights.

The Scale of Christmas Engagement demonstrated that the majority of participants agreed that the installation brought extra sparkle to the city's Christmas (92%), that it prepared the way for their own Christmas celebrations (73%), and that it brought the nativity to life (70%). Nearly two-thirds reported that the installation reminded them of the true meaning of Christmas (65%) and that they lost themselves in the wonderful story of Christmas (63%). The engagement was lower, however, on enhancing intentions to keep Christmas as a religious festival (38%) or on adding encouragement to attend church on Christmas Eve/Day (22%). These results suggest that the installation was well placed to serve the expectations of the city.

The Scale of Cathedral Engagement demonstrated that the majority of participants agreed that they felt welcome and at home in the Cathedral (94%) and that this installation made them want to come back to other events in the Cathedral (92%). For two-thirds of the participants this installation made them want to come back for the Carol Services (67%), and for half it made them want to come to services in the Cathedral (48%). These results suggest that the installation was well placed to promote the core mission of the Cathedral within the city and display a Christian presence in this location (Seeley, 2019).

The Scale of Spiritual/Religious Engagement demonstrated that two-thirds of the participants were conscious of the spiritual impact of the installation (65% said that it moved them spiritually), and nearly half were conscious of the religious impact of the installation (45% said that it helped them to feel close to God). These results suggest that the installation was successful in blurring the boundaries between the secular and the sacred and successful in promoting the transition from common ground to sacred space as suggested by the theory of implicit religion (Bailey, 1997, 1998, 2002) and by Muskett's (2016, 2019) analysis of cathedral metaphors.

The Scale of Personal Engagement demonstrated the high level of appreciation for the installation: 94% of the participants agreed that it was a stunning display of lights and

85% that it was a breath-taking experience. Perhaps of even greater importance was the capacity of the installation to sustain personal engagement: 88% said that it kept their interest throughout. The installation delighted their senses (87%) and stirred their heart (70%). These results suggest that the installation was of personal benefit to the participants.

The Scale of Imaginative Engagement demonstrated a particular kind of engagement, the kind of engagement that sows seeds and nurtures future growth: 70% of the participants said that the installation fired their imagination, 56% said that it gave them food for thought, and 55% said that sparked ideas in their mind. These results suggest that the impact of the installation may have been more than superficial and not simply ephemeral.

The Scale of Positive Engagement, serving as an index of positive affect change, demonstrated that the installation contributed greatly to the personal wellbeing of the participants. Four-fifths of the participants went away feeling happier (82%), three-quarters went away feeling thankful (74%), two-thirds went away feeling more hopeful (66%), and three-fifths went away feeling calmer (61%). These results add to earlier research that has mapped the contribution of cathedral carol services to the positive psychological wellbeing of participants (Francis and Jones, 2020, Francis, Jones, and McKenna, 2021).

The Scale of Negative Engagement, serving as an index of negative affect change, demonstrated that the installation had a negative impact on a small minority of participants. Around one in twenty went away feeling more frustrated (6%), stressed (6%), fatigued (5%), exhausted (4%), or anxious (4%). The causes for such increase in negative affect have been illustrated by McKenna et al. ([in press](#)) in their analysis of the qualitative responses written into the same survey. For some participants, the challenges of the winter evening, the logistics of navigating the Cathedral, the crowds of participants, the volume of the music, and the speed and power of the light show all added to their stress.

Assessing individual differences

The individual differences taken into account in the present study were personal factors (sex and age), education, church attendance, and personality (introversion, intuition, feeling, judging, and volatility). These factors were not entirely independent ([Table 4](#)). For example, three sex differences and five age differences were highlighted. In terms of sex differences: women scored more highly on feeling (and thus lower on thinking), a difference also reflected in the wider population (Kendall, 1998); women also scored more highly on volatility (neuroticism), a difference also reflected in the wider population (Eysenck and Eysenck, 1991); female participants tended to be older than male participants. In terms of age differences, among older participants there were fewer introverts, and fewer intuitive types. Older participants tended to be less emotionally volatile, were more likely to attend church, and less likely to hold higher educational qualifications.

The results of multiple regression ([Table 6](#)) draw attention to the main predictors of individual differences in the seven engagement scales. These data lead to three main conclusions. First, age differences have emerged in the same direction across all seven

scales, although not all of them reached statistical significance. The clearest age effect was on the Scale of Positive Affect ($\beta = -.20$). This demonstrates that the greatest positive impact of the installation was experienced by younger people. Given the general challenge of churches to contact and influence younger people, this is an important indication that the installation had its greatest impact on generations least likely to enter churches.

Second, frequency of church attendance, alongside age, emerged as a key predictor of aspects of engagement. Non-churchgoers reported higher engagement with the Cathedral, higher personal engagement, higher imaginative engagement, and less negative engagement. Here is further evidence that the installation was speaking to people who were not churchgoing members of the Christian community.

Third, while personality did not generally play a significant part in shaping the measures of engagement, personality emerged as a significant predictor of individual differences in engagement with the Cathedral. Greater engagement with the Cathedral occurred among extraverts ($\beta = .14$) and among feeling types ($\beta = .13$). Of particular significance here is the association with a preference for feeling. This finding is consistent with a preference for feeling among Anglican church congregations (Francis, Robbins, and Craig, 2011) and among Anglican clergy (Francis et al. 2007). Given that Anglican churches tend to attract twice as many women as men (Francis and Lankshear, 2021) and that women are twice as likely as men to prefer feeling (Kendall, 1998), the preference for feeling may tend to inform the prevailing ambience of Anglicanism. The challenge facing Liverpool Cathedral is that of winning the minds of thinking types as much as the hearts of feeling types, or (put another way) the challenge is that of engaging the predominant evaluative preference of men as strongly as the predominant evaluative preference of women.

Limitations

Assessing responses in such a detailed way to events like this pre-Christmas *son et lumiere* requires that participants give some time and effort into completing a survey, which means they had to complete it online and some days or weeks after they had attended. Contact was with those who booked the tickets and who also agreed to allow the Cathedral to retain their contact details for research purposes. This means the sample was of a particular subset of the attendees and may not have fully reflected the views of everyone. Future surveys might get more representative samples by approaching people as they left and either interviewing on the spot with a short questionnaire or asking for permission to contact for a more detailed survey.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

Data are available from the corresponding author, L.J.F., upon reasonable request.

Ethical considerations

This study received approval from the Research Ethics Committee for the School of Humanities, Religion and Philosophy at York St John University (approval code: HUM-RS-AV-05-22-01). All participants had to affirm they were 18 or over and give their informed consent by clicking a box that gave access to the rest of the survey.

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