

ARTICLE

Measuring a Sense of Belonging at Museums and Cultural Centers

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Abstract Better understanding guests' sense of belonging can explain why some feel quite at home in museums while others would never consider visiting. To do so, we start by developing a model of belonging uniquely suited for museums and cultural institutions. Based on literature and expert interviews, it includes three elements of belonging: Inclusion, Place Belongingness and Context of the visit. This study presents an easy-to-use survey instrument designed to measure all aspects of the model. It adapts two previously published scales while introducing the Cultural Context Belonging Scale, newly developed for these settings. We tested it with 333 guests leaving a science museum and present results of a confirmatory factor analysis and criterion validation. The former showed the new scale consisted of two factors based on concepts of community and agency. Overall, community belongingness showed the most significant difference among guests' reported sense of overall belonging at the museum. Black or African American, Latinx and Asian guests thought of community more often related to their race and ethnic identity. In contrast, White guests thought of community in terms of a place or location.

INTRODUCTION

Museums¹ are not known as bastions of diversity. Historically, they have been designed by the few for the few. In recognition of this, many are driving to become more equitable and community-focused, with mixed levels of success. Museum research has begun to focus more on these issues and have uncovered some central tenets to existing inequities. Among them is the systemic social exclusion and “othering” of guests not part of the original power structures that built the western museum community.

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One of the pernicious symptoms of social exclusion is a feeling of not belonging to a place or experience. Having a sense of belonging is a fundamental need for human happiness and mental health (Maslow, 1958). Psychologists have studied it for decades and have proposed a myriad of clinical definitions for the term. But one core tenet that seems to run through them all is that a necessary (but not sufficient) aspect to belonging is to fit in. How you fit in, where you fit in, what you fit into. . . these are all key questions that differ according to the context of the discussion. In the center of it all is the individual and how they relate to the world outside of themselves (Hagerty et al., 1992). To explore personal and social exclusion is to explore belongingness.

But the responsibility to fit in does not reside with the guest. It is a marriage between guest and museum, which imposes a powerful influence of its own. With their missions embedded into an academic, artistic, political and cultural firmament, the institutions carry extensive societal capital, expectations and baggage. This manifests in the architecture, layout and messaging of the building along with the objects and programming within it. At the same time, guests bring with them an even larger and sophisticated context - their entire lives (Falk & Dierking, 1992, 2016). How these forces interact determines how a guest belongs (or not), and can teach us about how to build more inclusive programming, spaces and institutions.

Numerous instruments exist to measure belonging (see review by Malone et al., 2012). But we have not seen any that study belonging in museums or cultural institutions using scales and methods created for those spaces. It remains an elusive construct, despite being recognized as a barrier to bringing in estranged audiences (Bonnici, 2019; Daenekindt, 2019). Due to the unique experience of a museum visit and the personal impact museums can have on people (Smith, 2014), we believe a new instrument, with its roots in existing literature, is needed to measure belonging in museums.

Our main research question was “How can we measure a sense of belonging in museums and cultural centers?” and “How are guest perceptions of belonging related with the communities with whom they identify?” To answer those questions, we developed an easy-to-use survey instrument based on literature, expert interviews and multiple rounds of pilot testing. We then analyzed the data from the final round of testing to look for differences and relationships between various groups. Implications are presented about how museums and cultural institutions can use this tool to learn more about their guests.

LITERATURE REVIEW

Social Exclusion in Museums

Despite prevailing popular narratives that museums are for all, they have in general excluded people, historically and at present. Often, groups that are marginalized, disenfranchised and discriminated against find it “unthinkable” to visit museums (Dawson, 2014). Overly designed museum spaces can be seen as elitist and reflecting of existing power dynamics (DeWitt & Archer, 2017).

Large spaces, of the type often seen in museums, are often designed to make people feel small (Berger, 2005) and disoriented (Archer et al., 2016) as a way to impress a sense of power and/or awe. Staff can also give the impression that guests from marginalized populations do not belong by applying special rules to them (ex: closing an exhibit early or giving constant reminders to behave) (Archer, Dawson, Seakins, DeWitt et al., 2016; Bonnici, 2019). Those who do visit tend to come from more privileged backgrounds (DeWitt & Archer, 2017). All of these reasons, and more, can cause guests who are marginalized in society to feel “othered” and that the museum was not built for them (Archer, Dawson, Seakins, DeWitt, et al., 2016). While they may still have an enjoyable and educational experience, it is mainly due to an ability to accommodate – a skill developed through dealing with similar inequities throughout life (Tatum, 2017).

Museums have been touted as social inclusion agents for decades (Newman et al., 2005; Sandell, 1998). This stems from the belief that museums offer a neutral and safe space for everyone to visit with positive outcomes from the individual (e.g., enhanced self-esteem) to the society levels (e.g., promoting tolerance) (Sandell, 2003). And by existing outside of formal educational systems, they offer program flexibility and the opportunity for staff and guests to define, own and push the boundaries of the space beyond what would be allowed in government-supported systems with more rigid power dynamics (Garcia, 2012; Vallance, 2004). There have been moments where museums have lived up to these expectations (see an in-depth analysis of the “Talking Differences” exhibit at the Immigration Museum of Melbourne by Henry [2018]). But, by and large it is agreed that the museum community has generally failed (Eutopia, 2012; Feinstein & Meshoulam, 2014; Inclusion, 2012; Jung, 2014; Proulx, 2020), that museums are not neutral and never have been (Coffee, 2008; Fleming, 2016; Fraser et al., 2020; Wood, 2018), and they have their own idiosyncratic power dynamics that reflect and uphold white supremacy and traditional gender norms (Jung, 2015). Museums contribute to racism and must participate in racial healing as part of their role as “keepers of stories” (Jennings, 2015; p. 104). In writing about museum inclusivity, Pierre Bourdieu even engaged in victim-blaming when he said, “Only those who exclude themselves are ever excluded” (p. 37) (Bourdieu et al., 1991 cited by Daenekindt, 2019). Museums want to bring people in, but in reality, leave most people out.

Particularly within the past 5 years, more pointed conversations have emerged that focus specifically upon race and/or ethnicity (Maldonado & Nguyen, 2020). Heaton (2014) discusses how on a national level, museum attendees are largely white and affluent, despite shifting racial demographics in the US. Heaton attributes this disparity to people of color feeling unwelcome in museums as a result of “colorblind” policies and approaches to social inclusion. English (2015) echoes the notion that art museums have been predominantly white spaces in their staff, collections, and programs. English’s argument honors the feelings of exclusion that many people of color may feel in museums, while at the same time challenging the notion that there is an unsurmountable threshold keeping people of color out. Popular culture’s representations of museums have contributed to this conversation as well. Ragbir (2018a) cites the Black Panther movie and Beyoncé’s music video (Ragbir, 2018b) filmed in the Louvre as examples of people of color asserting their right to be in these spaces. Toolis (2018) explores the psychological pathways facilitated by participation in museums, as well as the methods of exclusion (and possibilities for enhancing inclusion) for local low-income guests and

guests of color. Results demonstrated that while museums can support place attachment and a sense of community, they also bring to light experiences of museum spaces as unfamiliar, expensive, white, elite, and constraining.

A Model of Belonging at Museums

Psychologists often define belongingness as how one fits in with a social situation. Hagerty et al. (1992) described it as “the experience of personal involvement in a system or environment so that persons feel themselves to be an integral part of that system or environment” (p. 173). Maslow (1958) identified it as the most fundamental psychological need of humanity (after the physical needs such as food and safety). However, beyond these philosophical definitions there is no general consensus as to what belonging means at the operational level (Mahar et al., 2013). Even in terms of temporal scope, to belong can involve a commitment to something for the long haul (Turner, 2017), a connection to a specific event (Allen, 2020) or the creation of “fluid or transitory” relationships (Mahar et al., 2013, p. 4). “Belonging is one of those terms that has a life of its own. It circulates widely in social and political discourse, as a noun or a verb, often without an object” (McLeod, 2018; p. 1).

Objects of belonging usually refer to what belonging is attached or influenced by. Although one does not want to focus too much on objects to the detriment of the subject or process of belonging (Fuchs et al., 2021), it is important to consider objects because they are influential over issues salient to belonging, such as identity (Bernardo & Palma-Oliveira, 2012). Objects can be physical (buildings, exhibitions, etc.) or experiential (interactive programming, performances, etc.). Thus, studying belonging in museums needs to include both objects and experiences. For example, at the museum included in this study there is a central area with a quotation about science and “man” embedded in stone that surrounds the space (Figure 1). The message of the quotation, and its symbolic engraving in stone, bestows a system of beliefs and values on the space which is among the first ones guests encounter when visiting. Likewise, programming often occurs in the space beneath the quotation. That programming also sends its own message, which often complicates or even challenges common interpretation of the quotation (ex: an interactive program about how science is for all, not just “man”).

Museums are unique places with special relationships with their guests and community. Guests come expecting to see something they have never seen before (Smith, 2014). The uniqueness of a museum experience is directly related to guest satisfaction (Del Chiappa et al., 2014). Museums are one of the few establishments where guests can experience both learning and enjoyment at the same time (Kim & Chan, 2009). It is a place where learning is nonlinear and involves personal choice so people can “find meaning and make connections” (Falk & Dierking, 2018, p. xi). Smith (2014) quotes a tourist who was comparing the impact of a museum visit with that of their friends and colleagues who instead spent the day shopping: “The exhibition took me to a place I’ve never been before. . . in five years [the others] will have forgotten this visit, but I will never forget it” (p. 16). Beyond the individual, museums can also be anchors of the community (Simmel, 2013), agents of



Figure 1. A quotation instills a sense of values and beliefs in a liminal museum space (in this case a central rotunda). Credit: Museum of Science and Industry, Chicago.

cultural change (Fraser & Wharton, 2007), social infrastructure to support belonging (Fortune, 2020) and serve “a unique role as beacons in their communities, social actors whose choices and statements are followed carefully by their publics” (Spitzer & Fraser, 2020, p. 5-6).

We needed to develop a model of belonging that takes into account the uniqueness of museums. The first step was to establish an operational definition of belonging. We conducted a review of the psychology, museum, and cultural institutional literature and interviewed ten museum professionals from various professional and personal backgrounds. They included senior staff in exhibits and education, more junior guest facing staff, evaluators, academic researchers in psychology and one museum executive director and head curator. Institutions included art and science museums of both small and large sizes.

Our resulting model is a hybrid of psychological and cultural concepts of belonging (Figure 2). At the center of the model are people and whether they feel included or excluded from the experience (hereafter: People Fit). Those feelings occur within and are impacted by their physical environment (hereafter: Place). That environment, in turn, exists within the context of the experience, which includes the greater community and the purpose of the visit (hereafter: Context). It can be thought of as a Who/Where/What model of belonging. *Who* are the people in the experience? *Where* is the space in which the experience is occurring? And *what* is the context for it? Similar to Bronfenbrenner’s (1979) ecological systems theory, this nested structure is not meant to compartmentalize since all the pieces interact with and influence each other. And there is no inherent judgment of importance based

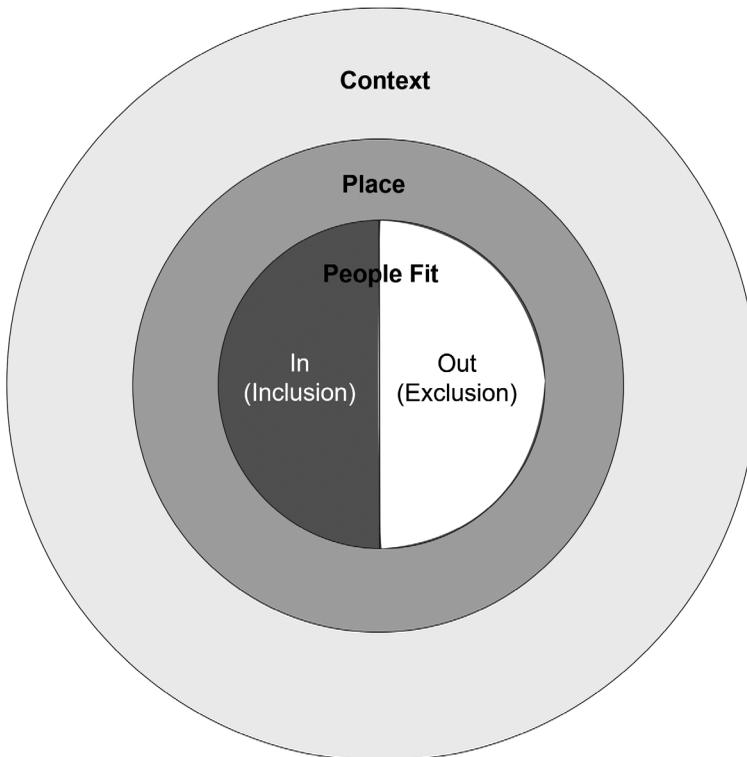


Figure 2. Our model of belonging at cultural institutions. Credit: Museum of Science and Industry, Chicago.

on centrality in the model. The spheres represent relationships, not importance. The Eckersley (2017) people-place-process model of belonging places equal emphasis on people and place. Our model substitutes process with context.

Context

Guests bring their entire lives with them to a museum visit (Falk & Dierking, 1992, 2016). Hence, the need to consider the context of the visit in a broader sense beyond social inclusion. An important part of a museum's community service is being welcoming (Crooke, 2006). But welcoming and inclusion is not enough (Turner & Zepeda, 2021). Dr. John A. Powell, the Director of the Other and Belonging Institute, wrote, "To belong is not just to be a citizen or member in the weakest sense, but to be able to participate in co-creating the thing you belong to. This makes it different than inclusion." (Powell, 2021).

To belong, people need to be respected and valued both for their community/collective identities and their personal identities (Strayhorn, 2012). These communal and personal identities with whom a guest identifies creates the context around the visit (Kelly, 2007). Community provides the structure of belonging (Block, 2018) while agency provides the power (Carver, 1997). Simon (2016) defines community as a group of people who feel a common sense of belonging or interpersonal connection. When designed well, museums can serve as social infrastructure to support belonging in the community (Fortune, 2020).

Place

Fitting in by itself is only one part of belonging. One can also include an attachment and connection to an environment or space. The psychology literature has different frameworks and terminology that relate to this, including place bonding (Hammit et al., 2006), place attachment (Ram et al., 2015) and place identity (Baldwin, 2012). Garibay and Gyllenhaal (2015) found increased bonds between specific environmental places and guests who has interacted with dioramas at natural history museums. Place can include the physical aspects of a space, but also consists of the social environment (Bennett, 2013) and its historic legacy (Bennett, 2014; Eckersley, 2017). It can also include temporal aspects when museum spaces are designed for ". . .the freezing, pausing, fast-forwarding and rewinding of time, all placed within a bounded space" (Eckersley, 2017; p. 26). Studies of architecture and design have shown how influential space can be on a sense of belonging (Alawadhi et al., 2011; Glusac, 2015; Shah, 2020; Yousefi et al., 2017), including museum architecture in particular (Bennett, 2007; Bourdieu et al., 1991; Jones & MacLeod, 2016). Most work focuses on large and heavily designed spaces, but small decisions can also influence belonging. For example, decor in a space can impact a sense of belonging in a phenomenon described as ambient belonging. In one study, all-female work teams and female computer science students showed increased feelings of belongingness

once wall posters and similar items reflecting stereotypical male interests (ex: science fiction) were removed from their workspaces (Cheryan et al., 2009).

People Fit

Belongingness is centered on creating positive, close attachments that create a sense of fitting in (Baumeister & Leary, 1995; Lambert et al., 2013). Feeling connected (Oyserman et al., 2006), welcomed (Antonsich, 2010), empowered (Itzhaky & York, 2000), and that one's presence is valued and needed (Hagerty & Patusky, 1995) are all aspects of fitting in. The welcoming aspect is particularly important for those who do not traditionally visit museums (Pickering, 2010). Missing any of those aspects can lead to feeling left out or excluded. However, one can also be actively excluded through promoting competitive individualism (Slee, 2019), enforcing group identities on others (Caxaj & Berman, 2010), cultural gatekeeping (Bissell, 2019), and so much more. Of course, many reasons for feeling included and excluded can exist simultaneously and interact with each other, forcing one to navigate and negotiate their presence in complex ways (Crisp, 2010).

A Thought Experiment

Imagine a guest visiting a museum. The guest has relationships with others in their group, other guests at the museum, and staff. Each of those relationships is very different and unique. But the impact of the relationships also interact (ex: they may feel comfortable with staff until another member of their group points out something different about them). Usually, for museums and performance centers, they are in a highly designed space that purposefully evoke emotions like awe and grandeur. Guests are also guided by personal memories of past visits and what they have heard/read from others. Their motivation is also part of the context. Are they there to learn about a specific topic? To give a tour to out-of-town guests? A part of a school field trip? On a romantic date? How guests are progressing in their goals and expectations of the visit also influences their feelings. Finally, the relationship between the institution and their community permeates everything. Before walking in, they already have an idea of what to expect – whether good or bad. And their community is carried with them throughout the visit. Together, all of these aspects influence a sense of belonging and informed the model we developed for this study.

STUDY BACKGROUND

This study takes place at a large urban science museum in the United States. The museum identified belongingness as an essential framework for the development of new exhibitions and experiences and needed a way to measure it. Through a search of the literature, we identified two previously published survey instruments that align with the People Fit and Place aspects of the model. For People Fit, we adopted the General Belonging Scale (GBS - Malone et al., 2012). The GBS consisted of 12

items belonging to two factors: Acceptance/Inclusion (hereafter: Inclusion) and Rejection/Exclusion (hereafter: Exclusion) and was developed to measure achieved belongingness, as distinct from the latent need to belong. It was psychometrically validated through multiple studies of college students and showed high reliability and validity. For Place, we used the Recreation Place Bonding Scale (RPBS - Hammitt et al., 2006). The RPBS is a 26-item scale with five factors, of which we adopted one – Place Belongingness, consisting of six items. They define place belongingness as “a feeling of affiliation with place, a social bond where people feel as though they are connected and hold ‘membership’ with an environment” (Hammitt et al., 2009, p. 61).

We could not find an existing scale that matched the Context element of the model. We knew from the literature that we needed to address community and personal agency. And from personal experience and through our ten expert interviews, we identified the need to also address identity and empowerment. We found many instruments related to belonging in the psychology literature but none of them included those aspects together. Also, we knew from our experience with science assessments, that there may be significant individual differences in how guests interpret words like “belonging” and “community”. Adopting a technique from Zacharia and Barton (2004), we added two constructed-response (CR, a.k.a. open-ended) items to allow guests to tell us how they define the words, which we later use to interpret the scale results. The two items were “What does the word belonging mean to you?” and “What community were you thinking about when you answered these questions?”, both asked after the scale items.

In Spring 2020 we conducted an online pilot study of a 13-item scale aligned with the Context part of the model with 237 previous guests of the museum (Price, 2020). Through exploratory factor analysis (EFA), we found the items best loaded onto two factors, which we labeled “Community” and “Agency”. The former constituted items related to how a person and their community related to the museum. The latter were items associated with a sense of agency, power and influence over their visit. To constrain the length of the survey, we removed five of the original 14 items that were performing similarly to other items. Then we added a new one to increase the number of items associated with the Agency factor. Due to ceiling effects in the pilot, we also slightly reworded two items about comfort to make them more challenging with which to agree (ex: “I felt comfortable...” became “I felt very comfortable...”). We chose a seven-point scale, because they show the optimal properties on most survey designs (Krosnick & Presser, 2010). We refer to the final scale as the Cultural Context Belonging Scale (CCBS – Table 1).

METHODS

This manuscript presents results from a confirmatory factor analysis (CFA) of the CCBS and an exploratory descriptive analysis of the entire survey instrument, including all three scales, the two CR items and demographics.

Table 1.
The final Cultural Context Belonging Scale (CCBS) and CFA factor loadings (N = 434)

Item keyword	Item description	Loadings
Community		
EQUAL	The museum promoted an equal experience for people like me	0.82
GUESTS	Museum guests reflected my community	0.75
CONTENT	Museum content reflected my community	0.78
GENDER	I felt very comfortable at the museum as a person of my gender	0.83
RACE	I felt very comfortable at the museum as a person of my race and/or ethnicity	0.83
MYSELF	I could be myself here	0.82
Agency		
OTHERS	I could help others have a better experience at the museum	0.62
BETTER	By being here I made the museum a better place	0.82
MATTER	My presence here mattered	0.85

We collected data in Fall 2020 by posting a QR code on signs near the museum’s exits during the last half of the day. Guests were offered an Amazon gift card as compensation. The Museum’s Institutional Review Board reviewed the study.

We included the three Likert scales as separate tables. The first table consisted of the GBS and was aligned to the Fitting In aspect of our model. The second table consisted of the Place Belongingness items from the RPBS and was aligned with the Place aspect of our model. The third table consisted of the CCBS, aligned with the Context aspect of our model. After that came the two CR items, and then demographic and background items about age, gender, race/ethnic identity, and the number of past visits to the museum. The complete instrument is available as Appendix S1.

Participants

Five hundred and thirty-three guests started the survey but only about 333 completed all sections. We think this is an artifact of giving the survey using QR codes (due to pandemic-related restrictions) instead of our standard method of in-person recruitment. The average age was 34. Guests self-identified as 58% female, 41% male, 1% nonbinary or other. They also identified as 60% White, 14% Latinx/Hispanic, 11% Asian, 8% Black or African American, and <1% each of American Indian/Alaskan Native, Middle Eastern/North African, Native Hawaiian/Other Pacific Island or other races. About 7% of guests chose more than one race. All of these demographics align generally well with our pre-pandemic data suggesting no demographic selection bias.

Analysis

Our analysis began with a CFA of the CCBS. Then for our exploratory descriptive analysis of the entire survey, we used the general linear model to look for relationships between the three scales,

differences between demographic groups and, finally, relationships between the scales and the CR item responses. We establish our significance level at $p = 0.05$ but report all p -values and do not limit our interpretation of findings to simple significance testing. Analysis was done with IBM SPSS Statistics 24 and the lavaan 0.6-7 package for R.

The Likert data was translated to a scale from 1 (Strongly Disagree) to 7 (Strongly Agree) and we computed means for each factor of each scale. CR items were coded through an emergent process. Two researchers coded subsets of responses concurrently, adjusting the rubric after each round. After two rounds, they reached an interrater reliability of 82% on the belonging question and 86% on the community question. Responses were then divided in half, with one researcher coding each half. Responses were coded into multiple categories when appropriate.

We ran separate ANOVAs with the factor means as the dependent variables and the categories as the independent variables to look for differences between groups. Finally, to look at relationships with background variables and also criterion validity for the CCBS, we computed the Pearson correlations between the factor means, age and number of prior visits.

A note about terminology: In this paper we refer to people visiting the museum as “guests” because that is the nomenclature used by the institution where data was collected. We recognize there is no consensus about how to refer to people who visit museums within the field and do not mean to imply any preference or motives in this choice.

RESULTS

Cultural Context Belonging Scale (CCBS) CFA

Informed by results of the pilot study, a 2-factor model was specified with items loading onto either a Community factor or an Agency factor. The model fit our sample ($N = 434$) well on three standard CFA model fit indices (Comparative fit index [CFI] = 0.94; Tucker-Lewis index [TLI] = 0.92; standardized root mean square residual [SRMR] = 0.048). The only test statistic that was not strong is the root mean square error of approximation (RMSEA), which was 0.11 while standard guidelines suggest anything >0.08 indicates an enhanced risk of a Type-II error (Hu & Bentler, 1999). Correlation between our 2 latent factors is indeed high (0.77) but a comparison between a 1- and 2-factor model using the Akaike information criteria (AIC) shows the 2-factor model was still a better fit ($AIC_{2\text{factor}} = 12,064$, $AIC_{1\text{factor}} = 12,213$). The reliability of the entire scale was $\alpha = 0.77$.

Responses to Belonging Scales

Means and descriptives for the factors in each scale are in Table 2. For the GBS, the Inclusion factor scored over twice as high as the Exclusion factor, indicating guests overall felt the experience

Table 2.
Pearson correlations (two-tailed) between belonging factor means and age, prior visits

		Age	Acceptance/ inclusion	Rejection/ exclusion	Place belongingness	Community	Agency
Past visits	<i>r</i>	0.047	0.110*	-0.049	0.160**	0.125*	0.157**
	<i>p</i>	0.372	0.036	0.349	0.002	0.017	0.003
	<i>N</i>	362	364	363	366	368	363
Age	<i>r</i>		-0.101	0.112*	-0.159**	-0.058	-0.008
	<i>p</i>		0.056	0.034	0.002	0.272	0.887
	<i>N</i>		359	358	361	363	358
Acceptance/ inclusion	<i>r</i>			-0.277**	0.674**	0.576**	0.569**
	<i>p</i>			<0.000	0.000	0.000	0.000
	<i>N</i>			391	381	383	379
Rejection/ exclusion	<i>r</i>				-0.233**	-0.298**	-0.196**
	<i>p</i>				0.000	0.000	0.000
	<i>N</i>				380	382	377
Place belongingness	<i>r</i>					0.682**	0.649**
	<i>p</i>					0.000	0.000
	<i>N</i>					395	390
Community	<i>r</i>						0.606**
	<i>p</i>						0.000
	<i>N</i>						407

Table 3.
Descriptives and reliability indices for factors in all belonging scales (ascending scale of 1-7)

	Factor	N	M	SD	α
General Belonging Scale	Acceptance/inclusion	393	4.94	1.33	0.87
	Rejection/exclusion	392	2.18	1.28	0.85
Recreation Place Belonging Scale	Place belongingness	411	5.48	1.30	0.94
Cultural Institution Belonging Scale	Community	412	5.80	1.12	0.76
	Agency	413	4.87	1.44	0.71

was much more inclusive than exclusive. The Place Belongingness factor from the RPBS was also high. The Community factor in the CCBS was the highest of all factors across all scales. It reflects guests reporting a positive sense of belonging for their community at the museum. The Agency factor was the lowest mean of them all but still above the midpoint of the scale. It is important to remember that the sample comes from guests who attended the museum, which will have a positive response bias. These numbers are more useful in comparing differences between the factors than to generalize.

We also found mostly medium and strong correlations between the means of the Community and Agency factors and those from the other scales - Inclusion, Exclusion and Place (Table 3). All were positive, except for the correlation with the Rejection/Exclusion factor mean, which was negative, as expected for a set of negatively worded items. All correlations were significant to *p*-values <0.001.

Table 4.
Factor means for gender and race/ethnicity

	N	GBS		RPBS	CIBS	
		Acceptance/ inclusion	Rejection/ exclusion	Place belongingness	Community	Agency
Gender						
Female	206	5.05 (1.27)	2.19 (1.36)	5.62 (1.24)*	5.95 (1.01)	4.91 (1.41)
Male	145	5.53 (1.21)	2.20 (1.17)	5.31 (1.32)*	5.69 (1.16)	4.49 (1.46)
Nonbinary	5	5.53 (1.21)	2.00 (1.57)	5.90 (1.23)*	5.9 (1.11)	5.33 (1.31)
Race/ethnicity						
White	213	4.96 (1.31)	2.10 (1.23)	5.54 (1.29)	5.93 (1.03)**	4.75 (1.42)
Latinx/hispanic	74	4.90 (1.34)	2.14 (1.22)	5.56 (1.24)	5.64 (1.22)	5.06 (1.43)
Asian	61	4.95 (1.31)	2.45 (1.43)	5.34 (1.39)	5.80 (1.12)	4.77 (1.54)
Black and African American	41	4.79 (1.42)	1.95 (1.00)	5.08 (1.40)*	5.74 (1.12)	4.81 (1.56)

There were few differences between genders and race/ethnicities (Table 4). On the Place Belongingness factor, female guests reported a higher mean score than male guests, $f(355) = 2.91$, $p = 0.05$, $\eta^2 = 0.02$. Female guests also reported a higher mean score on the Community factor over male guests, but it did not meet traditional levels of significance testing, $f(357) = 2.50$, $p = 0.08$, $\eta^2 = 0.01$. Nonbinary/Other response sample size was too small to analyze statistically, but the few responses we had averaged scores on the high end.

In terms of race/ethnicity, we found a couple of significant differences. Guests who identify as White reported higher levels of Community belongingness compared to others, $f(411) = 6.21$, $p = 0.01$, $\eta^2 = 0.02$. Black and African American guests reported lower levels of Place Belongingness, $f(410) = 4.36$, $p = 0.037$, $\eta^2 = 0.01$. Asian guests reported higher levels of Exclusion compared to others, a difference that approached traditional statistical significance, $f(391) = 3.10$, $p = 0.08$, $\eta^2 = 0.01$. This was almost exclusively due to one item (“I felt isolated from everyone else at the museum.”), $f(374) = 5.16$, $p = 0.02$. White guests also reported lower levels of Agency, a difference that also approached traditional statistical significance, $f(406) = 3.09$, $p = 0.08$, $\eta^2 = 0.01$.

Prior visits to the museum and age were consistently related to how guests responded to the belonging factors (Table 2). Prior visits were weakly, positively related to belonging scores on all factors except Exclusion. Age was weakly, negatively related to the Place Belonging factor, meaning that guests felt less connected to the space as age increased. Age was weakly, positively related to the Exclusion factor meaning as guests’ age increased they reported feeling more excluded.

Definitions of Belonging and Examples of Community

Guest definitions of “belonging” were groups into one or more of 8 categories (Table 5). The majority of responses described a feeling of being included and accepted. The next largest group

Table 5.
Categories of responses to “What does the word ‘belonging’ mean to you?”

Category	Description	Examples	Responses (N = 385)
Inclusive/Fitting In	A feeling of being included, accepted, welcomed, connected, together, part of a group, or fitting in	“To feel included”, “A part of something”	61%
Comfort or Safety	A feeling of comfort, safety, warmth, at ease, being able to be who you are without judgement	“Feeling safe”, “Feeling comfortable in a space”	17%
Community	Mention the word community	“A sense of community”, “A part of a community”	6%
Feeling Present	Feeling present or in the moment	“Feeling as if you are ‘in place’”, “Feeling present”	3%
Representation/ Similar Interests	Seeing yourself represented in a space or having a common bond or interest with the people around you. F	“Being together with a common bond”, “Being with like-minded people”	2%
Family or Friends	Mention being with family or friends	“Going to the museum with my family”, “Friends”	2%
Able to Do Activities Intended in Space	Able to enjoy or use a space as it has been intended	“Being able to find and understand the exhibits”, “Active participants. . .”	2%
Other	Anything that did not fit into the above categories or did not directly respond to the prompt	“Where I am from”, “Whatever the dictionary says”	2%

Note: Categories are not mutually exclusive.

involved definitions involving comfort or safety. After that, references to the community were the third most common group. The rest of the categories were all used by 3% or less of guests. About 2% of responses did not fit any of the other categories.

Some responses specifically referred to their current situation when thinking about belonging. Example responses include “belonging means having a sense of place, and feeling comfortable being in a space”, “just being at the museum”, “being present”, and “feeling like something would be lacking without presence.” There were also many responses that referred to specific spaces like museums. Some examples include “It means feeling safe in a space. . .”, “That I am welcome and valued, fit in a space. . .”, “A connection to the purpose of the visit”, “how to manage things easily in the exhibits. . .”, and “a place you feel comfortable”. The words “space” or “place” were used at least once in 32 responses to the question.

Guest definitions of “community” were grouped into one or more of 13 categories (Table 6). The most common response was to describe a place or a location (ex: “south side of Chicago”). The next common, but separated only by 1%, were references to race and ethnicity (ex: “South Asian”). References to family or a position within a family was the third most common response (ex: “suburban working mom”), followed closely by gender identity and sexual orientation (ex: “the LGBT community”). The rest of the categories were all used by 5% or less of guests. Many responses could not

Table 6.
Categories of responses to “What community were you thinking about when you answered these questions?”

Category	Examples	Responses (N = 410)
Place/location	“The community in which I live, where I reside”, “Chicagoans in general”, “Archer Heights”, “middle class, suburban”	32%
Race/ethnicity	“African American Community”, “Latina, female”, “Middle-age, white cisgender male”	31%
Family or position within a family	“A middle-class family with young children”, “Mom of a 5-year-old”, “Married with no children, middle class, mid 30’s couple”	11%
Gender identity/sexual orientation	“Black brown and queer”, “My gender, race, and the people I associate myself ‘with”	9%
Interests	“People living in the Chicago area with an interest” in science, technology”, “Humans interested in learning”	5%
Occupation/education	“Scientists/Medical professionals of color”, “Science teachers and students”	3%
Age	“Young adults”, “My community was that of a young high” school/college age”, “multiracial girl that is very interested in science”	3%
Socioeconomic status	“Suburban, middle class, mixed ethnicity”, “Working class”	1%
Friends	“Friends that I have made”, “Local communities, friends/family...”	1%
Religion/church	“Work and church community”, “Jewish orthodox”	<1%
Disability community	“Visual and hearing impaired”, “I’m white with a disability...”	<1%
Immigration and citizenship	“Asian Immigrants”, “American citizen”	<1%
Other	“Visitors from all over the world”, “very nice home”	21%

Note: Categories are not mutually exclusive.

be categorized because they were too broad or did not directly answer the question. There were large differences according to race/ethnicity (Figure 3).

We looked for relationships between the type of definition guests gave for “community” and the factor means. Analyzed separately through ANOVAs, we found no differences in the factor means between those who describe a Place/Location or Race/Ethnicity compared to those who did not. However, we did find that those who were thinking of Family or Position within a Family as their community did report scores of Place Belongingness that were 0.44 points higher than those who did not, $F(360) = 4.00, p = 0.046, \eta^2 = 0.01$. And those who gave definitions that could be placed in the Community group reported Place Belongingness scores that were 0.41 points higher than those who did not, $F(358) = 5.91, p = 0.03, \eta^2 = 0.01$.

Similarly, we looked for differences between guest definitions of “belonging” and their belonging scale responses. Guests who responded with a definition that could be categorized as Inclusive and Fitting In scored significantly higher than other guests on the Place Belongingness, Community and Agency factor means (Table 7). Guests who responded with a definition that could be categorized as representing Comfort or Safety scored significantly higher on the Acceptance/Inclusion and Community factor means (Table 8). Sample sizes were too small to test the other categories.

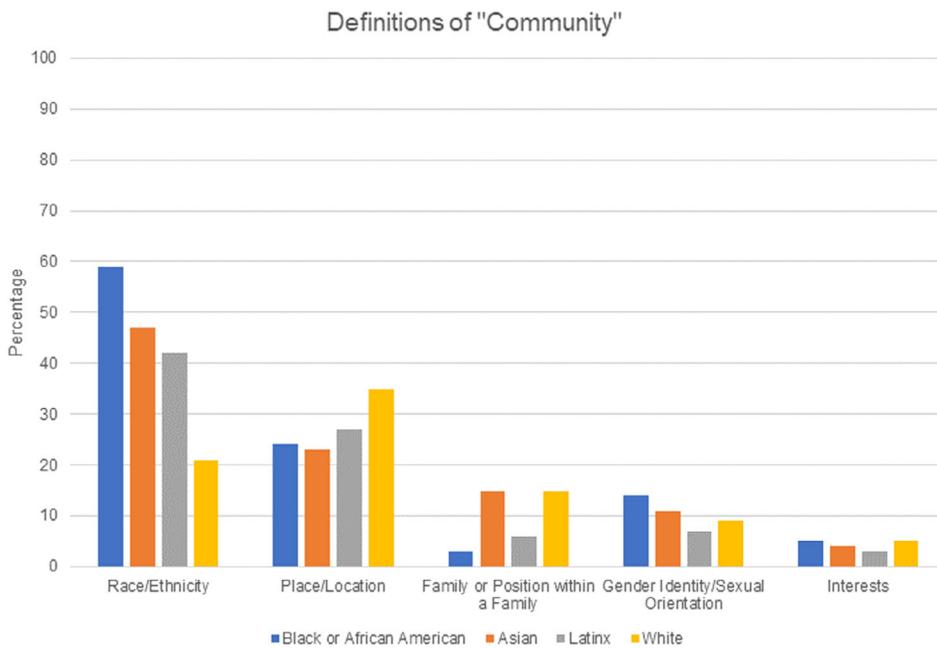


Figure 3. Top 5 categories of guests’ definitions of “community”. Credit: Museum of Science and Industry, Chicago.

Table 7. Guest belonging ANOVAs by whether they define “belonging” as Comfort or Safety

Scale	Factor	Comfort or safety	N	M	SD	F	df	p	η^2
General Belonging Scale	Acceptance/ inclusion	No	318	4.86	1.37	4.35	375	0.038*	0.01
		Yes	58	5.26	1.09				
	Rejection/ exclusion	No	316	2.22	1.29	2.28	374	0.132	0.01
		Yes	59	1.95	1.156				
Recreation Place Belonging Scale	Place belongingness	No	332	5.44	1.34	2.43	390	0.120	0.01
		Yes	59	5.72	1.09				
Cultural Institution Belonging Scale	Community	No	328	5.7327	1.13703	9.61	386	0.002**	0.02
		Yes	59	6.2153	0.86659				
	Agency	No	324	4.8251	1.44558	2.38	381	0.124	0.01
		Yes	58	5.1408	1.37925				

DISCUSSION

Our goal was to develop an easy-to-use instrument to measure a sense of belonging within the context of museums. Our instrument uses two scales adapted from the literature and introduces a third, new one (the CCBS). All of the scales together show good criterion concurrent validity, and each shows good reliability. When combined with the two constructed-response items, the

Table 8.
 Guest belonging ANOVAs by whether they define “belonging” as inclusive/fitting in

Scale	Factor	Inclusive/Fitting		N	M	SD	F	df	p	η^2
		In	Out							
General Belonging Scale	Acceptance/ inclusion	No		169	4.86	1.38	0.80	375	0.373	0.00
		Yes		207	4.98	1.30				
	Rejection/ exclusion	No		170	2.29	1.36	2.32	374	0.129	0.01
		Yes		205	2.08	1.19				
Recreation Place Belonging Scale	Place	No		185	5.32	1.34	5.20	390	0.023*	0.01
	belongingness	Yes		206	5.62	1.26				
Cultural Institution Belonging Scale	Community	No		180	5.68	1.19	4.45	386	0.036*	0.02
		Yes		207	5.92	1.03				
	Agency	No		177	4.68	1.52	6.21	381	0.013**	0.02
		Yes		205	5.04	1.35				

instrument was sensitive to sensible differences between groups. It showed no ceiling or floor effects, which are common in informal education settings where respondents tend to have strong positive feelings and opinions about such spaces.

People Fit

At the center of our model is how people fit in – measured through the two factors of Inclusion and Exclusion. We found no differences between any of our tested gender and race/ethnic groups on feelings of Inclusion. Everyone pretty much reported the same levels. Asian guests reported higher levels of Exclusion, which was associated with not seeing themselves among museum guests. We had a smaller sample size for Asian guests, which could mean that they were underrepresented among guests during our data collection period.

Place

Another part of our model was Place Belonging, which had the most group differences. Black/African American guests reported lower levels of place belongingness than other race/ethnic groups of guests. This supports other qualitative studies showing spaces designed for STEM activities (like science museums) are often “elitist, reflecting dominant group values and practices, and consequently experienced as ‘fish out of water’ by minoritized groups. . .” (DeWitt & Archer, 2017, p. 369). However, female guests reported more place belongingness. STEM education has historically been biased against the success and equal participation of female students. But at science museums, female guests consistently outnumber male guests (COVES, 2019), which could explain their higher scores on our instrument. It would be interesting to see if this result was different when measured in a STEM environment where female guests are typically not the majority, such as in maker spaces.

Context

The CCBS was developed to measure our model's Context aspect, an important part of cultural experiences that we felt was missing from the corpus of belonging instrumentation. We confirmed two factors for the CCBS – Community and Agency. The two factors are aligned with what others have identified as important aspects of cultural belonging. Valuing one's community, one's self and one's culture "is at the core of a cultural strategy for belonging" (Bissell, 2019, p. 9).

There are valid criticisms of describing belongingness as a critical part of a community, specifically that it centers the individual at the expense of the collective (Bettez, 2011). In our data, we find strong positive relationships between the agency and community factors. Hence, we believe agency is critical for community building, as long as it is not at the community's expense. Belongingness, as described through our model, is a way to support that balance since it involves both an internal (*who*) and external perspective (*where/what*) that interacts with and influences each other. Anything out of balance might challenge a sense of belonging. Yet, if the goal is to build a brand new equitable community, it is fair to consider how much emphasis should be placed on personal agency at the outset.

The CCBS' Community factor received the highest ratings across the entire instrument. But we found differences by gender and race/ethnicity. Audiences that are traditionally dominant in science museum spaces (white guests, female guests and families [COVES, 2019]) reported higher rates of feeling like they belonged to the community at the museum. They also reported thinking of community differently than the other guests. Guests who were Black or African American, Asian or Latinx were twice as likely to think of their community in terms of race/ethnicity than White guests, who tended to think about their location or place of being. When thinking about new audiences, museums and cultural institutions may want to think about broader definitions of community and realize that museum staff, who tend to be disproportionately white and/or female, may have different concepts of community than the audience with whom they are trying to partner. Community means more than "the other side of the city." By expanding that definition, museums and cultural centers can make design decisions that are more inclusive to how everyone thinks about community.

Feeling welcomed opens the door to belonging. But we have to go beyond expanding access and diversifying demographics to learn more about why museums exclude some people. "Understanding visitor motivations illuminates who is, and who isn't, coming through the doors, but these motivations do not necessarily address how *welcoming*, or not, the museum is to its diverse community" (Anderson & Mileham, 2020, p. 600 – emphasis ours). Museum guests fit into their identities in overlapping ways (Isselhardt & Cross, 2020). To learn more we need to look both broader and deeper. That is why our model includes measures of welcoming ("The museum was designed for me") but also exclusion (ex: "I felt like an outsider at the museum") and agency ("I could be myself here"). For example, we found that nonwhite guests showed lower levels of Community belongingness while similar levels of Inclusion as compared to white guests. In this data

and with these guests, nonwhite racial and ethnic guests felt like they had equal levels of inclusion and personal agency compared to white guests at the museum. But they also felt their communities were not as equally empowered. They felt *personally* welcomed, but not as members of their community.

Next Steps

This instrument is designed to measure what a guest is feeling and thinking about their presence at a particular place, a particular time and within a particular context. One of the goals of this instrument is to be useful to museums and institutions without staff expertise in research and analysis. But we must not overinterpret self-reported survey results as being the last word in measuring belonging among guests. A sense of belonging, like most deep experiential constructs, needs a deep qualitative investigation as well. We caution others not to solely rely on this instrument for “feel-good intentions and the promise of an inclusive cuddle” (McLeod, 2018, p. 1). The survey can help provide a basic understanding of what guests are generally reporting and look at differences among them. But belongingness is a fluid principle that ultimately requires multifaceted approaches if you really want to get into specific reasons why guests may feel a certain way. Taking cues from the fields of embodied cognition (Hubard, 2007; Moran, 2013; Vossoughi et al., 2020), participatory action research in the cultural sector (Goebel et al., 2020), and process evaluation for community participation (Butterfoss, 2006), researchers may want to look for signs of *embodied belonging* and how belonging can be seen and felt throughout an experience. The National Science Foundation has recently funded a study to look at moments of belonging as seen from the guest’s point of view during (as opposed to after) a science museum visit (Bequette & Nelson, 2020). Ours is one tool to be used in combination with others to provide a more nuanced and in-depth view into a sense of belonging among guests.

We do not want to suggest that supporting a positive sense of belonging among all guests should be a goal of museums. Sometimes feeling uncomfortable can be a sign of progress when designing culturally responsive exhibits (Garibay, 2017). As Jackson (2020) put it when referring to the power of museums to put guests in the footsteps of others, “Museums have a duty to bringing the stories into our consciousness by being brutally honest” (p. 318). Regarding collective identity, experiences that strengthen existing community connections can at the same time also build brand new linking identities that lead to a stronger sense of belonging (Zhuravlev, 2015).

Issues of social exclusion and belonging also vex other cultural fields such as community arts (Stickley, 2010), cultural festivals (Jaeger & Mykletun, 2013), dance (Gard, 2003; Ritchie & Gaultier, 2020), music (Daenekindt, 2019; Gonzales, 2017; Negus, 2002), and theater (Johnson, 2019; Lee & Finney, 2005). The People Fit and Place factors of our survey may be directly applicable to those settings. However, the Context factor may need to be tested and tweaked to address the specific circumstances of each situation.

We recently received IMLS funding to support a cross-cultural validation of the instrument, including groups who have never been to a museum before, and to create an age-appropriate version for youth (IMLS #MG-249150-OMS-21).

Limitations

We collected this data during a pandemic. Guests and staff both carried associated trauma and stressors throughout their experience, which was different from non-pandemic times. There was less staff interaction, more closed-off exhibit spaces and fewer guests. Those who felt comfortable visiting a museum at that time may have a stronger attachment to the museum or feel more confident in general. Thus, overall belonging scores may be higher in this study than what we will find post-pandemic. On the other hand, the closed down exhibits and background stress from the pandemic may have suppressed scores. We simply don't know and make no claims to generalization as of yet. Our sample is limited in size and in scope. One area where this prevented any real analysis is with guests who identify as non-binary. Recent studies have shown the suppression of alternative and queer identities are hiding important differences and disparities between groups (Eliason & Streed, 2017; West & McCabe, 2021) and we intend to increase that sample size in future work.

CONCLUSION

One of the most fundamental of needs, a sense of welcoming and belonging is a sign of a communal, introspective, satisfying museum experience (Pekarik et al., 1999). We built a model of belonging for use by museums based on psychological conceptions of belonging (fitting in, place belongingness) and also the cultural sphere (community and agency). We then assembled an instrument to measure aspects of the model among guests at those institutions. In addition to using two previously published scales, we added a new scale to measure a sense of belonging with regards to the context surrounding and permeating the guest experience. The scale showed good reliability and validity during testing, and in the process hinted at differences we may see among genders, race/ethnicities and age when used in a more formal research design. It is a tool for museums and cultural institutions to use for learning more about how guests fundamentally relate to their experience. As the field struggles with issues of social inclusion and exclusion, this can help bring much-needed data and perspectives to the discussion. **END**

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CONFLICTS OF INTEREST

We have no conflicts of interest to disclose.

NOTE

1. We adopt Gutwill (2016)'s definition of *museum* "as a shorthand for "all designed informal learning environments, such as art, history, natural history and science museums, as well as zoos, aquaria, botanical gardens and science centers" (p. 206).

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SUPPORTING INFORMATION

Additional supporting information can be found in the online version of this article:

Appendix S1. Survey instrument items.