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# Coming together after standing apart: What predicts felt safety in the post-coronavirus crowd?

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## ABSTRACT

**Rationale:** Over a year after the outbreak of SARS-CoV-2, and the ensuing COVID-19 pandemic with its lockdowns and social distancing requirements, being together with others again seems possible. Against this backdrop, important questions arise about how to safely manage gatherings of large numbers of unrelated people – like festivals, concerts and sporting matches – and how individuals contemplating involvement in such events feel about the risks presented.

**Methods:** To begin answering these questions, the current research surveyed would-be attendees at one of Europe's largest outdoor music festivals ( $n = 18353$ ). Drawing on social psychological theories of crowd behavior and risk perception, we explored the identity processes that contributed to individual feelings of safety within the planned event.

**Results:** The results show that shared identity with other festival goers and the perception of collectivistic (versus individualistic) values as defining of that festival, contributed to more trust in relevant others, stronger expectations that others would behave with safety rather than risk, and through these increased comfort with, and acceptance of the risks presented by, the planned festival.

**Conclusion:** These results highlight identity forces that might be leveraged for crowd management in the context of disease risk.

## 1. Introduction

More than a year after the pandemic outbreak, Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2: the virus causing COVID-19; more colloquially “coronavirus” or just “corona”) continues to impact daily life around the world. Still, with vaccinations progressing some countries are emerging on the other side of this pandemic. With this shift, policy discussions have turned to the questions of whether a complete return to “normal” is possible – and, if not, how the “new normal” might look?

Of the many areas where these questions might be applied, the future of mass gatherings has been a particular focus of debate. Mass gatherings – where large numbers of unrelated individuals come together for a specific time – are a mainstay of cultural life that encompass such varied events as political rallies and demonstrations, community gatherings, sports matches, concerts, and music festivals. In their latter forms, mass gatherings can be significant features of local economies, and the decision to cancel these in many jurisdictions has had knock-on consequences for local businesses, both small and large. Yet, mass gatherings

also seem risky. From a public health perspective, such events amplify opportunities for viral transmission, both among those present and through them into the wider community. Coupled with this are concerns about human behavior: After a year of standing apart, the joy of being together again might make participants at mass gatherings less restrained and less cautious in their behavior. Authorizing mass gatherings too soon could jeopardize the progress made in containing the virus, and as such the desire for cultural life to return to normal must be balanced against the consequences for public health.

In this context, a detailed understanding of behavior at mass gatherings in a post-corona world seems vital (Hopkins and Reicher, 2021; Templeton, 2021). The current research aimed to contribute to this understanding by exploring the perspective of attendees themselves. To this end, we surveyed those who would be present at one of Europe's largest music festivals, Roskilde Festival, which typically attracts approximately 130000 attendees (including ticket holders and festival volunteers). The festival was scheduled to take place in the summer of 2021 but was subsequently cancelled for a second year running. Our survey occurred before the cancellation was announced and at a time

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when organizers and fans were actively preparing for the planned festival. As such, the data from our survey provide a picture of how prospective festival attendees were thinking about their participation and the factors that influenced their calculations of risk. To anticipate those factors, our survey was informed by the contemporary literature on the social psychology of behavior in crowds and mass gatherings. We provide a brief summary of this literature before considering what it means for corona-related risk versus safety and how it informed our survey.

### 1.1. Crowd psychology and behavior at mass gatherings

Scientific understandings of behavior at mass gatherings have evolved substantially over time. Gustave Le Bon's (1895) influential early text "The Crowd", focused on the inherent dangers of people assembling in large numbers – theorizing that submergence in the crowd caused individuals to lose their sense of self; and that this state in turn caused them to become emotionally impulsive and susceptible to the influence of others. To Le Bon, the products of these psychological transformations were recklessness, violence, and the destruction of property. Although "The Crowd" was a theoretical rather than empirical work, early psychological studies of the effects of "deindividuation" seemed to confirm some of Le Bon's predictions (e.g., Diener et al., 1976; Zimbardo, 1969). Applied today, this perspective on crowd psychology would suggest that uninhibited and risky behavior are an inevitable consequence of people coming together in large numbers – and would caution against opening-up society for mass gatherings before the coronavirus is fully contained.

Le Bon's image of the crowd fits well with popular stereotypes of unregulated crowd behavior, and also still informs various contemporary approaches to crowd management (Drury, Novelli, & Stott, 2013a, 2013b). However, this analysis is both out-of-date and out-of-step with empirical evidence. Behavior under conditions that promote deindividuation, including anonymity and submergence in crowds, has since been found to be highly varied and encompassing both pro- and anti-social responses (Postmes and Spears, 1998). Accordingly, contemporary theories of crowd psychology have developed a more nuanced account of the consequences of people coming together in large numbers – and in so doing allow for the possibility that crowds can be both constructive and destructive influences on individual thought, feeling, and action. This perspective is embedded within a deeper theoretical understanding of group processes and how these regulate individual behavior, informed largely by social identity theory (Tajfel and Turner, 1979) and self-categorization theory (Turner et al., 1987; collectively known as the "social identity approach", Haslam et al., 2010).

The contemporary analysis starts with a recognition that not all collections of individuals constitute a crowd in the psychological sense: A large group of people waiting at bus station is not the same as the same number of fans travelling to a football game. Even though people in the latter situation might not know each other personally they are nonetheless connected by their shared identity and purpose, and they recognize and relate to each other in a way that is different from the former situation. The former situation is an aggregation of individuals, whereas the latter is a psychological crowd. Because crowds typically come together for a purpose, being part of the crowd is also typically an expression of one's identity and one's relationships with other people. Rather than being a place where identity is lost and social relations severed, as suggested by Le Bon, being part of a crowd entails a shift in the bases of self-understanding and social relations: In the crowd, a focus on the individual "I" and "me" (in comparison to "you") gives way to a focus on the collective "us" and "we" (in comparison to "them"). Recognizing that other people are part of "us" activates shared values and concerns, and creates expectations of reciprocity between individuals, within the boundaries that are understood to define the identity of the crowd (for a recent review see: Drury, 2020).

Attention to the broader context that surrounds crowd phenomena reveals that unruly "mobs" rarely appear from thin air. Instead, angry crowds (e.g., protesters, rioters) embody the shared frustrations that individuals experience as a result of who they are and the treatment they receive on that basis (Power, 2021; Reicher & Stott, 2011; Stott et al., 2018). To the extent that crowds do engage in violence and destruction, the targets of these actions are not random (Reicher, 1984, 1987). Anger and destruction are typically expressed towards those perceived to be responsible for the crowd's shared frustrations (e.g., political elites, outgroups: Stott and Reicher, 1998; Stott and Drury, 2000), whereas positive and mutually caring behavior are simultaneously directed towards fellow members of the crowd (i.e., ingroup members: Drury et al., 2015). Through this lens, although it may be dismissed as disorderly and unpredictable from the outside, crowd behavior is regulated by the shared interests that unite the crowd.

Of course, not all crowds are angry and crowds come together for purposes other than to protest shared grievances. Crowds can represent the celebration of life, community, shared beliefs and the joy of being together. Accordingly, empirical work has also highlighted the positive psychological experiences that flow from participation in mass gatherings. Because mass gatherings are expressions of things people share, participants often experience these as powerful affirmations of their social connections, and of their individual sense of self (e.g., Hopkins et al., 2016). The positive experience of being immersed in identity-affirming crowds carries across time and can persist long after the crowd has dissipated (Tewari et al., 2012). In these ways, collective participation is a meaningful human activity that energizes participants and can contribute to the health and wellbeing of individuals and the communities to which they are attached.

### 1.2. Crowd behavior and corona risk

Discussions of whether and how it is possible to organize mass gatherings safely in the context of the ongoing disease threat tend to focus on the environmental features that amplify or attenuate disease transmission. Events that provide good ventilation, more space, sanitation opportunities, fixed seating, and lower numbers of attendees reduce the density of the crowd, are considered safer because they limit the physical opportunities for viral transmission. But even under favorable environmental conditions, disease transmission is affected by the behavior of the individuals present: Where there is ample room, people still seek proximity; despite fixed seating, people might lean towards each other to verbally share their enjoyment as well as sharing food and drink. These behavioral issues raise a unique set of questions for event organizers in the current corona-affected world: How is it possible to simultaneously engage processes within the crowd that regulate individual behavior to minimize risk and disease spread, while also preserving the reasons why such crowds come together in the first place, namely the enjoyment of shared experience?

As elaborated above, being part of a crowd can feel good. But because crowd membership transforms self-other relations, it also alters how people feel about sharing space, food, and even their bodies with others who are also part of the crowd. Studies show that shared identity attenuates the need for personal space (Novelli et al., 2010) as well as the disgust people typically experience in response to strangers' bodies (Hult Khazaie and Khan, 2020; Reicher et al., 2016). Because of the expectation of reciprocity and trust in psychological crowds, individuals may also engage in higher levels of risk-taking as a way of expressing their communality with others and their trust in them; something that is again confirmed empirically (Cruwys et al., 2020; Cruwys et al., 2021a, b; Cruwys et al., 2021). Proximity, attenuated disgust, interpersonal trust and amplified risk-taking are all vectors for the spread of disease. As such, although being part of a crowd might *feel good* and be psychologically safe, it might not actually *be good* for individual or public health (Hopkins and Reicher, 2021).

Despite these risk-amplifying forces, crowd psychology can also be

leveraged to promote positive behavioral regulation within the crowd, and through this to increase the safety of mass gatherings. The identity-based transformations that occur in crowds are not all risk-oriented: Shared identity also heightens prosocial orientations to others in the crowd and creates the expectation that these orientations will be reciprocated. Moreover, specific group values and norms regulate the ways individuals enact their identity as part of the crowd. When group norms value risk-taking—as might be expected at a rock concert—crowd members will express their shared identity and trust in each other through risky behavior. But when group norms value restraint and quiet appreciation (as might be expected at a classical concert), crowd members are unlikely to express their shared identity through risk-taking. Although these examples seem obvious, they highlight how the shared understandings of the norms and values of the crowd shape the behavior of individuals in the crowd. These shared understandings can function as resources that facilitate mutual care and concern as well as safety behavior at mass gatherings (Drury, 2018; Drury et al., 2015). Effective crowd management begins with an understanding of the identity, norms and values of the crowd (Drury et al., 2021).

### 1.3. The current research

To gain some understanding of the psychology of people anticipating attendance at a mass gathering, and to examine the possible drivers of risk versus safety specified by models of crowd psychology, we surveyed ticket holders and volunteers for a planned (but subsequently cancelled) music festival. In line with the literature review above, our interest was in the role of identity-related processes in shaping how festival attendees were anticipating the festival, what they were expecting from others in that environment, and therefore how they were evaluating the risks involved. The identity-related processes we focus on are individual differences in identification with the crowd and the shared values that are perceived to define that crowd.

Consistent with Cruwys and colleagues social identity model of risk (e.g., Cruwys et al., 2021a), we expected that stronger identification with the festival crowd would be reflected in higher levels of trust to others connected to that crowd (festival organizers and other festival-goers), and that this heightened trust would be associated with reduced risk perception and therefore more comfort with attending the festival.

Following Drury's (2018) work on pro-social orientations within the crowd, we expected that stronger identification with the festival would also be associated with the ascription of more collectively-oriented (versus individualistic) values to the festival, and that this collectivistic orientation should be reflected in positive expectations about others' (and one's own) behavior within the crowd. Positive behavioral expectations should feed into feelings of safety and comfort with attending the planned festival (Alnabulsi & Dury, 2014; Alnabulsi et al., 2018).

In addition to expecting identity-based pathways via trust and positive behavioral expectations to perceptions of risk versus in the crowd, a more general reading of the social identity approach would suggest that any effects of group-based identification should be conditional on the specific norms and values that define the group (e.g., Hogg and Smith, 2007). Accordingly, our analyses also allowed for the possibility that our two identity process variables (identification and perceived crowd values) might interact when predicting the proposed trust, behavioral expectations, and their outcomes. Our theoretically-derived model is summarized in Fig. 1.

## 2. Method

### 2.1. Participants

Access to respondents was facilitated by the Roskilde Festival communication department. Although the festival is based in Denmark,

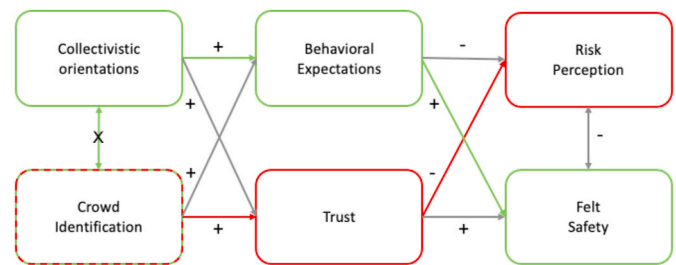


Fig. 1. Theoretically-derived model linking identity processes to perceived risk and felt safety in the crowd.

being one of the largest festivals on the European circuit it attracts an international audience and the survey was programmed using Qualtrics such that it could be taken in either Danish or English. A link to an online survey was distributed by the organization to registered e-mail addresses of ticket holders and volunteers at 9:00 on Thursday, March 18, 2021. The survey was closed for responses at 23:59 on Monday, 22 March, prior to a press briefing on 23 March that was anticipated to discuss the possible opening of festivals for the summer of 2021 (something that was not discussed at the press briefing; the decision to cancel festivals came on the 4 May).

Across the five days the survey was open, a total of 22732 people followed the link to access the survey, and 18497 completed the survey and submitted their answers. From these, we excluded people who indicated that they had bought the ticket for someone else ( $n = 131$ ), since these people had no plans to attend the festival. We retained those who had bought a ticket for themselves but afterward decided not to attend ( $n = 1115$ ), because we wanted to include the perspective of these would-be attendees. We also retained those who did not answer this question ( $n = 83$ ), on the assumption that these people may have been undecided on the issue of their attendance. Of the remaining sample, 17356 were ticket holders and 997 were volunteers. These numbers represent about 20% of those who were due to attend the festival at the point of surveying (and about 15% of the total attendance were the festival to go ahead). Characteristics of this sample are detailed in the supplementary file (Table S1).

The survey was conducted in accordance with APA ethical guidelines and ethical approval was given by the authors' institution (IP-IRB/26072021). The content of the survey was also reviewed and approved by Roskilde Festival before distribution.

### 2.2. Measures

After providing detailed information to respondents and obtaining their consent, the survey began with a series of questions eliciting background demographic information and plans for festival attendance (summarized in the supplementary file, Table S1). In the space below, we describe the measures that were relevant to testing the theoretical model outlined in the introduction. Complete copies of the survey in English and Danish can be accessed at [https://osf.io/vhzdg/?view\\_only=2232283a087e4479b52e5aef4426086f](https://osf.io/vhzdg/?view_only=2232283a087e4479b52e5aef4426086f).

#### 2.2.1. Identity predictors

Guided by the social identity approach, our survey assessed two key identity-related predictors. *Group defining values* were assessed by asking respondents to reflect the specific values they associate with the festival or that define its ethos. Although the importance of group-defining values (as well as norms) is repeatedly referenced in the social identity literature, a standardized measure of this construct does not exist. Accordingly, we adapted a common measure of personal values to the group context. In this measure, respondents were provided with a list of 9 broad values (presented in a randomized order) and were invited to drag into a box the values that they most strongly associated with the

festival. Our list of possible values was adapted from Schwartz's typology of universal human values (e.g., see Schwartz, 2012, for a recent overview). The model contains 10 values, but conformity and tradition are closely aligned and fall in the same space within the model. Given the context, we listed tradition rather than conformity, resulting in nine rather than ten options on our list. These values, how they are described by theory, and how they were adapted to the current list are summarized in Table 1. Basic values are said to collapse into 4 quadrants defined by two dimensions: self-enhancement in contrast to self-transcendence; openness to change in contrast to conservation. Because our current purpose was more general and motivated by a desire to differentiate collectivistic group-defining values from alternative individualistic orientations, we created a single index by subtracting the total number of collectivistic values (self-transcendence and conservation) from the total number of individualistic values (self-enhancement and openness to change) selected by the participant. Scores on this measure indicate the degree to which the festival was associated with relatively more individualistic than collectivistic values. Some participants selected none of the listed values ( $n = 1066$ ) and these people received a score of zero reflecting the assumption that they did not associate the festival with any particular set of values.

Our second identity-related predictor was individual differences in *identification*. Participants were asked how they think about themselves concerning the festival and the other people who would be present and then answer 4 items taken from Leach and colleagues' (2008) multidimensional model of identification. Two items were from the self-definition subscale: "I feel like I have a lot in common with the average Roskilde Festival-goer", "Roskilde Festival-goers have a lot in common with each other". A further two items were from the self-investment subscale: "I feel a strong sense of connection to Roskilde Festival", "Going to Roskilde Festival is an important part of my identity". Items were presented in random order and responses were given on a 5-point scale ranging from 1 = *Strongly disagree* to 5 = *Strongly agree*. These items were averaged to form a single index of identification ( $\alpha = 0.75$ ).

Here we also included two items capturing generic trust in others at the festival: "Even if I don't know them, I feel like I can trust other people who attend Roskilde Festival", "I know I could rely on other people at Roskilde Festival to help me if I needed it". Reflecting the expected association between identification and trust, these items were indistinguishable in a factor analysis, which produced a single factor explaining 50.93% of variance. We decided to exclude these items (1) to

retain the conceptual independence of identification and subsequent trust measures, and (2) because subsequent trust measures were more focussed on the corona context rather than capturing more generic feelings (and these more specific items did separate from identification in a factor analysis).

### 2.2.2. Mediating processes

Within a block of questions documenting corona experiences and perceptions, the proposed mediator of *trust* was measured with the question: "How much do you trust each of the following groups to make the best decisions to protect the public from unnecessary health risks?" This prompt was followed by a list of targets: Parliament, local municipalities, scientists and doctors, other members of the Danish public, people who go to concerts and festivals, the organizers of Roskilde Festival. Respondents rated each target on a 5-point scale ranging from 1 = *Not at all* to 5 = *A great deal*. Our primary interest was trust in others connected to the festival, namely organizers and fans, but we also discuss relative trust in other agents in the results below.

The second proposed mediator, *behavioral expectations*, was assessed by asking respondents to imagine how other people would behave after they had gained entry to the planned festival. They were presented with a list of possible behaviors and asked to rate how likely it was that other people would engage in each behavior at the up-coming festival (1 = *Extremely unlikely* to 5 = *Extremely likely*). The list (presented in a random order) included behaviors that reflect safety (wear masks, wash hands, keep distance from strangers), those that might reflect calculated risks (hug friends, kiss friends), and those that might be considered more risky (share drinks/food, share spliffs/drugs, mosh/dance in a crowd, hug strangers, kiss strangers, engage in casual sex). Factor analysis produced two factors together explaining 55.96% of variance. Factor loadings suggested a distinction between the safety items (all loadings  $>0.71$ ) and all remaining risky items (i.e., regardless of whether friends or strangers were involved; all loadings  $>0.66$ ; there were no cross loadings). Accordingly, we created two indices of expected safety behavior from others ( $\alpha = 0.66$ ) and expected risky behavior from others ( $\alpha = 0.88$ ).

On the next page, respondents were presented with the same list of behaviours, but were now asked to rate the likelihood that they themselves would behave in each way at the planned festival. An initial factor analysis suggested 3 factors which together explained 61.42% of variance. Safety items again factored together (all loadings  $>0.67$ ), but items pertaining to hugging friends, kissing friends, sharing food and drink and moshing loaded together (all loadings  $>0.55$ ) and separately from the remaining risk items (all loadings  $>0.51$ ). There was some evidence of split loadings across the latter two factors (especially the items kissing friends and hugging strangers). A second analysis was constrained to extract only two factors. In this analysis, all safety items loaded on one factor (loadings  $>0.53$ ) and all risk items loaded on the other factor (loadings  $>0.43$ ), with no split loadings. To maintain consistency with the measures of expected behavior of others, we created two indices of expected safety ( $\alpha = 0.58$ ) and expected risk ( $\alpha = 0.85$ ) for the self.

### 2.2.3. Outcome variables

As outcomes we assessed both felt safety at the planned festival and global assessments of risk. To assess *felt safety*, respondents were presented with information about the planned festival and how corona-related risks would be managed (information that had not previously been released to the public). The summary emphasized the plan to conduct the festival in ways that would be "as close to the traditional 'Roskilde experience', but that also allows people to make choices to manage their own risk in ways that are comfortable to them." The only specific corona-related restriction that was outlined applied to the point of entry: Ticket holders and volunteers would need to produce a valid documentation to establish that they were not currently infected (e.g., a negative PCA test) or had immunity (e.g., via vaccination or recent

**Table 1**  
Adaptation of Schwartz values to the festival context.

Schwartz Value	Our Adaptation	Schwartz Dimension	Our designation
Self-direction	<i>Freedom of thought and action</i>	Openness to change	Individualistic
Stimulation	<i>Excitement, variety, &amp; discovering new things</i>	Openness to change	Individualistic
Hedonism	<i>Pleasure, fun, &amp; good times</i>	Openness to change/ Self-enhancement	Individualistic
Achievement	<i>Being recognized by others/gaining their respect</i>	Self-enhancement	Individualistic
Power	<i>Doing the things I want to do, that are important to me</i>	Self-enhancement	Individualistic
Universalism	<i>Tolerance, social justice &amp; equality</i>	Self-transcendence	Collectivistic
Benevolence	<i>Being helpful and caring for others</i>	Self-transcendence	Collectivistic
Security	<i>Safety security &amp; belonging</i>	Conservation	Collectivistic
Tradition	<i>Tradition &amp; cultural customs</i>	Conservation	Collectivistic
Conformity		Conservation	

overcome infection). Inside the festival compound, people would be free to behave how they chose, with the provision of extra viewing spaces away from the stage for people who wanted to maintain distance. Respondents were asked how they felt about attending this festival and were presented with a list of possible emotions (concerned, anxious, safe, protected, relaxed, calm, excited, energized; presented in a random order; rated on a 5-point scale ranging from 1 = *Not at all* to 5 = *A lot*). Factor analysis revealed a single factor that explained 63.70% of variance in emotions. After reverse-scoring negative emotions, all emotions were averaged to form a single index of felt safety ( $\alpha = 0.92$ ).

After the set of items assessing expected behavior (above), respondents were invited to reflect on the overall risks involved with attending the festival. Three items asked the degree to which they agreed (1 = *Strongly disagree*, 5 = *Strongly agree*) that, all things considered: “I would feel safe if Roskilde Festival were to go ahead according to the current plan”, “I would worry about the risks to my health attending Roskilde Festival under the current plan” (reversed), and “Although there might be risks attending Roskilde Festival under the current plan, I am comfortable with that level of risk”. Factor analysis revealed that these items all loaded on a single factor explaining 80.64% of variance. After appropriate rescaling, these items were averaged into a single index of risk acceptability ( $\alpha = 0.88$ ).

### 3. Results

#### 3.1. Descriptive patterns and data preparation

A number of descriptively interesting patterns can be seen in the means and bivariate correlations (Table 2). Because our list of festival values contained 5 individualistic and 4 collectivistic options, if participants simply selected all values they would get a score of 1, and the overall mean is close to this value. Yet, inspection of the most selected values suggests that the festival was indeed associated with individualistic (and more accurately hedonistic) values more than collectivistic ones. In order of prominence, defining festival values were: pleasure (selected by 88.9% of respondents), excitement (63.5%), doing what I want (42.7%), tolerance (41.5%), freedom (37.2%), tradition (30%), safety/belonging (28.7%), being helpful/caring (24.7%), recognition from others (12.6%). Nonetheless, there was variation in this measure and scores spread the full range of possibilities from -4 (exclusively collective values) to 5 (exclusively individual values).

Identification with Roskilde Festival was above the scale mid-point,  $t_{(18308)} = 80.30, p < .001$ , suggesting that overall the festival was a meaningful entity for our respondents’ sense of self. But there was again variability and responses covered the full scale range. Consistent with what might be expected based on the theoretical and empirical work guiding this research (e.g., Drury, 2018), stronger identification with the festival was associated with the attribution of more collectivistic than individualistic values; still, this association was small in size.

Concerning patterns of trust and expectations for behavior, interesting distinctions can be seen. Trust in festival organizers was high ( $M$

$= 3.94, SD = 0.92$ ) – it exceeded trust in the political entities of parliament ( $M = 3.65, SD = 0.97$ ) and municipalities ( $M = 3.65, SD = 0.90$ ) and was topped only by trust in scientists/doctors ( $M = 4.40, SD = 0.73$ ). However, relative to all these, trust in other festival-goers was low ( $M = 2.76, SD = 1.01$ ). Trust in parliament and local municipalities were indistinguishable,  $p = 1$ , but all other pairwise comparisons were significant,  $ps < .001$ . Although identification was correlated with all measures of trust, these associations were small in size ( $0.029 \leq rs \leq 0.096, ps < .001$ ) with the exception of trust in festival organizers ( $r = 0.27, p < .001$ ) and trust in other festival goers ( $r = 0.26, p < .001$ ). This pattern is consistent with the idea that identification is important for defining the boundaries of trust within a psychological crowd and supports the idea that measures of trust in organizers and festival-goers are most relevant to our analysis.

Reflecting their lack of trust in other festival goers, respondents expected others to behave with more risk than safety under the planned scenario – but they expected the opposite for themselves, more safety than risk. Confirming the disconnect between expectations of others versus the self, a 2 (target: self, other)  $\times$  2 (behavior: safety, risk) repeated measures analysis of variance revealed main effects of each factor,  $F_{\text{target}}(1, 18119) = 10906, p < .001, \eta^2_p = .38, F_{\text{behaviour}}(1, 18119) = 1512.91, p < .001, \eta^2_p = .08$ , qualified by a very large interaction,  $F_{(1, 18119)} = 34947.56, p < .001, \eta^2_p = .66$ . All pairwise comparisons within this interaction were significant,  $ps < .001$ . Given the overall pattern, to further simplify the data before analysis, we created single indices of expected behavior for the self and for others by subtracting expected safety from risk. These indices capture the interactive pattern in which people expected others to behave with more risk than safety (i.e., a positive mean-score:  $M_{\text{others}} = 1.37, SD = 1.37$ ), but themselves to behave with more safety than risk (i.e., a negative mean score:  $M_{\text{self}} = -0.67, SD = 1.49$ ).

Despite the expectation of relatively risky behavior from others, felt safety and the perceived acceptability of risks were both high. Indeed, the modal responses to these questions were at the top of the response scale (i.e., 5). However, there was variability with and individual scores covered the full range of both scales with skew statistics acceptable (i.e.,  $< 1$ ). These measures were also highly correlated ( $r = 0.84, p < .001$ ). Although our original intention was to treat these as separate outcomes, in response to the very high correlation we created a composite measure of *felt safety* by standardizing the component measures and then averaging these.

#### 3.2. Missing data

Due to missing values on individual measures, degrees of freedom vary slightly across the analyses reported below. Although patterns of missing data can be a concern, the overall level of data missing on focal variables (predictors, mediators, outcomes) was low ( $= < 1.2\%$ ). Missing data for covariates used in robustness checks was similarly low ( $= < 0.6\%$ ), with the exception of age (3.8% missing). These data were not missing completely at random, as indicated by a significant Little’s

**Table 2**  
Means, standard deviations, and bivariate correlations.

Variable:	Range	<i>M</i>	<i>SD</i>	Skew	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Identification	1–5	3.48	.82	-.36	-.07	.27	.26	-.07	.16	.04	.03	.26	.23
2. Individualistic Values	-4–5	1.20	1.27	-.10		-.04	-.06	.10	-.05	.18	-.13	.04	.05
3. Trust Organizers	1–5	3.94	.92	-.70			.52	-.14	.30	-.006 <sup>ns</sup>	.15	.45	.42
4. Trust fans	1–5	2.76	1.01	.13				-.19	.30	-.005 <sup>ns</sup>	.10	.39	.36
5. Other’s risk beh.	1–5	4.18	.75	-1.11					.44	-.37	-.24	-.13	-.13
6. Other’s safety beh.	1–5	2.80	.90	.02						-.12	.51	.34	.34
7. Own risk beh.	1–5	2.77	.96	.26							-.37	.17	.18
8. Own safety beh.	1–5	3.44	.84	-.27								-.04	-.05
9. Felt safety	1–5	3.71	.93	-.70									.84
10. Risk acceptability	1–5	3.77	1.13	-.75									

<sup>ns</sup>non-significant correlation; all other correlations significant  $p < .01$ .

MCAR test,  $\chi^2_{(216)} = 413.21, p < .001$ . Yet, as described in the robustness checks below, additional analyses with imputed data revealed no substantive difference in the patterns reported in the primary analyses using listwise deletion.

### 3.3. Primary analyses

To explore the pathways outlined in Fig. 1, we ran a series of regression models using PROCESS (Hayes, 2017). In these models, felt safety within the crowd (comprising a composite index of feelings in the scenario and risk acceptability, explained above) was the criterion; trust (in festival organizers and fans) and behavioral expectations (for self and others) were positioned as parallel mediators, and; identification and festival values as predictors were allowed to interact (PROCESS, Model 8). Predictors were centered before analysis. Regression output for individual pathways are summarized in Table 3 and tests of indirect effects are reported in Table 4.

Consistent with Cruwys and colleagues (2021a), identification with the festival was associated with heightened trust in entities connected to this crowd (i.e., organizers and festival-goers) and this trust contributed to felt safety. Consistent with Drury (2018), identification was also associated with more positive expectations from others within the crowd and through this with felt safety. Unexpectedly, identification was associated with expectations of more risk from the self, and this too was associated with felt safety, however, the links in this sequence were weak and indirect pathways small. In sum, identification seemed to contribute to a set of positive expectations about others (but not the self), which reinforced feeling safe within that crowd given the planned scenario.

With respect to values, similar patterns are apparent. Perceiving the festival's values to be more individualistic (rather than collective) was associated with lower trust and heightened expectations of risk (from both others and especially the self). Lacking trust in others, and expecting them to behave with risk, in turn undermined felt safety (whereas expecting the self to behave with risk was reflected in greater felt safety).

Contrary to what might have been expected based on the social identity approach (e.g., Hogg and Smith, 2007), there were no interactions between identification and the values that define the crowd on any outcome.

### 3.4. Robustness checks

To explore the robustness of the above patterns, we conducted a number of additional analyses. Various background and demographic variables correlated with the index of felt safety: male gender, younger age, more regular concert attendance in a typical year, having been to Roskilde Festival more times, planning to attend in a group rather than alone, being Danish or a resident in Denmark, having previously been tested positive for coronavirus, and being a volunteer rather than ticket

holder. Including all these indicators as covariates did not change the pattern of effects reported above: all direct and indirect pathways remained significant (see supplementary file Tables S2 & S3).

Because ticket holders and volunteers are distinct sub-populations within this crowd, and because these are differently aligned with the organizers of the festival versus ordinary festival-goers, we also ran the models separately within each subgroup. All direct and indirect pathways were replicated among ticket-holders (supplementary file Tables S4 & S5). Among volunteers, there were some minor differences: festival values did not predict trust in organizers or festival-goers, and as such there were no mediational pathways between these variables to safety; identification did not predict expectations of risky behavior for the self, again precluding any mediation via this pathway (supplementary file Tables S6 & S7).

As noted in the participant section, we included in our analyses respondents who indicated that they had decided to give away or sell their ticket. These decisions could have been made for a variety of reasons, but plausibly might reflect how they were thinking about the risks of their participation. Indeed, those who had given up their ticket felt less safe with the planned scenario compared to both those who still planned to attend,  $p < .001$ , and those who did not indicate their plans,  $p < .001$ . They also trusted festival organizers and festival-goers less than both alternative groups,  $ps < .001$ , and expected others to behave with more risk and less safety,  $ps < .001$ . With respect to their own behavior, they reported expecting less risk from themselves than those who still planned to attend,  $p < .001$  (and more than those who gave no answer  $p < .001$ ), but expectations of safety from the self were equivalent across these two groups,  $p = 1$  (and significantly different from those who gave no answer,  $ps < .001$ ). This suggests that while concerns about risk might have been behind decisions not to attend, at least some of these concerns may have been based in misperceptions: those who did and did not plan to attend the event had the same expectations for the degree to which they would behave with safety. Excluding this group did not change the results reported above, and the results also remained unchanged when all respondents were included regardless of whether they originally planned to attend, had changed their mind since purchasing a ticket, or did not indicate any plan with respect to attendance (supplementary file Tables S8 & S9).

Finally, analyses using multiple imputation to replace missing data produced very similar coefficients to those based on listwise deletion. Therefore, accounting for missing data did not affect the interpretation of the results (supplementary file Tables S10 & S11).

## 4. Discussion

The aim of this study was to provide a broad picture of how would-be attendees at a large European music festival planned for the summer of 2021 were thinking and feeling about the corona-related risks of their attendance. Informed by contemporary theory and research on crowd psychology, we tested the role of festival identity and collective values in

**Table 3**  
Regression models.

	Trust Organizers			Trust Fans			Other's Behavior			Own Behavior			Felt Safety		
	B	SE	p	B	SE	p	B	SE	p	B	SE	p	B	SE	p
Identification	.30	.008	<.0001	.32	.009	<.0001	-.23	.012	<.0001	.04	.013	.0001	.11	.007	<.0001
Values	-.02	.005	.001	-.03	.006	<.0001	.09	.008	<.0001	.22	.009	<.0001	.03	.005	<.0001
Interaction	-.00	.007	.95	.006	.007	.86	-.007	.010	.50	-.001	.011	.95	-.006	.006	.32
Trust Organizers													.31	.007	<.0001
Trust Fans													.12	.007	<.0001
Other's beh.													-.23	.005	<.0001
Own beh.													.21	.004	<.0001
Model	$R^2 = .07$			$R^2 = .07$			$R^2 = .03$			$R^2 = .04$			$R^2 = .36$		
	$F_{(3, 17945)} = 454.35, p < .0001$			$F_{(3, 17945)} = 447.11, p < .0001$			$F_{(3, 17945)} = 168.72, p < .0001$			$F_{(3, 17945)} = 219.25, p < .0001$			$F_{(7, 17941)} = 1457.99, p < .0001$		

**Table 4**

Tests of indirect effects.

	Identification > Mediator > Felt Safety				Values > Mediator > Felt Safety			
	Coeff	SE	95% CIs		Coeff	SE	95% CIs	
Trust Organizers	.094	.004	.086	.101	-.005	.002	-.009	-.002
Trust Fans	.039	.003	.035	.044	-.004	.001	-.005	-.002
Other's beh.	.053	.003	.047	.060	-.020	.002	-.024	-.017
Own beh.	.009	.003	.003	.015	.046	.002	.042	.051

shaping how respondents were orienting towards others associated with the festival (in terms of trust and expected behavior) and their overall feelings of comfort with the risks posed.

The data analyzed above mostly confirm expectations: Identification with the festival was associated with more positive orientations towards others included in this psychological crowd in the form of heightened trust and heightened expectations of safe rather than risky behavior. Because of these positive orientations, those who identified more strongly with the festival also felt safer and more comfortable with the prospect of being in the crowd with others there. Group-defining values operated in a similar way: Perceiving the festival to be defined by more collectivistic (rather than individualistic) values was associated with heightened trust and expectations of safe rather than risky behavior and through these orientations contributed to felt safety. Aligning these two identity processes, higher levels of identification with the festival were also associated with the perception of more collectivistic values. Nonetheless, it should also be noted that the overall perception of this festival was dominated by individualistic values, and that those who identified more strongly with the festival expected themselves to behave with slightly less safety and more risk (something that was reinforced by the perception of individualistic values). The latter finding was not expected.

#### 4.1. Theoretical implications

These patterns provide further evidence for the role of identity processes in shaping crowd psychology, for example as detailed in the social identity model of risk (e.g., [Cruwys et al., 2021a](#)) and the social identity model of collective resilience ([Drury, 2018](#)), both of which have informed discussions of the processes that contribute to risk and safety at mass gatherings (e.g., [Hopkins and Reicher, 2021](#); [Templeton, 2021](#)). One theoretically-derived expectation that was not supported by the data was the idea that among highly identified crowd members, thoughts, feelings, and actions are regulated by the specific norms and values that are perceived to define the collective (e.g., [Hogg and Smith, 2007](#)). This expectation implies an interaction between festival identification and festival values on outcomes, an interaction that was observed in none of our models. There are at least two plausible reasons for this lack of interactive effects. First, the measure of values was very broad and did not specify any particular way of enacting identity or interpreting the actions of others. As such, it is unclear how high identifiers should live up to values of “pleasure” and “excitement” or “tolerance” and “freedom” when considering their trust in others, forming expectations of their behavior, and feeling comfort (or not) with that. More specific values might more strongly imply particular thoughts, feelings and actions among highly identified festival-goers. Alternatively, and second, such broadly defined values might regulate the actions of individuals within the crowd, but their influence might be better revealed in how individuals spontaneously orient towards each other and behave, rather than their conscious expectations. Nonetheless, and despite the absence of theoretically interesting interactions, the results do show a flow of influences from both individual identification with the collective and perceptions of the values that define this. As such, both aspects of crowd psychology are potentially relevant for the management of risk and safety in the crowd.

#### 4.2. Practical implications

Beyond providing more data in support of contemporary models of crowd psychology, this research also contains some additional insights that are of relevance to those planning mass gatherings against the backdrop of the ongoing corona pandemic. One striking pattern in the data was the discrepancy between what people expected from others and what they expected from themselves. Since our survey reached almost 15% of those who would have been present at the festival in question, and in that sense can be considered quite representative, one of these expectations is likely to be inaccurate: Either people are overly pessimistic about the behavior of others (since the majority of individuals surveyed say they would be safe not risky), or they are being naïve about, or misrepresenting, themselves.

The former interpretation would be consistent with work on pluralistic ignorance ([Prentice and Miller, 1996](#)), and would caution event organizers to correct erroneous expectations about others' behavior to avoid these becoming normative standards for the self. Said differently, if everyone else is (erroneously) believed to be inclined towards risk, there is a danger that individuals will decide that they too should behave that way. This possibility is evident in our data, in which expectations of others and of the self were strongly positively correlated. It is also possible that misperceptions of behavioral norms might lead some people to disengage from a situation that they erroneously believe does not reflect their own preferences ([Prentice and Miller, 1993](#)). Again, this possibility is evident in our data, in which those who reported having given up their ticket since purchasing were most likely to believe that others would behave with risk, but nonetheless showed similar expectations of self-safety to those who were still planning on going.

Still, it is equally plausible that individuals are misperceiving themselves, rather than others – or that their intention to behave with safety is expressed with social desirability concerns in mind. Our data cannot adjudicate between these two alternatives – but resolving it is a critical one for event organizers. In the place of resolution, we would say that the data do at least show that individuals know which behaviours constitute safety versus risk, and that they are motivated to endorse safety. The challenge for event organizers, and future research, is to understand the conditions that facilitate them to act on these good intentions in an environment that prioritizes pleasure, excitement, and “doing what I want”.

Relatedly, though not surprising, it is potentially concerning that the overarching values associated with this festival were more hedonistic than communal. Perceiving festival values in this way was associated with expectations of higher risk taking, not just from others but also – and more strongly – from the self. This suggests an additional challenge to event organizers: Finding ways to embed communal values into the festival ethos seems important for cultivating an environment that regulates attendees away from risk and towards collectively-minded responsibility. Although challenging, research informed by contemporary models of crowd psychology suggests some ways this shift might be achieved (e.g., [Drury et al., 2021](#)).

#### 4.3. Strengths and limitations

The findings reported here, and the conclusions that are drawn from



these, should be considered in relation to a number of strengths and limitations of the methods used and data produced. The survey was not designed to be representative and participation was voluntary. This weakness is offset by the number of responses received. Given the coverage of the target population (~20% of those registered to attend at the point of survey, and ~15% of ultimate festival attendees), though not representative in a strict sense these data do provide a fairly accurate picture of the range of opinions within the target population. Indeed, the current study is one of the largest datasets that has been used to test models derived from the social identity approach applied to mass gatherings (Hult Khazaie, Khan and Stott, 2021). As such, it also provides very good estimates of the associations between identification, trust, behavioral expectations, and felt safety. In so doing, this study can inform future work guided by this perspective as well as interventions intended to address these social psychological drivers of felt risk versus safety.

Because the survey is self-report, the answers given may not be a fully accurate account of respondents' true opinions. This point is especially important for interpreting questions about expected behavior: How people say they would behave is likely to be very different from what they would actually do in the moment. The insights gained from this survey need to be validated against data from other methods, for example observational data of behavior at concerts and events. Those kinds of methods would also be vital for elaborating how people's expectations translate into behavior *in situ*, and for identifying social and environmental features that facilitate versus interfere with positive intentions. Here, it is also worth highlighting that this survey was conducted at a time when there was considerable uncertainty about whether festivals and concerts would be able to open in the summer of 2021. In this context, it is quite likely that respondents were motivated to give the "right answer" to our questions. Nonetheless, the patterns of association between identity factors, orientations towards others, and felt safety conform to theoretically-derived expectations.

Finally, it is important to emphasize that these data are cross-sectional. The expected model we tested was derived by prior theory and informed by previous longitudinal and experimental tests of specific pathways (e.g., between identification, trust, and perceived risk: Cruwys et al., 2021a,b). However, the extent to which the observed direct and indirect relationships represent genuine causal pathways cannot be answered by these kinds of data.

## 5. Conclusions

The findings from a survey of would-be attendees at one of Europe's largest music festivals, a year after the pandemic outbreak, paint a picture of a public that is very keen to return to mass gatherings and that accepts the risks associated with this. Nonetheless, the data also reveal factors that might further reinforce or undermine felt comfort, and that should be considered by those planning mass gatherings. Based on our findings, it is clear that would-be festival attendees place a lot of trust in festival organizers, and that trust is a substantive resource that contributes to their comfort with the current plans. It is also clear that the festival-goers' sense of identity, and the more communal orientations that are associated with that, are resources that further reinforce trust and contribute to the expectation of positive safety-related behavior from themselves and others at the festival. Of course, this heightened trust might lead people to behave in ways that amplify rather than attenuate actual risk (Cruwys et al., 2021a). As such festival organizers have a responsibility to both live up to the trust that is placed in them and to maximize the possibilities for attendees to realize their motivations positively – that is to actually behave with safety rather than to just feel safe. Reciprocally, the identity of festival attendees is something that might be leveraged to help manage their behavior (Drury et al., 2021). Moving further forward into the post-corona world, it is important to understand how the identities of those who participate in mass events are lived out and enacted on the spot, and to consider what this

means for their felt and actual safety – as well as for their enjoyment of the events they have come together to experience.

## Credit author statement

Thomas Morton: Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Writing – original draft, Writing – review & editing; Séamus Power: Conceptualization, Methodology, Investigation, Writing – original draft, Writing – review & editing.

## Declaration of competing interest

None.

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.socscimed.2021.114649>.

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