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Mass Gatherings, Health, and Well-Being: From Risk Mitigation to Health Promotion

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Mass gatherings are routinely viewed as posing risks to physical health. However, social psychological research shows mass gathering participation can also bring benefits to psychological well-being. We describe how both sets of outcomes can be understood as arising from the distinctive forms of behavior that may be found when people—even strangers—come to define themselves and each other in terms of a shared social identity. We show that many of the risks and benefits of participation are products of group processes; that these different outcomes can have their roots in the same core processes; and that knowledge of these process provides a basis for health promotion interventions to mitigate the risks and maximize the benefits of participation. Throughout, we offer practical guidance as to how policy makers and practitioners should tailor such interventions.

Mass gatherings take many forms: large-scale religious pilgrimages (e.g., the *hajj*), sporting events (e.g., the World Cup), music festivals (e.g., Glastonbury), regional and national commemorative events (e.g., St Patrick’s Day celebrations), etc. Some are short-lived, others span days, even weeks. Some attract a few thousand, others, hundreds of thousands. Perhaps the most striking of all are the Kumbh Mela and the Magh Mela, each of which attract millions of Hindu pilgrims to the banks of the Ganga (north India) for a full month (Buzinde, Kalavar, Kohli, & Manuel-Navarrete, 2014; Hopkins et al., 2015; Maclean, 2008).

The spectacle to such gatherings frequently attracts fascination. Yet, such interest is routinely accompanied by anxiety, if not fear. In part, this is because mass

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gatherings can pose significant risks to health. However, because participants' behavior often seems so different from everyday routine, there is also a tendency to assume it reflects a fundamental aberration in people's psychological functioning. Moreover, these fears routinely combine with the result that mass gatherings typically come with a strong "health warning." Yet, this is a partial vision which fails to appreciate that mass gathering participation can deliver social, cultural, and psychological benefits. As these benefits can be significant, policy and practice must be geared towards creating events at which the benefits outweigh the dangers. This requires policy and practice be based on a clear understanding of the behavioral determinants of health outcomes.

Below, we describe recent developments in our understanding of how participation in large-scale collective events impacts health and well-being. Traditionally, the focus has been on physical health and how this can be undermined through participation. Recently, however, there has been an emerging awareness that participation can bring benefits for psychological well-being. The potential for these latter outcomes demands a reevaluation of mass gatherings: Rather than assuming participation to bring risk, we need to ask when and why it may have positive *or* negative impacts upon both physical health *and* psychological well-being. We argue that if answers to such questions are to be found, policy makers and practitioners must draw upon social psychological insights concerning group behavior and to use such insights to understand how best to intervene to mitigate the risks and maximize the benefits of participation.

We begin with a description of the traditional focus on the physical health risks posed by mass gathering participation. We then explain how social psychological research is beginning to transform what is essentially a risk mitigation perspective on mass gatherings into a broader perspective which recognizes the potential of mass gatherings to be a vehicle to promote health and well-being. In turn, we describe how group processes can be harnessed to deliver such positive health outcomes.

From Mass Gathering Medicine to Mass Gathering Health

Nowhere are the dangers of mass gathering participation clearer than in infection transmission. Mass gatherings bring people into proximity, often in conditions where the chances of infection transmission are magnified by rudimentary sanitation conditions (Abubakar et al., 2012; Balsari et al., 2016; Steffen et al., 2012). Moreover, such risks travel: The first Asiatic cholera pandemic of 1817–1824 had its roots in infection transmission at the 1817 Kumbh Mela, and pilgrims and British naval officers spread the disease throughout India and beyond. Contemporary epidemiological studies confirm the potential for diverse events to spread all manner of disease (Blyth et al., 2010; Botelho-Nevers & Gautret, 2013; Dixon, Ishola, & Phin 2014, Gautret & Steffen, 2016; Sridhar, Gautret,

& Brouqui, 2015). Inevitably, such risks are magnified if the disease is particularly contagious (e.g., COVID-19: McCloskey et al., 2020) and it is no surprise that with such transmission potential there may be little alternative than to cancel events or massively scale them back to allow social distancing. In addition, there are noncommunicable health risks aplenty (Steffen et al., 2012): Pilgrims at the hajj are vulnerable to heat stroke; music festival attendees may consume excessive amounts of alcohol and/or engage in unprotected sex; people stumble and may be crushed.

Good reason then for policy and practice to be geared towards anticipating and mitigating such outcomes. Indeed, such is the scale and diversity of these risks that a specialist field of medicine—mass gathering medicine—has developed to advise on the conduct of pre-event risk assessments, develop surveillance, and reporting procedures to monitor patient presentations, organize on-site medical facilities (e.g., triage stations, medical centers), etc. (Memish, Stephens, Steffen, & Ahmed, 2012; World Health Organization, 2015). This development was prompted by the practical challenges of the H1N1 influenza pandemic (2009) and was formalized through a series of conferences (e.g., *The Lancet Infectious Diseases* First International Conference on Mass Gatherings Medicine, Jeddah, 2010), which emphasized the need to mitigate the risk of local medical services being overwhelmed.

However, social psychological evidence that mass gathering participation can benefit psychological well-being has resulted in a significant broadening of this agenda. Reporting on the third conference in the series mentioned above, Yezli et al. (2018) argued there was a need to “move from the limiting concept of “Mass Gatherings Medicine” to the more encompassing field of “Mass Gatherings Health” (Yezli et al., 2018, p. 129) and that there was a concomitant need for “the incorporation of newer areas to the discipline of ‘Mass Gatherings Health’ such as the socio-psychological dimension” (Yezli et al., 2018, p. 129).

Below, we address this social psychological dimension, its application to mass gatherings, and its implications for policy and practice. As we will see, a social psychological account of mass gathering participants’ behavior provides a much-needed framework for understanding when and why the outcomes for physical and psychological health will be positive or negative.

Group Processes as a Basis for Health and Well-Being

At the heart of recent social psychological analyses of group behavior is the social identity approach (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). This argues that rather than having a single unified sense of self we have a variety of identities operating at different levels of abstraction. In some situations, we may focus on what marks us out as individuals compared to other individuals (personal identity: “I” vs. “you”). At other times, we may focus on what marks us out as

members of a certain group compared to others (social identity: “we” vs. “they”). As we are members of various groups, so we may have multiple identities (e.g., as a trade unionist, as a Muslim, as a Scot). Such identities vary in term of their inclusiveness, allowing broader superordinate identifications (e.g., as a European, as a member of the global community, etc.) as well as identities that have a more restricted group membership.

Which of these memberships is salient varies according to context (Turner, Oakes, Haslam, & McGarty, 1994) and transforms people’s understandings of their social relations. Specifically, when people define themselves in terms of a social identity and see others as sharing that identity, they come to see and treat each other as “fellows” rather than as “other.” This results in increased helping (Levine, Evans, Prosser, & Reicher, 2005), increased anticipation of social support, and increased confidence that one can cope with difficult circumstances (Reicher & Haslam, 2009). Indeed, there is by now substantial evidence of a relationship between the experience of a sense of shared identity and well-being (Haslam, Reicher, & Levine, 2012; Jetten, Haslam, & Haslam, 2012; Steffens, Haslam, Schuh, Jetten, & van Dick, 2016). Such is the scale of this evidence that social psychologists refer to building shared identity as the basis for a “social cure” (Jetten et al., 2012) because such identities provide group members with a sense of meaning and purpose and the belief that social support is available should they need it.

Much of the evidence concerning the relationship between social identification and well-being has been obtained in contexts where the group membership has a basis in a relatively enduring organizational setting—for example, people working in demanding jobs (Haslam, O’Brien, Jetten, Vormedal, & Penna, 2005; Wegge, Van Dick, Fisher, Wecking, & Moltzen, 2006); the elderly in old-age homes (Gleibs et al., 2011); soldiers in army units (Sani, Herrera, Wakefield, Boroch, & Gulysas, 2012); members of local communities (Bakouri & Staerklé, 2015). However, research has also begun to address the potential for identification with strangers in more transient collective events (i.e., mass gatherings) to have similar outcomes.

Mass Gatherings and the “Social Cure”

The fact that people are in proximity does not mean they self-categorize as a group. The crowds found in shopping malls on Black Friday or in large transport hubs are unlikely to have a sense of collective identity (such individuals are likely focused on their personal concerns). However, at mass gatherings there is often the potential for a shared identity to develop such that even though the participants have never met before, they are able to cohere and act as a psychological group: for example, *hajjis* in Mecca (Alnabulsi & Drury, 2014; Alnabulsi, Drury, & Templeton, 2018), music festival attendees (Drury et al., 2015; Packer

& Ballantyne, 2010), and football fans (Neville & Reicher, 2011). Where participants experience a shared social identity, they do not simply have a sense that “I am a member of this crowd” but rather a sense that “We are members of this crowd” with the corollary that all see and treat each other as group members (Neville & Reicher, 2011). This turns an aggregate of strangers into a psychological group in which social relations become more intimate such that there is the potential for mass gatherings to bring the benefits identified in the “social cure” literature.

Evidence for the utility of conceptualizing mass gathering participation in terms of this literature comes in three forms. First, individual difference research using a measure of people’s tendency to engage in mass gatherings shows that the more one participates, the more positive one’s affect and the stronger the belief that one’s life is meaningful (Gabriel, Valenti, Naragon-Gainey, & Young, 2017). As these relationships obtain even after controlling for individual difference variables (e.g., personality traits), Gabriel et al. conclude that “collective assembly is more than just people coming together to distract themselves from life” but is instead “an opportunity to feel connected to something bigger than oneself; it is an opportunity to feel joy, social connection, meaning, and peace” (Gabriel et al., 2017, p. 1360).

Second, there is evidence obtained from cross-sectional surveys which points to the relationship between a shared identification and key “social cure” variables. For example, research reveals a relationship between the perception of a shared identity and participants’ inclination to support others. Thus, hajj pilgrims’ level of shared identification at and around the Grand Mosque in Makkah predicted their (self-reported) provision of help to others (Alnabulsi et al., 2018). In turn, there is evidence from an overcrowded music festival that under a shared identity, participants report anticipating support from others and that this contributed to feelings of safety and resilience (Drury, Novelli, & Stott, 2015). So too in a study of youth celebrations marking the end of schooling in Australia, Cruwys et al., (2019) found social identification with the crowd-predicted well-being. Moreover, the relationship between identification and (improved) mental health was stronger among a sample tested later in the event than a sample tested earlier in the event. Inevitably, such studies are limited in being cross-sectional. However, they are suggestive of the potential significance of a sense of shared identity impacting participants’ experiences of their social relations.

Third, there are now a series of longitudinal studies addressing the impact of participation on psychological well-being. These studies do not simply repeat the observation that a sense of social connection during the event predicts perceptions of social support while one is at the event. Rather, they show that these identity-related processes during the event can bring improvements that continue even after the event has concluded. These longitudinal studies have focused on diverse gatherings with their own particularities. Moreover, researchers have measured

diverse psychological outcomes (e.g., mood, self-esteem, empowerment) and a variety of process variables (e.g., shared identity, shared emotional experience). Yet, two commonalities stand out. First, participation improved well-being. Second, a key ingredient was participants' sense of connection with others at the event. Below we consider examples of such research across three broad headings: Mass gatherings that attract religious devotees, mass gatherings that celebrate local community identities, and mass gatherings that help create a sense of community for individuals going through distinctive life transitions or experiencing particularly traumatic events.

Religious Mass Gatherings

Evidence suggests that those who are religious report better health outcomes (George, Larson, Koenig, & McCullough, 2000). One reason is that religious groups provide health-relevant social capital (Cohen, 2004; Kawachi, Subramanian, & Kim, 2008; Smith & Christakis, 2008). Indeed, Graham and Haidt (2010) argue that while belief in the divine is undoubtedly important in explaining the benefits of religiosity, the real "action" may be elsewhere, in "the creation, enacting, and maintaining of an emergent community by the collective behaviors' of group members" (p. 142). Much of the evidence for such a perspective comes from cross-sectional research investigating engagement with Christian church congregations. However, there is also work addressing such processes with more transient and non-Christian collectives. Perhaps the best example addresses the impact of participation in the month-long Hindu Magh Mela in north India. This research involved a longitudinal design in which data were gathered before, during, and after the event (from the same participants) and a control group of (otherwise similar) nonattendees (i.e., fellow villagers who did not attend the Mela). Measures of health and well-being were completed approximately 1 month before and 1 month after participation, and showed that whereas 1 month prior to the event there were no significant differences on these health-related measures, there were improvements in the pilgrims' self-reported health and well-being which were absent among the nonattendee controls (Tewari, Khan, Hopkins, Srinivasan, & Reicher, 2012).

Additional data gathered from the pilgrims while they were at the event addressed their perceptions of the degree to which they shared a common social identity and experienced more intimate social relations with each other (including mutual support). Both process measures helped explain between-pilgrim differences in the positive effect of participation (Khan et al., 2015): The more pilgrims perceived a shared identity, the more they experienced positive and supportive social relations with others, and the greater the longitudinal (pre-post) improvement in well-being. That is, a shared identity had an indirect effect on well-being *via* the more intimate social relations it allowed.

Celebrating Community Identities

Another set of studies address the benefits of participation in events that are more secular in nature and which celebrate local community identities. Studying a local folkloric march occurring in Belgium, Páez, Rimé, Basabe, Włodarczyk, and Zumeta (2015) gathered cross-sectional data (immediately after the event) comparing walkers with nonwalkers and found that the walkers reported: greater levels of social integration and social connection; improved positive affect; increased empowerment; and more positive social beliefs about the world and the people around them. With regard to the processes involved, Páez et al. found the improvements in these outcomes were greater among walkers who reported feeling a common emotional experience with others on the march. In a second study conducted at a marching event known as the *Tamborrada* in San Sebastian (Basque Country), similar data were obtained but in a properly longitudinal design: 2 days before and 2 days after the event (with additional data concerning the experience of emotional synchrony during the march being gathered a day after the march). Participation increased postevent feelings of belonging, social integration, positive affect, and efficacy. It also engendered more positive social beliefs about society. Again, the scale of these improvements was predicted by participants' shared experience of a strongly positive emotional state during their participation.

Establishing Community Identities

Other mass gatherings are less about celebrating a community than *establishing* one at a time when people are facing particularly significant challenges. For example, adolescents are faced with the challenging developmental task of establishing a sense of who they are and finding a place in a complex social world. This task can be eased by participation in youth organizations. Addressing such participation, Bouchat, Rime, van Eyken, and Nils (2019) report longitudinal data investigating the impact of participation in a large-scale Scouting event, which featured many communal activities with a shared focus (e.g., communal singing) likely to promote a joint emotional experience and sense of shared identity. They found the experience of shared emotions during the event predicted longitudinal improvements in participants' self-esteem, pride in being a scout, positive affect and openness to experience. They conclude that the event brought benefits for participants' sense of social integration and empowerment that lasted for at least 10 weeks.

Other studies have addressed the relevance of mass gathering participation for the painful challenges posed by the sudden and unpredictable trauma of death (e.g., the suicide of a loved one, the death of one's fellow compatriots through acts of terror). The experience of losing a loved one to suicide can elicit all

manner of debilitating feelings that are especially traumatic because the stigma surrounding suicide limits discussion of such loss (with the result that people remain isolated in their grief). In such a context, collective events involving others facing a similar loss may provide opportunities to build a sense of community and social support. Addressing such a possibility, Kearns, Muldoon, Msetfi, and Surgenor (2017: Study 2) report data gathered at an Irish charity event (“Darkness into Light”) designed to mobilize awareness of suicide. The event involved over 100,000 people rising at 4 am to walk/run 5 km as the dawn broke at 80 locations in Ireland and across the Irish diaspora. In addition to functioning as a fundraiser, the event allowed participants to develop a sense of shared identity and belonging. As some participants had personal experiences of losing a loved one to suicide and others did not, Kearns et al. predicted participation would be more meaningful (and consequential) for those directly affected by suicide. The results confirmed this prediction: Adopting a longitudinal (before–after) study, the authors found participation improved affect for those who had lost an immediate family member but not for other attendees. Moreover, greater identification with the crowd predicted higher levels of postevent positive affect. Unfortunately, no control group of “nonparticipants” was available. However, the fact that improvement was only found among those losing an immediate family member suggests that the impact of participation was not due to extraneous factors associated with the phase / time during which the data were gathered. Rather, the selective patterning to the benefit observed in this study implies that the observed improvement arose because those most affected by loss were able to overcome the isolation of grief through participating in a supportive collective event.

The role of mass gatherings in managing trauma is also illustrated in research exploring public responses to acts of terrorism. Such acts result in feelings of anger, fear, and uncertainty, and mass gathering participation can establish a welcome sense of solidarity and hope. Exploring such possibilities, Páez, Basabe, Ubillos, and González-Castro (2007) found the collective sharing of emotion at commemorative demonstrations after a terrorist attack motivated social and political engagement and contributed to more positive perceptions of the wider emotional climate in one’s social milieu (e.g., the extent to which others perceived hope, solidarity, and trust). In similar vein, Pelletier (2018) found that the shared positive emotional experience of participation in a commemorative event for the victims of terrorist attack in Belgium shaped participants’ perceptions of the wider community’s mood. More specifically, the experience of sharing positive emotions with others allowed one’s own positive feelings to be generalized to the wider national community such that one was more hopeful about the nation’s resilience and future.

Policy Implications (1): The Value of Mass Gatherings

The work described above confirms our opening observation that an exclusive emphasis on the risks of mass gathering participation for physical health is limited. If one looks beyond the data available from on-site triage and infection surveillance reports, we find that across a variety of cultural contexts (India, Belgium, Spain, Ireland), across a variety of event types (religious pilgrimage, folkloric celebration, youth movement, charity fundraisers, demonstrations), and across a variety of outcome variables (social integration, self-esteem, empowerment, positive affect, positive social beliefs, stress symptomology etc.), there is evidence for the positive effects of participation on psychological well-being. Moreover, despite differences of emphasis with regard to processes, there is consensus on the importance of participants experiencing a strong sense of social connection during the event. Some capture this with measures of shared identity (Kearns et al., 2017; Khan et al., 2015) and the relational intimacy that it facilitates (Khan et al., 2015). Others use measures of shared emotional experience (e.g., Bouchat et al. 2019; Páez et al., 2015). Yet, despite such differences of emphasis, all such measures capture the powerful feelings of solidarity that can arise to turn an aggregate of individuals into a social unit.

One obvious policy implication arising from the studies reviewed above is that mass gathering participation should be encouraged. For example, Kearns et al. (2017) argue that nonprofit organizations could use collective charity events “not only as a fundraising initiative but also as an intervention in terms of well-being for those who have a personal connection with the cause” (p. 885). In similar vein, Bouchat et al. (2019) argue that mass gatherings “constitute a significant lever for policymakers wishing to influence the sense of social integration and well-being of their citizens” (p. 199). Such recommendations also arise from interview studies conducted at other types of gathering, for example, music festivals. Thus, speaking of the latter, Packer and Ballantyne (2010) observe that for some participants “their festival experience is not only meaningful in itself, but gives meaning to the rest of their lives” (p. 178), such that festival organizers, performers, attendees, and concerned community groups, should “take optimal advantage of opportunities to enhance psychological and social well-being through festival attendance” (p. 179).

At the same time, it should also be clear that the experience of such potential benefits is contingent on participants feeling a sense of connection with others at the event. This cannot be guaranteed. Some events (e.g., religious pilgrimages) are sites of factional dispute as different traditions vie to assert their own visions of the event over others (on pilgrimage, see Eade & Sallnow, 1991; Sallnow, 1981). At other events, the informal culture may be such as to alienate some participants. For example, to the degree that music festivals are

infused with masculine social expectations, females may find themselves subject to unwanted (male) attention with the corollary that they find it difficult to engage with those around them in the carefree manner that they would wish (Fileborn, Wadds, & Tomsen, 2020). Similar points may be made in relation to the experience of the disabled, ethnic minorities, LGBT+ participants, etc. Indeed, even if marginalized participants do identify with others, this might not be reciprocated with the result that participants rapidly disidentify and experience a sense of hurt at their exclusion (Pehrson, Stevenson, Muldoon, & Reicher, 2014).

Again, the implications for policy makers and practitioners are clear: Part of their remit should be to explore how social inclusion might be increased (both among attendees and the surrounding local community: Laing & Marr, 2015). This would involve investigating the degree to which an inclusive social identity is possible at any given event. One element to such an analysis would focus on the ways in which particular representations of identity and culture are used by the organizers to communicate an understanding of the event, the values it represents, the constituency to which it appeals, etc. (see Lugosi, 2014). This could then be followed by discussions with event organizers to explore the ways in which these social practices may (quite unintentionally) limit people's ability to participate and experience a shared identity. The extent to which it might be possible to use such knowledge to modify practice and bring about a more inclusive event (e.g., a music festival culture which is less permeated by masculine expectations) will depend on the event in question.

Thus far we have reviewed evidence showing that to the degree that a shared identification is experienced, mass gathering participation can bring psychological benefits. However, to leave it at this would be to replace the myopic vision of mass gatherings as inevitably risky with an equally myopic image of mass gatherings as providing a "social cure." There is a reality to the risks to physical health documented in mass gathering medicine research which means that policy makers and practitioners require a more nuanced understanding of when and why mass gathering participation features costs and benefits for physical health and psychological well-being. Below, we offer a broader account of the psychological implications of a salient social identification. This shows that in addition to the transformation in social relations described in the "social cure" literature (and evidenced in the longitudinal studies reported above), a salient social identity shapes both group members' understanding of their values (and how they should behave), and their affective experiences (Reicher, 2011, 2017). Understanding (and using) these processes is key to developing interventions likely to mitigate the risks and boost the benefits of participation.

Mass Gathering Health: Understanding the Costs and Benefits of Participation

The popular image of the group processes to be found in mass gatherings is far from positive. Following the influence of early writers (e.g., Le Bon, 1895/1947), crowd psychology is routinely assumed to involve a loss of reason and restraint. Accordingly, we should not be surprised to find policy and practitioner perspectives on mass gatherings permeated by references to crowd “panic,” “irrationality,” and “herding” (Haghani, Cristiani, Bode, Boltes, & Corbetta, 2019) and the assumption that crowd psychology only exacerbates risk (Berlonghi, 1995; Zeitz, Tan, Grief, Couns, & Zeitz, 2009). However, the reality is quite different and such misunderstandings only inhibit effective practice.

We have already noted that one consequence of people identifying with each other is that their relations become more intimate and supportive. Here, we describe two further transformations in functioning. One is that the basis for people’s cognition is transformed. When we identify in terms of a social group membership (rather than as an individual), we shift from thinking and acting in terms of our idiosyncratic beliefs and values to thinking and acting in terms of group-based beliefs and values. Put differently, group members form a cognitive representation of the values, beliefs, and behaviors associated with their group identity and use this as a framework with which to interpret scenarios (Levine & Reicher, 1996) and guide their behavior (Turner, 1982; Turner et al., 1994). The implications of such a shift in the basis for cognition are wide ranging. First, group behavior, including crowd behavior (Reicher, 1982), is far from being uncontrolled, but rather is in accordance with members’ identity-related beliefs, values, and norms. Second, as the salience of our social identity changes, so individuals’ behavior likely changes. Third, the influence found in groups (including mass gatherings) should be seen as involving processes whereby group members develop and refine a socially shared understanding of their collective values and norms (Haslam, Turner, Oakes, McGarty, & Reynolds, 1998).

Another implication of a shared identity concerns group members’ affect. When acting in terms of a particular social identity, our affective experiences are no longer based on idiosyncratic appraisals of events but rather their social identity-related meaning. Accordingly, when people identify with the same group (and thus appraise events from the common vantage point of that identity) they are likely to converge in their affective experience (Moons, Leonard, Mackie, & Smith, 2009; Parkinson, 2019). Moreover, such convergence arises through mutual social influence: Group-relevant emotions (but not others) spread because they communicate relevant information concerning the meaning of a situation of joint relevance to group members (Delvaux, Meeussen, & Mesquita, 2016). This is particularly likely in situations where there is coordinated group activity (e.g.,

singing) where there is joint attention and the potential for participants to observe fellow group members' embodied experience (Parkinson, 2019).

When applying this analytic framework to the analysis of mass gathering participants' behavior, it is important to note that these transformations in functioning do not operate in isolation but feed into each other in a cyclical manner. For example, the more intimate relations made possible by a shared identity allow mass gathering participants to coordinate their behavior such that they are enabled to enact their identity-related values and beliefs. In turn, success in identity enactment contributes to group members' positive affect. In protest crowds such relational intimacy and the ability to enact identity-related values results in a sense of efficacy and empowerment (Drury & Reicher, 2005, 2009; Drury, Cocking, Beale, Hanson, & Rapley, 2005; Vestergren, Drury, & Hammar Chiriac, 2016) that is uplifting and encourages hope rather than despair (Evripidou & Drury, 2013; Pérez et al., 2007). In religious mass gatherings such as the Hindu Magh Mela, we find similar effects: Survey data obtained during the event showed that perceptions of a shared identity with other pilgrims contributed to pilgrims' positive emotional experience at the event and that it did so because participants experienced the pleasure of social connection with others and felt able to realize their identity-related goals (Hopkins et al., 2016). Moreover, just as emotional convergence can arise from a shared identity, so observing others' emotion can feed back into inferring a shared identity (Livingstone, Spears, Manstead, Bruder, & Shepherd, 2011). Indeed, participation in rituals entailing a shared focus of attention and emotional experience reinforces a sense group solidarity (Draper, 2014)—a finding that is brought to life in Packer and Ballantyne's (2010) interview research with music festival attendees: In the words of one participant: if others "are into the same act that you're into, if you're singing along and they're singing along ... you've got nothing else in common at any other time, you know what I mean? You've got a connection at that time" (cited in Packer & Ballantyne, 2010, p. 171).

With this elaborated analysis of group processes, we can now explore how policy makers and practitioners should understand how mass gathering health is a function of (i) the relational intimacy associated with a shared identity; (ii) the values and norms associated with a group membership; and, (iii), the emotional experience associated with adopting a social identity (see Table 1). In turn, we will consider how policy makers and practitioners should use group processes to impact positively upon both physical health and psychological well-being.

Understanding the Role of Relational Intimacy

The complex (and contradictory) implications of the relational intimacy associated with a shared identity are well illustrated if we consider two issues of concern to policy makers and practitioners: The risks of crowding and the risks associated with the sharing of resources.

Table 1. Identity-related processes and their implications for health and well-being: Illustrative examples of benefits and risks

| Identity-related processes | Health outcomes | |
|---------------------------------|---|---|
| | Health benefits | Health risks |
| The role of relational intimacy | Social support is anticipated (and provided) resulting in a sense of empowerment Crowding is not experienced as a stressor | Reduced disgust facilitates the sharing of resources thereby increasing opportunities for infection transmission Participants may be drawn to crowded sites where they are at risk of crushing |
| The role of values and norms | Norms may proscribe unhealthy behaviors (e.g., smoking) Features of the environment are experienced as a function of their relationship with participants' shared social identity which means that what may appear to be a stressor (e.g., noise) is not experienced as such | Norms may result in behavior which facilitates infection transmission (e.g., blowing vuvuzelas) Symptoms of ill-health may be interpreted in ways that decrease the seeking of medical advice |
| The role of emotion | Positive emotional experiences contribute to psychological resilience | Positive emotional experiences can result in overlooking signs of ill-health, dismissing health warnings, and carrying on when one should stop |

The experience of crowding. Being surrounded by others can be stressful (Evans, 1979; Maeng, Tanner, & Soman, 2013). In addition to engendering fears for one’s safety, being brought up close to others’ bodies, their sweat and their odor, can result in a strong sense of disgust and revulsion. Little wonder then that crowding can instigate self-protective motivations and a desire to escape others’ proximity (Maeng et al., 2013). Indeed, Wang and Ackerman (2019) report experimental evidence that an aversion to crowding can be motivated by concerns about pathogen threat.

Yet, under a shared identity the stress associated with others’ proximity is likely attenuated. Moreover, participants may find considerable pleasure in such crowding.

Evidence concerning the impact of a shared identity on the experience of others’ proximity is available from laboratory and field studies. In laboratory studies where participants had the opportunity to control proximity, Novelli, Drury, and Reicher (2010) found that people were more comfortable with less “personal space” in relation to an in-group member than an out-group (or nongroup) member. Field studies confirm a shared identity results in greater acceptance of

others' proximity. Novelli, Drury, Reicher, and Stott (2013) found that participants reporting a stronger identification with others at an outdoor music event experienced a reduced sense of crowding (even when, objectively, the crowd was very dense). Moreover, this reduced sense of crowding mediated the relationship between identification with the crowd and participants' positive emotion at the event. Alnabusi and Drury (2014) report similar findings among pilgrims at the hajj. They found that while concerns about safety increased with crowd density, pilgrims' social identification with the crowd moderated the degree to which density impacted perceptions of safety. Moreover, this relationship was mediated by the perception that others would be supportive should one need help. Again, the point is that crowding is not necessarily aversive. Under a shared identity, others are transformed into trusted fellows who one wishes to be with. Related work on disgust makes the same point: Although being exposed to others' sweaty bodies is aversive, a shared identity attenuates such disgust (Reicher, Templeton, Neville, Ferrari, & Drury, 2016).

The significance of such research for policy makers and practitioners is that they cannot assume that crowding is stressful: Much will depend on the degree to which participants view each other in terms of a shared social identity. Indeed, where others are construed as one's fellows, others' proximity can bring pleasure (and thus contribute to positive well-being). However, such an attenuation of concern about others' proximity does not mean that there is no risk in crowding: There may be contexts where a relaxed attitude to proximity increases participants' vulnerability to crushing (e.g., the crowded "mosh pits" that feature at some music festivals: Milsten, Tennyson, & Weisberg, 2017; Wing, Johnson, & Fowler, 2020).

Fortunately, a social psychological understanding of participants' desire for proximity suggests options for practice. For example, while warnings to avoid music festival "mosh pits" are unlikely to outweigh the immediate pleasures of proximity, practitioners might be able to influence behavior through capitalizing on the underlying sense of mutual connection that motivates such proximity, and build upon the sense of solidarity to be found in such contexts (Palmer, 2005). Practically, this would entail working with the on-stage performers to emphasize the message that everyone is "in this together" and that all should look out for each other and help those who may fall.

Trust and disgust. The relational intimacy associated with a shared identity can be manifested in increased trust and empathy. In combination with reduced disgust concerning others' bodily emissions (Reicher et al., 2016), such trust and empathy may motivate all manner of more intimate interactions with strangers, for example, the sharing of personal resources such as one's water bottle, eating utensils, razor blades, lipstick, etc. In some situations, such sharing may benefit health (e.g., sharing water when someone is dehydrated). However, such acts may

also bring risks: Research concerning the bacteria-sharing potential of the common Communion Cup shows that sharing drinking utensils can transmit saliva and bacteria (Gregory, Carpenter, & Bending, 1967)

Once again, research confirms the role of a shared identity in attenuating disgust and motivating such sharing. Hult Khazaie and Khan (2019, Study 2) report data gathered from music festival attendees showing that the perception of a shared identity had an indirect effect on increasing the likelihood of engagement in risky practices (e.g., sharing water bottles) and that this was mediated *via* decreased disgust. They also found a similar indirect effect of shared identity (again *via* decreased disgust) on (reducing) the degree to which participants judged themselves vulnerable to infection. In a related manner, Cruwys et al. (2020) report that perceptions of a shared identity among young people attending end of school celebrations in Australia predicted lower risk perceptions for a range of activities (e.g., unprotected sex, sharing drinks, accepting drinks from strangers, etc.) and that this was mediated through their greater trust in their fellow participants.

These studies show that a shared identity brings an intimacy (manifested in reduced disgust and increased trust) that can result in behavior that would otherwise be unlikely (e.g., sharing resources with strangers, accepting drinks from strangers). The degree to which such sharing is risky will depend on the behavior in question (e.g., what is being shared), and this is likely to reflect the norms of the event (e.g., bottles of beer at a music festival, razor blades at a religious pilgrimage). Where such practices are judged as warranting intervention, policy makers and practitioners will likely face a difficult challenge. To the degree that participants identify with each other, any attempt to communicate the message that participants should not trust others (and so should not accept offers to share) will likely fail. An alternative strategy would be to build on the sense of solidarity between participants and communicate the message that because group members value each other, they should not offer particular resources (e.g., a razor) to others and so put them in a position where they may use something that puts them at risk.

Understanding the Role of Values and Norms

As our self-definition shifts from an individual to a group-level identity, so we no longer think and act in terms of our individual and idiosyncratic beliefs and values, but in terms of group-based beliefs and values (Turner, 1982; Turner et al., 1994). Accordingly, where there is a shared identity, it follows that participants' behavior accords with their understandings of the collective's norms, values, beliefs, and interests. For those concerned with risk mitigation and health promotion, the key implication is that understanding the risks and benefits of participation requires attention to the cultural particularities of the event at hand. Take the way

strangers greet each other. At the Hindu Magh Mela pilgrims show respect to each other through putting their hands together and bowing their head (Hopkins et al., 2019). At the Bonnaroo musical festival in Tennessee, participants routinely greet strangers with “high-fives” (Locker, 2016). These different ways of expressing relational connectedness say much about the identity-related beliefs and values at the two events and how these may shape behaviors that impact health and well-being. For example, in a context where the likelihood of hand-to-hand infection transmission is increased (e.g., poor toilet sanitation), such a simple difference in cultural practice could impact health (e.g., diarrhea outbreaks).

Below, we describe the diverse ways in which identity-related values, beliefs, and practices, can impact health and well-being (one’s own and others’), how these processes can combine to have cumulative effects, and how these effects may be simultaneously good and bad for participants’ health and well-being. We will also consider how understanding these dynamics should inform policy and practice.

Behavior impacting one’s own health. Identity-related values and practices sometimes encourage behaviors that have a direct impact on one’s health. For example, music festivals may be associated with values that endorse alcohol or drug consumption, unprotected sex, etc. Certainly, the many thousands of Australian school leavers who participate in the extended party-like gatherings known as “schoolies” (Lubman, Droste, Pennay, Hyder, & Miller, 2014) or those attending the large music festivals catering to younger audiences, are at risk through excessive alcohol and drug use (Hutton, Ranse, Verdonk, Ullah, & Arbon, 2014; Fox et al., 2018). In contrast, other events’ norms may encourage healthier practices and discourage unhealthy practices. With regard to the encouragement of healthy practices, pilgrims at the Hindu Magh Mela must follow a simple low-salt, low fat, vegetarian diet and must walk lengthy distances to bathe (Hopkins & Reicher, 2017). With regard to the discouragement of unhealthy practices, pilgrims at the hajj are expected to refrain from smoking. Such identity-related norms are not only relevant for health while participants are at the event but provide practitioners with new opportunities to intervene to bring about longer term change. For example, the hajj authorities use billboards to encourage pilgrims to continue their abstinence from smoking on their return home (e.g., one slogan, referring to the last day of the hajj rituals, read “Make Arafat Day, a Quit-Smoking Day”: Babylon & Beyond, 2009).

Behavior impacting others’ health. Some identity-related practices will have less impact on the person performing the practice but nevertheless impact the health-related environment of others around them. For example, at Asian and African sporting fixtures it is normative to blow vuvuzelas (plastic blowing horns) which can facilitate the generation and dissemination of respiratory aerosols (Lai,

Bottomley & McNerney, 2011) and so create conditions in which infection transmission can flourish. In a similar vein, pilgrims' bathing in the Ganga contributes to the contamination of the river: After particularly auspicious bathing days (attracting very large crowds), the levels of *E. coli* and fecal coliform counts in the river increases (Vortmann, Balsari, Holman, & Greenough, 2015). Again, the point is that identity-related practices impact the health environment that all must occupy (in this case, the river waters that all must bathe in for the duration of the festival).

The wider corollary of such observations is that policy makers and practitioners should not only seek to change those behaviors that impact directly on the participant's own health (e.g., their smoking), but also those behaviors that affect the environmental determinants of others' health. This widening of the policy agenda could be pursued through interventions that capitalize on participants' shared identity and relational intimacy with others. That is, interventions could highlight the wider implications of problematic behaviors (e.g., blowing vuvuzelas, public urination at music festivals) and draw upon the target's sense of solidarity with their fellows to make such behaviors nonnormative.

The cumulative impact of identity-related norms. Policy makers and practitioners should also be aware of the potential for identity-related beliefs to combine to exert cumulative impacts on participants' health status. For example, at the Hindu mass gathering at the Lord Murugan Temple of Nallur in Jafna (Sri Lanka) pilgrims ritually roll on sand. This (normative) practice has the effect of exposing pilgrims to skin infections caused by parasitic larvae buried in the sand—*cutaneous larva migrans* (Kannathasan, Muruganathan, Rajeshkannan, & de Silva, 2012). In turn, this health outcome is compounded by the tendency for symptoms of ill-health to be given meaning and evaluated (as serious or not) through reference to identity-related values and beliefs (Levine & Reicher, 1996). With regard to the skin infections picked up through rolling on the sand, there is evidence that some pilgrims came to interpret their symptoms in terms of their faith (i.e., as a sign of divine blessing) such that they fail to seek treatment.

Needless to say, developing interventions capable of modifying such religiously framed perceptions of symptomology is challenging: It is likely that arguments couched solely in terms of secular science would fail to gain traction. Accordingly, policy makers and practitioners would be well-advised to work with respected religious leaders to investigate if religious and secular knowledge can be combined (Mpofu, 2018) to develop alternative framings that encourage the seeking of treatment. This is an issue to which we will return.

The simultaneously positive and negative impact of identity-related belief. When identifying the risks arising from participants' identity-related belief and practice, policy makers, and practitioners should be aware of the potential for

complex and contradictory outcomes. This is well-illustrated if we consider the experience of the auditory environment. Many mass gatherings (e.g., music festivals) are loud and exceed WHO guidelines (Tronstad & Gelderblom, 2016). Such noise can damage health and well-being directly (e.g., hearing loss) or more indirectly (e.g., noise can be a stressor: Westman & Walters, 1981). However, whether such noise is subjectively experienced as stressful cannot be assumed: As Westman and Walters put it, noise is best understood as “unwanted sound” (p. 295) and what is wanted (or not) depends on its relationship with identity (Shayegh, Drury, & Stevenson, 2017). On the positive side, this means that auditory features of the environment that may be assumed to be intrusive stressors may not be experienced as such (but rather as meaningful, pleasurable, and manageable). Yet, on the negative side, just because a loud noise is not experienced as stressful does not mean it is harmless: Loud identity-appropriate sounds can still result in hearing damage. Moreover, this is especially likely if the positivity of the experience encourages participants to continue their exposure.

Data relevant to such observations come from research conducted at the Magh Mela (Shankar et al., 2013). The event features hundreds of sound-systems broadcasting songs, speeches, and announcements throughout the day (at a level approximating a busy city street: 85–90 dB). Interviews with pilgrims showed that to the degree that the content was judged as meaningful in relation to pilgrims’ identity it was accepted and even described as the “sound of the Saraswati” (the mythical river of knowledge which contributes to making the Mela such a sacred site: Prayag Magh Mela Research Group, 2007). Experimental research confirmed that the experience of an auditory stimulus is not simply a reflection of its intrinsic properties but contingent on the identity-related meanings attributed to it. The number of competing sound systems at the Mela mean that there are many sites where the messages of each are lost and merge into an indistinct cacophony. Capitalizing on this, the researchers produced a sound clip that was sufficiently ambiguous that it could be labeled as either coming from the Mela or from a busy city street. In one set of experimental studies, the clip was played for a set duration and pilgrim participants had to estimate the length of time it was played. Longer estimates were produced when the clip was apparently from the mass gathering (Srinivasan et al., 2013; Srinivasan, Tewari, Makwana, & Hopkins, 2015) which suggests that it attracted more attention (resulting in richer encoding) than when designated city related. In another study, pilgrim participants judged the clip more interesting and less uncomfortable when it was labeled as coming from the Mela (rather than the city). They also chose to listen to it longer (Shankar et al., 2013). In other words, while identity-related beliefs may turn what appears to be a stressor into a meaningful pleasure (a positive outcome) the result may be greater toleration of (and exposure to) loud sounds that could damage hearing (a negative outcome).

Being aware of the potential for identity-related beliefs and practices to have contradictory implications for health and well-being is important. First, it can help practitioners reach a more rounded judgment of risk. Second, it can help in the messaging around interventions. For example, a message that loud noise should be avoided because it elicits stress *and* damages hearing would likely be rejected if participants experience the noise as meaningful sound (with the result that it is not experienced as a stressor). In contrast, a message that acknowledged the pleasure of such sound but explained the dangers of overexposure for hearing loss would be more likely to resonate with participants' actual experience and have greater credibility.

Understanding the Role of Emotion

The intense positive emotional experience of mass gatherings is striking (Ehrenreich, 2006) and has encouraged many to view participants' behavior as beyond the reach of theories developed to address mundane social life. This is particularly clear in the popular assumption that crowd psychology and emotion are coupled and contrasted from everyday individual functioning such that crowd members are assumed to lose reason and "panic" (resulting in health-threatening stampedes). It is also manifest in the attempt to identify crowds that are "at risk" of emotional volatility and the types of patient presentation different crowd emotions may give rise to (Berlonghi 1995; Hutton et al., 2020; Zeitz et al., 2009).

The social identity approach offers a radical alternative. Rather than crowd members' emotion being diagnostic of an absence of identity and reason, it is intelligible as a product of solidarity and identity enactment (Hopkins et al., 2016; Neville & Reicher, 2011). Indeed, mass gathering research documenting the role of emotional synchrony in producing well-being (e.g., Bouchat et al. 2019; Páez et al., 2015) draws upon Durkheim's (1912/1995) conceptualization of emotion as involving "will and intention, and symbolic focus" rather than "mob psychology" (Olaveson, 2001, p. 101).

Several observations of relevance to policy makers and practitioners flow from the above. One is that positive crowd emotion should not be feared but valued. Indeed, policy makers and practitioners should encourage the group activities known to produce positive emotions. This could be through encouraging the provision of synchronized group activities and rituals that result in the positive emotional state of "flow" (Csíkszentmihályi, 1990; Zumeta, Basabe, Włodarczyk, Bobowik, & Páez, 2016). However, policy makers and practitioners should also be aware that the experience of such positive affect may have a downside if it leads participants to neglect symptoms of illness or fatigue during the event such that they continue when their condition requires attention.

Another observation is that policy makers and practitioners should treat talk of mass gathering participants' emotional volatility and propensity to "panic"

with immense caution. When accidents involving crushing arise it is typically because of poor planning (Moitinho de Almeida & von Schreeb, 2019; Soomaroo & Murray, 2012) and talk of “panic” works to blame participants and curtail practitioners’ reflections on their own planning failures. Moreover, to the degree that emergency planning arrangements often rest upon misplaced assumptions about crowd emotion (Drury, Novelli, & Stott, 2013a, 2013b), there is a danger that practitioner action premised on such misunderstandings contributes to risk. For example, practitioners’ references to “panic” when communicating with participants might undermine the sense of shared identity and trust necessary for mutual support when accidents arise (Drury et al., 2015).

The more general implication of conceptualizing mass gathering participants’ emotions in terms of their experience of being able to enact their identity (Hopkins et al., 2016) is that practitioners will be better able to understand shifts in a crowd’s mood (e.g., from joyous celebration to anger). Such shifts are routinely attributed to processes internal to the crowd (e.g., a loss of reason) and are understood as exacerbating risky behavior (Berlonghi, 1995; Zeitz et al., 2009). However, if crowd emotion reflects the experience of identity enactment, a more complex understanding of mass gathering participants’ (apparent) emotional volatility is possible: Shifts from joy to anger likely arise when participants feel thwarted in pursuing identity-related values and practices. This implies policy makers and practitioners should work to facilitate such identity enactment. It also implies they should be sensitive as to how their own practices may thwart such enactment (and thus produce the apparent emotional volatility they so fear). Such potential is well-illustrated in studies of the policing of sports fans. These show the switch from fans’ joy to anger arose because of the way they were treated by the authorities on the assumption that they were troublemakers (Stott & Reicher, 1998). In settings where mass gathering policy makers and practitioners tend to adopt a “command and control” model of crowd management, the potential for practitioners to alienate mass gathering participants and so create new risks warrants particular attention (Verma & Varma, 2018).

Policy Implications (2): Working towards Behavior Change

Understanding the various transformations in functioning associated with a shared identity provides a process-based framework with which to approach mass gathering participants’ behavior and so helps identify the principles with which to guide policy and practice. In our earlier policy recommendations, we proposed that participation should be encouraged as a vehicle to promote well-being and that practitioners should seek to facilitate the sense of mutual connection and solidarity that is so critical to producing improvements in well-being. Now, we can add three further guiding principles (Table 2). One concerns the need for a full mapping of the identity-related social practices to be found in any particular mass

Table 2. Guidance for policy makers and practitioners: Core principles

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- (1) Promote mass gathering participation as a public health intervention
 - (2) Ensure that mass gatherings are inclusive so that all participants benefit from the experience of a shared social identity
 - (3) Map identity-related behaviors to identify the beliefs and practices that bring risks or benefits to health and well-being
 - (4) Work with participants to reshape their understanding of the behaviors appropriate to their shared social identity
 - (5) Address participants' categorization of event authorities (e.g., security staff, stewards, police) and communicate that the latter are there to support the safe expression of participants' shared identity
-

gathering. Another concerns the need to treat the social identities associated with any event with respect: They cannot be ignored or circumvented but must be conceptualized as sites for intervention. Finally, in addition to taking the participants' social identities seriously, practitioners must attend to their own identity and how this is understood by those participating in the gathering (for this will impact practitioners' credibility and authority). Below, we elaborate on these three additional principles.

Mapping Identity-Related Behavior

As group members' behavior is in accordance with their understandings of their social identity, the first task confronting policy makers and practitioners is to know the social identities relevant to any mass gathering (there may be several). This entails mapping their scope (who is included), their normative beliefs and practices, and the ways in which these impact health and well-being (for good or ill). Some of these practices might impact an individual's own health (e.g., consuming excessive alcohol at a music festival), some another's (e.g., sharing a used razor blade), and still others the wider health environment which all must inhabit (e.g., blowing aerosol-generating vuvuzelas).

Such mapping exercises require something of a methodological shift for policy makers and practitioners. Typically, they gather quantitative data concerning the frequency of various patient presentations (e.g., heatstroke, respiratory infection) so as to plan the type and scale of service infrastructure required. In contrast, the mapping of participants' beliefs and practices requires interviews and ethnographic observation to identify the social practices that are relevant to participants' health. At present such ethnographic observation of actual behavior at mass gatherings is rare. However, the utility of such methods is recognized (and

demonstrated) in other branches of health research that try to uncover the otherwise hidden social practices that impact health. For example, observational research with village communities in highland Papua New Guinea discovered that the transmission of childhood diarrhea was bound up with the tradition of keeping pigs in the domestic setting (Jenkins & Howard, 1992). In a similar vein, research concerning villager's daily routines in the Amazon basin found that the daily schedule to children's outdoor play corresponded with the peak period of mosquito activity (e.g., Feged-Rivadeneira & Evans, 2019). This not only explained why children were particularly vulnerable to malaria but also carried important implications for practice (it suggested the prophylactic value of mosquito bed nets was limited).

Such audits of mass gathering participants' behavior must be wide ranging. For example, they should include observation of how participants use the infrastructure provided by event organizers. Typically, such questions are overlooked as practitioners focus on the question of whether the scale of provision (e.g., the number of medical staff, the number of toilet facilities, etc.) is enough to cope with demand. However, as public health is not simply an issue of infrastructure but of how people behave, practitioners should observe how people actually use the infrastructure provided, and this may not be as was envisaged (e.g., for cultural reasons, some participants at the Kumbh Mela do not use the latrines provided but prefer open defecation: Balsari et al., 2016).

Once practices are identified as problematic, various options are available. Sometimes there may be a technical solution. For example, the risk of skin infection associated with the sand rolling ritual at the Nallur Temple in Jafna described earlier (Kannathasan et al., 2012) was addressed through deworming the stray dogs responsible for contaminating the sand with their feces (Kannathasan et al., 2013). Yet, elsewhere, the focus must be on changing participants' behavior through (re)shaping their understandings of their social identities.

(Re)Shaping Identities

Given the psychological significance of social identities, practitioners wishing to shape group members' behavior should work with participants' identities and "not across them or against them" (Haslam, 2014, p. 8). Practically this means interventions should focus on shaping participants' understanding of their identity and how particular behaviors and practices relate to it (Hopkins, 1994). A good example of what this might look like in practice comes from attempts to address the issue of sexual harassment at music festivals. This is a hidden risk to health and well-being (Fileborn et al., 2020; Hill, Hesmondhalgh, & Megson, 2020), and various campaign groups (e.g., Safe Gigs for Women) now work with festival organizers and performers to promote the message that harassment is counternormative to the ethos of music festivals. For example, the Safe Gigs for Women

website carries an interview with a performer (Sam Carter of the *Architects*) who advanced a definition of music festival culture which celebrated freedom of expression and censured acts of harassment that exploited such expression:

Live music shows are a place of expression; people use music as an escape and a place of empowerment and being around those who share the same ideals as you. When you come to a show, you don't come to be assaulted. You come to express yourself [] and if you see someone being assaulted while they're expressing themselves, how can you not be outraged? (Safe Gigs for Women, 2018)

Practical guidance on how to deliver such definitions of identity-appropriate behavior comes from social psychological research showing in-group members are more influential than out-group members (Abrams, Wetherell, Cochrane, Hogg, & Turner, 1990). This implies that practitioners should work closely with prototypical in-group members to disseminate "healthy" definitions of in-group norms and values. If this is hinted at in the Safe Gigs For Women example above, it is brought to life with a concrete example of such an intervention in which the performer (Sam Carter, cited above) interrupted his set to reprimand a man in the audience who had grabbed a female fan's breast while she was crowd surfing. What makes this example particularly interesting is the immediacy of the performer's censure and the audience's response. The intervention was angry, direct and in the vernacular: "It is not your f***ing body [] So if you feel like doing that again, walk out there and f*** off and don't come back. [] Let's keep this going, let's keep this a f***ing safe place for everybody" (cited in O'Connor, 2017). The response was immediate, unified, and loud (cheers and applause)

This intervention shows the potential for prototypical in-group members to convey information as to what participants ought to do (an injunctive norm). Moreover, the audience response (loud cheers and applause) hints at the utility of interventions that provide evidence of other group members' beliefs and values. Research shows that interventions conveying such descriptive norms work (Prentice & Paluck, 2020). Furthermore, it suggests that descriptive evidence that others *reject* a certain behavior (what Bergquist and Nilsson, 2019, refer to as a "descriptive don't norm") is particularly diagnostic of what group members think (and thus, particularly influential). Taken as whole, such research implies that in addition to using prototypical exemplars to advance injunctive norms, interventions should convey descriptive evidence of group members' supportive stance. For example, practitioners wishing to decrease hajj pilgrims' sharing of razors (a vehicle for infection transmission) could work with well-regarded religious leaders to provide religious authority for such a recommendation while also providing evidence (e.g., through leaflets) that other hajj pilgrims refuse to share blades (a "descriptive don't norm").

In some contexts, interventions may need to counter well-established identity-related norms. Inevitably, this presents significant challenges. However, it is appropriate to note that identities are typically sites of dispute and argument

(Reicher & Hopkins, 2000) such that there may be opportunities to frame the behaviors one wishes to promote in such a way that they appear as consonant with group values (Hopkins, 1994). Take the difficulty of encouraging hajj pilgrims to wear facemasks (both to protect themselves and others from infection transmission). Popular textual interpretation leads many Muslims to believe that the face should not be covered when one is in the spiritual state of *irham* during the hajj (Anuwar, Mohamad, & Abdullah, 2014). This means that messages focused on the risks of infection transmission alone are unlikely to be influential (for such a practice appears counter-normative). Rather, practitioners would be well-advised to engage with the content of religious belief and work with culturally knowledgeable in-group members to construct an understanding of facemasks as religiously acceptable. One such attempt involved working with the Grand Mufti of Saudi Arabia who was able to draw a distinction between “covering the face” and wearing masks (Kingdom of Saudi Arabia Ministry of Health Updates Health Protection Advice for Umrah & Hajj, 2013) such that wearing face masks could be presented as religiously acceptable.

Given all the above, it should be clear that the credibility and authority of policy makers and practitioners is likely limited. The corollary is that they must work closely with group representatives holding relevant cultural knowledge in both the design of effective health-related messaging and in their delivery.

Addressing Practitioner Identities

The importance of policy makers and practitioners understanding (and respecting) mass gathering participants’ identity-related values is not only relevant to the production of large-scale communications. It is also relevant for the conduct of practitioner–participant interactions at the event. Take the example of music festivals. Typically, such festivals feature a transgressive and carnivalesque celebration of freedom (e.g., in relation to alcohol, clothing, sexual activity, etc.). To the degree that on-site practitioners (e.g., security staff, stewards, the police) are perceived as misunderstanding such values or as adopting a judgmental stance, participants are unlikely to approach them for help—even when it is needed. For example, female festival participants who experience sexual harassment are often disinclined to seek help from the police for fear of judgment (Fileborn et al., 2020). Furthermore, there is evidence that a punitive response to drug use at music festivals can actually increase the risks to participants’ health through encouraging changed patterns of drug consumption (e.g., bingeing) motivated by the desire to avoid detection (Grigg, Barratt, & Lenton, 2018; Hughes, Moxham-Hall, Ritter, Weatherburn, & MacCoun, 2017). These outcomes imply that as well as seeking to work with the social identities valued by participants, practitioners must reflect on their own identities, how these are seen by participants, and how they can act

to ensure that rather than being seen as a judgmental out-group they are seen as motivated to support the safe expression of participants' shared identity.

Conclusion

At the start to this paper, we described an emerging shift in the field of health-related mass gathering research (Yezli et al., 2018). Although we are in the early stages of this development, we have sought to signal the direction of travel involved in moving from the traditional mass gatherings medicine agenda towards a broader mass gatherings health perspective. Policy makers and practitioners need to know that although participation brings risks to physical health it can bring psychological benefits such that participation should be promoted as an intervention to improve well-being. So too, policy makers and practitioners must appreciate that these benefits cannot be understood without reference to the social psychological implications of a shared identity, and that knowledge of these processes is also key to addressing the traditional risks of concern to mass gatherings medicine (e.g., infection transmission).

The significant challenge for policy makers and practitioners is to develop interventions that work with (rather than against) such processes to maximize the benefits and minimize the harms of participation. Practically speaking, this involves taking issues of identity (including practitioners' own identities) seriously, working with participants to identify the identity-related behaviors that should be encouraged or discouraged, and targeting interventions in such a way as to capitalize on the power of a shared identity to direct behavior. Typically, this will mean building interventions that exploit participants' sense of connection with each other and shaping their understandings of identity-related behaviors and practices.

In an era of Covid-19 coronavirus, any talk of mass gatherings featuring in the promotion of health and well-being may appear fanciful. However, cancelling mass gatherings is not without social cost (McCloskey et al., 2020) and if the experience of coronavirus teaches us anything, it is that our social connections matter and that the desire for collective assembly will return. Inevitably, the challenges for practitioners and policy makers will be enormous. However, an understanding of social identity processes provides the conceptual framework with which to explore these new challenges and produce experiences of collective assembly that benefit health and well-being.

References

- Abrams, D., Wetherell, M., Cochrane, S., Hogg, M. A., & Turner, J. C. (1990). Knowing what to think by knowing who you are: Self-categorization and the nature of norm formation, conformity and

- group polarization. *British Journal of Social Psychology*, 29, 97–119. <https://doi.org/10.1111/j.2044-8309.1990.tb00892.x>
- Abubakar, I., Gautret, P., Brunette, G. V., Blumberg, L., Johnson, D., Pomeroy, G., ... Khan, A. S. (2012). Global perspectives for prevention of infectious diseases associated with mass gatherings. *Lancet Infectious Diseases*, 12, 66–74. [http://doi.org/10.1016/S1473-3099\(11\)70246-8](http://doi.org/10.1016/S1473-3099(11)70246-8)
- Alnabulsi, H., & Drury, J. (2014). Social identification moderates the effect of crowd density on safety at the Hajj. *PNAS*, 111, 9091–9096. www.pnas.org/cgi/doi/10.1073/pnas.1404953111
- Alnabulsi Drury, J., & Templeton, A. (2018). Predicting collective behaviour at the Hajj: place, space, and the process of cooperation. *Philosophical Transactions, B: Biological Sciences*, 373, 20170240. <https://doi.org/10.1098/rstb.2017.0240>
- Anuwar, S. M. Y., Mohamad, I., & Abdullah, I. (2014). The issues of facemask among hajj pilgrims: A critical review. *International Journal of Science, Environment & Technology*, 3, 1528–1534.
- Babylon & Beyond. (2009). Saudi Arabia: Push for a smoke-free Hajj pilgrimage. Retrieved from <https://latimesblogs.latimes.com/babylonbeyond/2009/11/saudi-arabia-push-for-a-smoke-free-hajj-pilgrimage.html>.
- Bakouri, M. & Staerklé, C. (2015). Coping with structural disadvantage: Overcoming negative effects of perceived barriers through bonding identities. *British Journal of Social Psychology*, 54, 648–670. <https://doi.org/10.1111/bjso.12102>
- Balsari, S., Greenough, P. G., Kazi, D., Heerboth, A., Dwivedi, S. & Leaning, J. (2016). Public health aspects of the world's largest mass gathering: The 2013 Kumbh Mela in Allahabad, India. *Journal of Public Health Policy*, 37, 411–427. <http://doi.org/10.1057/s41271-016-0034-z>
- Berlonghi, A. E. (1995). Understanding and planning for different spectator crowds. *Safety Science*, 18, 239–247. [http://doi.org/10.1016/0925-7535\(94\)00033-Y](http://doi.org/10.1016/0925-7535(94)00033-Y)
- Bergquist, M., & Nilsson, A. (2019). The DOs and DON'Ts in social norms: A descriptive don't-norm increases conformity. *Journal of Theoretical Social Psychology*, 3, 158–166. <https://doi.org/10.1002/jts.5.43>
- Blyth, C. C., Foo, H., van Hall, S. J., Hurt, A. C., Barr, I. G., McPhie, K., ... Dwyer, D. E. (2010). Influenza outbreaks during World Youth Day 2008 mass gathering. *Emerging Infectious Diseases*, 16, 809–815. <http://wwwnc.cdc.gov/eid/article/16/5/09-1136>
- Botelho-Nevers, E., & Gautret, P. (2013). Outbreaks associated to large open-air festivals, including music festivals, 1980 to 2012. *Eurosurveillance*, 18, 20426. <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=20426>
- Bouchat, P., Rime, B., van Eyken, R., & Nils, F. (2019). The virtues of collective gatherings. A study on the positive effects of a major scouting event. *Journal of Applied Social Psychology*, 50, 189–201. <https://doi.org/10.1111/jasp.12649>
- Buzinde, C. N., Kalavar, J. M., Kohli, N., & Manuel-Navarrete, D. (2014). Emic understandings of Kumbh Mela pilgrimage experiences. *Annals of Tourism Research*, 49, 1–18. <https://doi.org/10.1016/j.annals.2014.08.001>
- Cohen, S. (2004). Social relationships and health. *American Psychologist*, 59, 676–684. <https://doi.org/10.1037/0003-066X.59.8.676>
- Csikszentmihályi, M. (1990). *Flow: The psychology of optimal experience*. New York: Harper and Row.
- Cruwys, T., Saeri, A. K., Radke, H. R. M., Walter, Z. C., Crimston, D., & Ferris, L. J. (2019). Risk and protective factors for mental health at a youth mass gathering. *European Child & Adolescent Psychiatry*, 28, 211–222. <https://doi.org/10.1007/s00787-018-1163-7>
- Cruwys, T., Greenaway, K., Ferris, L. J., Rathbone, J., Saeri, A. K., Williams, E., ..., & Grace, L. (2020). When trust goes wrong: A social identity model of risk taking. *Journal of Personality and Social Psychology*. <http://doi.org/10.1037/pspi0000243>
- Delvaux, E., Meeussen, L., & Mesquita, B. (2016). Emotions are not always contagious: Longitudinal spreading of self-pride and group pride in homogeneous and status-differentiated groups. *Cognition and Emotion*, 30, 101–116. <http://doi.org/10.1080/02699931.2015.1018143>
- Dixon, M., Ishola, D., & Phin, N. (2014). *Impact of mass gatherings on an influenza pandemic*. London: Public Health England, Department of Health.
- Draper, S. (2014). Collective effervescence and solidarity in religious organizations. *Journal for the Scientific Study of Religion*, 53, 229–248. <https://doi.org/10.1111/jssr.12109>

- Drury, J., & Reicher, S. (2005). Explaining enduring empowerment: A comparative study of collective action and psychological outcomes. *European Journal of Social Psychology, 35*, 35–58. <https://doi.org/10.1002/ejsp.231>
- Drury, J., & Reicher, S. D. (2009). Collective psychological empowerment as a model of social change: Researching crowds and power. *Journal of Social Issues, 65*, 707–726. <https://doi.org/10.1111/j.1540-4560.2009.01622.x>
- Drury, J., Novelli, D., & Stott, C. (2013a). Psychological disaster myths in the perception and management of mass emergencies. *Journal of Applied Social Psychology, 43*, 2259–2270. <https://doi.org/10.1111/jasp.12176>
- Drury, J., Novelli, D., & Stott, C. (2013b). Representing crowd behaviour in emergency planning guidance: ‘mass panic’ or collective resilience? *Resilience: International Policies, Practices and Discourses, 1*, 18–37. <https://doi.org/10.1080/21693293.2013.765740>
- Drury, J., Novelli, D., & Stott, C. (2015). Managing to avert disaster: Explaining collective resilience at an outdoor music event. *European Journal of Social Psychology, 45*, 533–547. <https://doi.org/10.1002/ejsp.2108>
- Drury, J., Cocking, C., Beale, J., Hanson, C., & Rapley, F. (2005). The phenomenology of empowerment in collective action. *British Journal of Social Psychology, 44*, 309–328. <https://doi.org/10.1348/014466604X18523>
- Durkheim, É (1912/1995). *The elementary forms of religious life*, Translated by K.E. Fields, New York: Free Press.
- Eade, J., & Sallnow, M. (1991) (Eds.) *Contesting the sacred: The anthropology of Christian pilgrimage*. London: Routledge.
- Ehrenreich, B. (2006). *Dancing in the streets*. New York, NY: Metropolitan.
- Evans, G. W. (1979). Behavioral and physiological consequences of crowding in humans. *Journal of Applied Social Psychology, 9*, 27–46. <https://doi.org/10.1111/j.1559-1816.1979.tb00793.x>
- Evrpidou, A., & Drury, J. (2013). This is the time of tension: collective action and subjective power in the Greek anti-austerity movement. *Contention: The Multidisciplinary Journal of Social Protest, 1*, 31–51.
- Feged-Rivadeneira, A., & Evans, S. (2019). Ethnography of a parasite: A quantitative ethnographic observation of forest malaria in the Amazon basin. *Scandinavian Journal of Public Health 47*, 820–831. <https://doi.org/10.1177/1403494818756561>
- Fileborn, B., Wadds, P., & Tomsen, S. (2020). Sexual harassment and violence at Australian music festivals: Reporting practices and experiences of festival attendees. *Australian & New Zealand Journal of Criminology, 53*(2), 194–212. <https://doi.org/10.1177/0004865820903777>
- Fox, J., Smith, A., Yale, A., Chow, C., Alaswad, E., Cushing, T., & Monte, A. A. (2018). Drugs of abuse and novel psychoactive substances at outdoor music festivals in Colorado. *Substance Use & Misuse, 53*, 1203–1211. <https://doi.org/10.1080/10826084.2017.1400067>
- Gautret, P., & Steffen, R. (2016). Communicable diseases as health risks at mass gatherings other than Hajj: what is the evidence? *International Journal of Infectious Diseases, 47*, 46–52. <http://doi.org/10.1016/j.ijid.2016.03.007>
- Gabriel, S., Valenti, J., Naragon-Gainey, K., & Young, A. F. (2017). The psychological importance of collective assembly: Development and validation of the tendency for effervescent assembly measure (TEAM). *Psychological Assessment, 29*, 1349–1362. <https://doi.org/10.1037/pas0000434>
- Gleibs, I. H., Haslam, C., Jones, J., Haslam, S. A., McNeill, J., & Connolly, H. (2011). No country for old men? The role of a “Gentlemen’s Club” in promoting social engagement and psychological well-being in residential care. *Aging & Mental Health, 15*, 456–467. <https://doi.org/10.1080/13607863.2010.536137>
- George, L. K., Larson, D. B., Koenig, H. G., & McCullough, M. E. (2000). Spirituality and health: What we know, what we need to know. *Journal of Social and Clinical Psychology, 19*, 102–116. <https://doi.org/10.1521/jsocp.2000.19.1.102>
- Graham, J., & Haidt, J. (2010). Beyond beliefs: Religions bind individuals into moral communities. *Personality and Social Psychology Review, 14*, 140–150. <https://doi.org/10.1177/1088868309353415>

- Gregory, K. F., Carpenter, J. A., & Bending G. C. (1967). Infection hazards of the common communion cup. *Canadian Journal of Public Health / Revue Canadienne de Santé Publique*, *58*, 305–310.
- Grigg, J., Barratt, M. J., & Lenton, S. (2018). Drug detection dogs at Australian outdoor music festivals: Deterrent, detection and iatrogenic effects. *International Journal of Drug Policy*, *60*, 89–95. <http://doi.org/10.1016/j.drugpo.2018.08.002>
- Haghani, M., Cristiani, E., Bode, N. W. F., Boltes, M., & Corbetta, A. (2019). Panic, irrationality, and herding: Three ambiguous terms in crowd dynamics research. *Journal of Advanced Transportation*, *2019*, 9267643. <https://doi.org/10.1155/2019/9267643>
- Haslam, S. A. (2014). Making good theory practical: Five lessons for an Applied Social Identity Approach to challenges of organizational, health, and clinical psychology. *British Journal of Social Psychology*, *53*, 1–20. <https://doi.org/10.1111/bjso.12061>
- Haslam, S. A., Reicher, S. D. & Levine, M. (2012). When other people are heaven, when other people are hell: How social identity determines the nature and impact of social support (pp 157–174). In J. Jetten, C. Haslam, & S. A. Haslam, (eds.), *The social cure*. London: Psychology Press.
- Haslam, S.A., O'Brien, A., Jetten, J., Vormedal, K., & Penna, S. (2005). Taking the strain: Social identity, social support, and the experience of stress. *British Journal of Social Psychology*, *44*, 355–370. <http://doi.org/10.1348/014466605X37468>
- Haslam, S. A., Turner, J. C., Oakes, P. J., McGarty, C., & Reynolds, K. J. (1998). The group as a basis for emergent stereotype consensus. *European Review of Social Psychology*, *8*, 203–239. <https://doi.org/10.1080/14792779643000128>
- Hill, R. L., Hesmondhalgh, D., & Megson, M. (2020) Sexual violence at live music events: Experiences, responses and prevention. *International Journal of Cultural Studies*, *23*, 368–384. <https://doi.org/10.1177/1367877919891730>
- Hopkins, N. (1994). Peer group processes and adolescent health-related behaviour: More than “peer group pressure”? *Journal of Community & Applied Social Psychology*, *4*, 329–345. <https://doi.org/10.1002/casp.2450040503>
- Hopkins, N., & Reicher, S. D. (2017). Social identity and health at mass gatherings. *European Journal of Social Psychology*, *47*, 867–877. <https://doi.org/10.1002/ejsp.2288>
- Hopkins, N., Stevenson, C., Shankar, S., Pandey, K., Khan, S., & Tewari, S. (2015) Being together at the Magh Mela: The social psychology of crowds and collectivity (pp. 19–39). In Gale, T., Maddrell, A., & Terry, A. (Eds.). *Sacred mobilities*. Farnham, UK: Ashgate.
- Hopkins, N., Reicher, S. D., Khan, S. S., Tewari, S., Srinivasan, N., & Stevenson, C. (2016). Explaining effervescence: Investigating the relationship between shared social identity and positive experience in crowds. *Cognition and Emotion*, *30*, 20–32. <https://doi.org/10.1080/02699931.2015.1015969>
- Hopkins, N., Reicher, S., Stevenson, C., Pandey, K., Shankar, S., & Tewari, S. (2019). Social relations in crowds: Recognition, validation and solidarity. *European Journal of Social Psychology*, *49*, 1283–1297. <https://doi.org/10.1002/ejsp.2586>
- Hughes, C. E., Moxham-Hall, V., Ritter, A., Weatherburn, D., & MacCoun, R. (2017). The deterrent effects of Australian street-level drug law enforcement on illicit drug offending at outdoor music festivals. *International Journal of Drug Policy*, *41*, 91–100. <https://doi.org/10.1016/j.drugpo.2016.12.018>
- Hult Khazaie, D., & Khan, S. S. (2019). Social identification lowers health risk perceptions in mass gatherings via lowered disgust. *British Journal of Social Psychology*. <https://doi.org/10.1111/bjso.12362>
- Hutton, A., Ranse, J., Verdonk, N., Ullah, S., & Arbon, P. (2014). Understanding the characteristics of patient presentations of young people at outdoor music festivals. *Prehospital Disaster Medicine*, *29*, 160–166. <http://doi.org/10.1017/S1049023X14000156>
- Hutton, A., Ranse, J., Gray, K. L., Turris, S., Lund, A., & Munn, M. B. (2020). Psychosocial influences on patient presentations: considerations for research and evaluation at mass-gathering events. *Prehospital Disaster Medicine*, *35*, 197–205. <http://doi.org/10.1017/S1049023X20000047>
- Jenkins, C., & Howard, P. (1992) The use of ethnography and structured observations in the study of risk factors for the transmission of diarrhea in highland Papua New Guinea. *Medical Anthropology*, *15*, 1–16. <http://doi.org/10.1080/01459740.1992.9966079>

- Jetten, J., Haslam, C., & Haslam, S. A. (Eds.). (2012). *The social cure: Identity, health, and well-being*. London: Psychology Press.
- Kannathasan, S., Muruganathan, A., Rajeshkannan, N., & de Silva, N. R. (2012). Cutaneous larva migrans among devotees of the Nallur Temple in Jaffna, Sri Lanka. *PLoS One*, 7, e30516. <https://doi.org/10.1371/journal.pone.0030516>
- Kannathasan, S., Muruganathan, A., Rajeshkannan, N., & de Silva, N. R. (2013). A simple intervention to prevent cutaneous larva migrans among devotees of the Nallur Temple in Jaffna, Sri Lanka. *PLoS One*, 8, e61816. <http://doi.org/10.1371/journal.pone.0061816>
- Kawachi, I., Subramanian, S. V., & Kim, D. (2008). *Social capital and health*. New York, NY: Springer.
- Kearns, M., Muldoon, O.T., Msetfi, R. M., & Surgenor, P. W. G. (2017). Darkness into light? Identification with the crowd at a suicide prevention fundraiser promotes well-being amongst participants. *European Journal of Social Psychology*, 47, 878–888. <https://doi.org/10.1002/ejsp.2304>
- Khan, S., Hopkins, N., Reicher, S., Tewari, S., Srinivasan, N., & Stevenson, C. (2015). Shared identity predicts enhanced health at mass gatherings. *Group Processes and Intergroup Relations*, 18, 504–522. <https://doi.org/10.1177/1368430214556703>
- Kingdom of Saudi Arabia Ministry of Health Updates Health Protection Advice For Umrah & Hajj (2013). Retrieved from <http://afludiary.blogspot.co.uk/2013/07/ksa-moh-updates-health-protection.html>
- Lai, K.M., Bottomley, C., & Mc Nerney, R. (2011). Propagation of respiratory aerosols by the vuvuzela. *PLoS One*, 6, e20086. <https://doi.org/10.1371/journal.pone.0020086>
- Laing, J. & Marr, J. (2015). Music festivals and social inclusion – The festival organizers’ perspective. *Leisure Sciences*, 37, 1–17. <https://doi.org/10.1080/01490400.2014.991009>
- Le Bon, G. (1895/1947). *The crowd: A study of the popular mind*. London: Ernest Benn.
- Levine, R. M., & Reicher, S. D. (1996). Making sense of symptoms: Self-categorization and the meaning of illness and injury. *British Journal of Social Psychology*, 35, 245–256. <https://doi.org/10.1111/j.2044-8309.1996.tb01095.x>
- Levine, R. M., Evans, D., Prosser, A., & Reicher, S. (2005). Identity and emergency intervention: How social group membership and inclusiveness of group boundaries shapes helping behavior. *Personality and Social Psychology Bulletin*, 31, 443–453. <https://doi.org/10.1177/0146167204271651>
- Livingstone, A. G., Spears, R., Manstead, A. S. R., Bruder, M., & Shepherd, L. (2011). We feel, therefore we are: Emotion as a basis for self-categorization and social action. *Emotion*, 11, 754–767. <https://doi.org/10.1037/a0023223>
- Locker, M. (2016). Bonnaroo: High fives to the Glastonbury of American music festivals. *The Guardian*, 8th June, 2016. Retrieved from <https://www.theguardian.com/music/2016/jun/08/bonnaroo-music-festival-tennessee-history-pearl-jam-lcd-soundsystem>
- Lubman, D.I., Droste, N., Pennay, A., Hyder, S., & Miller, P. (2014). High rates of alcohol consumption and related harm at schoolies week: A portal study. *Australian & New Zealand Public Health*, 38, 536–541. <https://doi.org/10.1111/1753-6405.12266>
- Lugosi, P. (2014). Mobilising identity and culture in experience co-creation and venue operation. *Tourism Management*, 40, 165–179. <https://doi.org/10.1016/j.tourman.2013.06.005>
- Maclean, K. (2008). *Pilgrimage and power: the Kumbh Mela in Allahabad, 1765–2001*. New York, NY: Oxford University Press.
- Maeng, A., Tanner, R. J., & Soman, D. (2013). Conservative when crowded: Social crowding and Consumer choice. *Journal of Marketing Research*, 50(6), 739–752. <https://doi.org/10.1509/jmr.12.0118>
- McCloskey, B., Zumla, A., Ippolito, G., Blumberg, L., Arbon, P., Cicero, A., ... Borodina, M. on Behalf of the WHO Novel Coronavirus-19 Mass Gatherings Expert Group. (2020). Mass gathering events and reducing further global spread of COVID-19: a political and public health dilemma. *The Lancet*, 395, 1096–1098. [http://doi.org/10.1016/S0140-6736\(20\)30681-4](http://doi.org/10.1016/S0140-6736(20)30681-4)
- Memish, Z. A., Stephens, G. M., Steffen, R., & Ahmed, Q. A. (2012). Emergence of medicine for mass gatherings: lessons from the Hajj. *Lancet Infectious Diseases*, 12, 56–65. [http://doi.org/10.1016/S1473-3099\(11\)70337-1](http://doi.org/10.1016/S1473-3099(11)70337-1)

- Milsten, A.M., Tennyson, J., & Weisberg, S. (2017). Retrospective analysis of mosh-pit related injuries. *Prehospital & Disaster Medicine, 32*, 636–641. <http://doi.org/10.1017/S1049023X17006689>
- Moitinho de Almeida, M., & von Schreeb, J. (2019). Human stampedes: An updated review of current literature. *Prehospital & Disaster Medicine, 34*, 82–88. <https://doi.org/10.1017/S1049023X18001073>
- Moons, W. G., Leonard, D. J., Mackie, D. M., & Smith, E. R. (2009). I feel our pain: Antecedents and consequences of emotional self-stereotyping. *Journal of Experimental Social Psychology, 45*, 760–769. <https://doi.org/10.1016/j.jesp.2009.04.016>
- Mpofu, E. (2018). How religion frames health norms: A structural theory approach. *Religions, 9*, 119. <https://doi.org/10.3390/rel9040119>
- Neville, F., & Reicher, S. D. (2011). The experience of collective participation: shared identity, relatedness and emotionality. *Contemporary Social Science, 6*, 377–396. <https://doi.org/10.1080/21582041.2012.627277>
- Novelli, D., Drury, J., & Reicher, S. D. (2010). Come together: Two studies concerning the impact of group relations on personal space. *British Journal of Social Psychology, 49*, 223–236. <https://doi.org/10.1348/014466609X449377>
- Novelli, D., Drury, J., Reicher, S. D., & Stott, C. (2013). Crowdedness mediates the effect of social identification on positive emotion in a crowd: A survey of two crowd events. *PLoS ONE 8*, e78983. <https://doi.org/10.1371/journal.pone.0078983>
- O'Connor, R. (2017, August 19). Architects singer Sam Carter calls out man “who grabbed fan’s breast while she was crowdsurfing”. *The Independent*. Retrieved from <https://www.independent.co.uk/arts-entertainment/music/news/architects-gig-sam-carter-crowdsurfer-video-lowlands-festival-sexual-assault-grope-latest-a7901606.html>
- Olaveson, T. (2001). Collective effervescence and *communitas*: Processual models of ritual and society in Emile Durkheim and Victor Turner. *Dialectical Anthropology, 26*, 89–124. <https://doi.org/10.1023/A:1020447706406>
- Packer, J., & Ballantyne, J. (2010). The impact of music festival attendance on young people’s psychological and social well-being. *Psychology of Music, 39*, 164–181. <https://doi.org/10.1177/0305735610372611>
- Páez, D., Basabe, N., Ubillos, S., & González-Castro, J. (2007). Social sharing, participation in demonstrations, emotional climate, and coping with collective violence after the March 11th Madrid bombings. *Journal of Social Issues, 63*, 323–337. <https://doi.org/10.1111/j.1540-4560.2007.00511.x>
- Páez, D., Rimé, B., Basabe, N., Wlodarczyk, A., & Zumeta, L. (2015). Psychosocial effects of perceived emotional synchrony in collective gatherings. *Journal of Personality and Social Psychology, 108*, 711–729. <https://doi.org/10.1037/pspi0000014>
- Palmer, C.T. (2005). Mummers and Moshers: Two rituals of trust in changing social environments. *Ethnology, 44*, 147–166. <http://doi.org/10.2307/3773994>
- Parkinson, B. (2019). Intragroup emotion convergence: Beyond contagion and social appraisal. *Personality and Social Psychology Review, 24*, 121–140. <https://doi.org/10.1177/1088868319882596>
- Pehrson, S., Stevenson, C., Muldoon, O. T., & Reicher, S. D. (2014). Is everyone Irish on St Patrick’s Day? Divergent expectations and experiences of collective self-objectification at a multicultural parade. *British Journal of Social Psychology, 53*, 249–264. <https://doi.org/10.1111/bjso.12029>
- Pelletier, P. (2018). The pivotal role of perceived emotional synchrony in the context of terrorism: Challenges and lessons learned from the March 2016 attack in Belgium. *Journal of Applied Social Psychology, 48*, 477–487. <https://doi.org/10.1111/jasp.12526>
- Prayag Magh Mela Research Group. (2007). Experiencing the Magh Mela at Prayag: Crowds, categories and social relations. *Psychological Studies, 52*, 311–319.
- Prentice, D., & Paluck, E. L., (2020). Engineering social change using social norms: Lessons from the study of collective action. *Current Opinion in Psychology, 35*, 138–142. <https://doi.org/10.1016/j.copsy.2020.06.012>

- Reicher, S. D. (1982). The determination of collective behaviour. (pp. 41–83). In H. Tajfel (ed.), *Social identity and intergroup relations*. Cambridge, UK: Cambridge University Press.
- Reicher, S. D. (2011). Mass action and mundane reality: An argument for putting crowd analysis at the centre of the social sciences. *Contemporary Social Science*, 6, 433–450. <https://doi.org/10.1080/21582041.2011.619347>
- Reicher, S. (2017). “La beauté est dans la rue”: Four reasons (or perhaps five) to study crowds. *Group Processes & Intergroup Relations*, 20, 593–605. <https://doi.org/10.1177/1368430217712835>
- Reicher, S. D., & Haslam, S. A. (2009). Beyond help: a social psychology of collective solidarity and social cohesion (pp. 289–309). In S. Sturmer & M. Snyder (Eds.), *The psychology of prosocial behavior*. London, UK: Wiley.
- Reicher, S. D. & Hopkins, N. (2000). *Self and nation*. London: Sage.
- Reicher, S. D., Templeton, A., Neville, F., Ferrari, L., & Drury, J. (2016). Core disgust is attenuated by ingroup relations. *Proceedings of the National Academy of Sciences*, 113, 2631–2635. <https://doi.org/10.1073/pnas.1517027113>
- Safe Gigs for Women (2018, February). Architects’ Sam Carter on tackling sexual assault in live music. Retrieved from <https://sgfw.org.uk/2018/02/01/architects-sam-carter-on-tackling-sexual-assault-in-live-music/>
- Sallnow, M. J. (1981). *Communitas* reconsidered: The sociology of Andean pilgrimage. *Man*, 16, 163–182.
- Sani, F., Herrera, M., Wakefield, J. R. H., Boroch, O., & Gulysas, C. (2012). Comparing social contact and group identifications as predictors of mental health. *British Journal of Social Psychology*, 51, 781–790. <http://doi.org/10.1111/j.2044-8309.2012.02101.x>
- Shankar, S., Stevenson, C., Pandey, K., Tewari, S., Hopkins, N., & Reicher, S. D. (2013). A calming cacophony: Social identity can shape the experience of loud noise. *Journal of Environmental Psychology*, 36, 87–95. <https://doi.org/10.1016/j.jenvp.2013.07.004>
- Shayegh, J., Drury, J., & Stevenson, C. (2017). Listen to the band! How sound can realise group identity and enact intergroup domination. *British Journal of Social Psychology*, 56, 181–196. <https://doi.org/10.1111/bjso.12175>
- Smith K. P., & Christakis N. A. (2008). Social networks and health. *Annual Review of Sociology*, 34, 405–429. <https://doi.org/10.1146/annurev.soc.34.040507.134601>
- Soomaroo L., & Murray V. (2012). Disasters at mass gatherings: Lessons from history. *PLOS Currents Disasters* 4, RRN1301. <http://doi.org/10.1371/currents.RRN1301>
- Sridhar, S., Gautret, P., & Brouqui, P. (2015). A comprehensive review of the Kumbh Mela: Identifying risks for spread of infectious diseases. *Clinical Microbiology & Infection*, 21, 128–133. <http://doi.org/10.1016/j.cmi.2014.11.021>
- Srinivasan, N., Hopkins, N. P., Reicher, S. D., Khan, S. S., Singh, T., & Levine, M. (2013). Social meaning of ambiguous sounds influences retrospective duration judgments. *Psychological Science*, 24, 1060–1062. <https://doi.org/10.1177/0956797612465293>
- Srinivasan, N., Tewari, S., Makwana, M., & Hopkins, N. (2015). Attention mediates the effect of context-relevant social meaning on prospective duration judgments. *Timing & Time Perception*, 3, 189–200. <https://doi.org/10.1163/22134468-00002032>
- Steffens, N. K., Haslam, S. A., Schuh, S. C., Jetten, J., & van Dick, R. (2016). A meta-analytic review of social identification and health in organizational contexts. *Personality and Social Psychology Review*, 21, 303–335. <https://doi.org/10.1177/1088868316656701>
- Steffen, R., Bouchama, A., Johansson, A., Dvorak, J., Isla, N., Smallwood, C., & Memish, Z. A. (2012). Non-communicable health risks during mass gatherings. *Lancet Infectious Diseases*, 12, 142–149. [https://doi.org/10.1016/S1473-3099\(11\)70293-6](https://doi.org/10.1016/S1473-3099(11)70293-6)
- Stott, C., & Reicher, S. (1998). How conflict escalates: The inter-group dynamics of collective football crowd ‘Violence’. *Sociology*, 32, 353–377. <https://doi.org/10.1177/0038038598032002007>
- Tewari, S., Khan, S. S., Hopkins, N. P., Srinivasan, N., & Reicher, S. D. (2012). Participation in mass gatherings can benefit well-being: Longitudinal and control data from a North Indian Hindu pilgrimage event. *PLoS One*, 7, e47291. <http://doi.org/10.1371/journal.pone.0047291>
- Tronstad, T. V., & Gelderblom, F. B. (2016). Sound exposure during outdoor music festivals. *Noise & Health*, 18, 220–228. <https://doi.org/10.4103/1463-1741.189245>

- Turner, J. C., (1982). Towards a cognitive redefinition of the social group (pp. 15–40). In H. Tajfel (Ed.), *Social identity and intergroup relations*. Cambridge, UK: Cambridge University Press.
- Turner, J. C., Oakes, P. J., Haslam, S. A., & McGarty, C. (1994). Self and collective: Cognition and social context. *Personality and Social Psychology Bulletin*, *20*, 454–454. <https://doi.org/10.1177/0146167294205002>
- Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D., & Wetherell, M. C., (1987). *Rediscovering the social group: A self-categorisation theory*. Oxford, UK: Basil Blackwell.
- Verma, A. & Varma, V. (2018). Policing non-violent crowds: Lessons from Kumbh Mela in India. *Policing: A Journal of Policy and Practice*. <https://doi.org/10.1093/police/pay012>
- Vestergren, S., Drury, J., & Hammar Chiriac, E. (2016). The biographical consequences of protest and activism: a systematic review and a new typology. *Social Movement Studies*, *16*, 203–221. <https://doi.org/10.1080/14742837.2016.1252665>
- Vortmann, M., Balsari, S., Holman, S. R., & Greenough, P. G. (2015). Water, sanitation, and hygiene at the world's largest mass gathering. *Current Infectious Disease Reports*, *17*, 461. <http://doi.org/10.1007/s11908-015-0461-1>
- Wang, I. M. , & Ackerman, J. M. (2019). The infectiousness of crowds: Crowding experiences are amplified by pathogen threats. *Personality and Social Psychology Bulletin*, *45*, 120–132. <https://doi.org/10.1177/0146167218780735>
- Wegge, J., Van Dick, R., Fisher, G., Wecking, C., & Moltzen, K. (2006). Work motivation, organisational identification, and well-being in call centre work. *Work & Stress*, *20*, 60–83. <https://doi.org/10.1080/02678370600655553>
- Westman, J. C., & Walters, J. R. (1981). Noise and stress: a comprehensive approach. *Environmental health perspectives*, *41*, 291–309. <https://doi.org/10.1289/ehp.8141291>
- Wing, S., Johnson, R., & Fowler, L. (2020). Moshpit medicine: The experience of an Australian event resuscitation team. *Prehospital & Disaster Medicine*, *35*, 293–297. <https://doi.org/10.1017/S1049023X20000266>
- World Health Organization. (2015). *Public health for mass gatherings: key considerations*. Geneva, Switzerland: WHO.
- Yezli, S., Assiri, A., Nabulsi, H., Awam, A., Blumberg, L., Endericks, T., ... Alotaibi, B. (2018). From mass gatherings medicine to mass gatherings health: Conclusions from the 3rd International Conference on Mass Gatherings Medicine, Riyadh, Kingdom of Saudi Arabia. *International Journal of Infectious Diseases*, *66*, 128–130. <http://doi.org/10.1016/j.ijid.2017.12.019>
- Zeitz, K. M., Tan, H. M., Grief, M., Couns, P. C., & Zeitz, C. J. (2009). Crowd behavior at mass gatherings: A literature review. *Prehospital & Disaster Medicine*, *24*, 32–38. <http://doi.org/10.1017/s1049023x00006518>
- Zumeta, L., Basabe, N., Wlodarczyk, A., Bobowik, M., & Páez, D. (2016). Shared flow and positive collective gatherings. *Anales De Psicología / Annals of Psychology*, *32*, 717–727. <https://doi.org/10.6018/analesps.32.3.261651>