Behavioral and Brain Sciences

cambridge.org/bbs

Dying for the group: Towards a general theory of extreme self-sacrifice

Harvey Whitehouse

School of Anthropology and Museum Ethnography, University of Oxford, Oxford OX2 6PE, United Kingdom.
harvey.whitehouse@anthro.ox.ac.uk http://www.harveywhitehouse.com
https://www.icea.ox.ac.uk/people/professor-harvey-whitehouse

Target Article

Cite this article: Whitehouse H. (2018) Dying for the group: Towards a general theory of extreme self-sacrifice. *Behavioral and Brain Sciences* **41**, e192: 1–62. doi:10.1017/S0140525X18000249

Target Article Accepted: 30 January 2018
Target Article Manuscript Online: 7 February 2018
Commentaries Accepted: 16 May, 10 June, and 26 June 2018

Key words:
Identity fusion; imagistic practices; memory; rites of terror; self-sacrifice; suicide terrorism; warfare

Abstract

Whether upheld as heroic or reviled as terrorism, people have been willing to lay down their lives for the sake of their groups throughout history. Why? Previous theories of extreme self-sacrifice have highlighted a range of seemingly disparate factors, such as collective identity, outgroup hostility, and kin psychology. In this paper, I attempt to integrate many of these factors into a single overarching theory based on several decades of collaborative research with a range of special populations, from tribes in Papua New Guinea to Libyan insurgents and from Muslim fundamentalists in Indonesia to Brazilian football hooligans. These studies suggest that extreme self-sacrifice is motivated by identity fusion, a visceral sense of oneness with the group, resulting from intense collective experiences (e.g., painful rituals or the horrors of frontline combat) or from perceptions of shared biology. In ancient foraging societies, fusion would have enabled warlike bands to stand united despite strong temptations to scatter and flee. The fusion mechanism has often been exploited in cultural rituals, not only by tribal societies but also in specialized cells embedded in armies, cults, and terrorist organizations. With the rise of social complexity and the spread of states and empires, fusion has also been extended to much larger groups, including doctrinal religions, ethnicities, and ideological movements. Explaining extreme self-sacrifice is not only a scientific priority but also a practical challenge as we seek a collective response to suicide, terrorism, and other extreme expressions of outgroup hostility that continue to bedevil humanity today.

1. Introduction

Willingness to sacrifice one's life for the sake of a group has been documented around the world and throughout human history, from the Christian martyrs of antiquity and the followers of Jim Jones in Guyana, to the Spartans at Thermopylae and the kamikaze pilots of Japan. In recent decades, a murderous form of self-sacrifice – suicide terrorism – has become increasingly common, with an estimated 3,500 such attacks recorded in the past 30 years (McCauley 2014). The Victorian scholar Emile Durkheim (1897/1951) argued that altruistic suicide, in all its forms, was a consequence of overintegration of the individual into the group, to an extent that abnegated even the most basic self-interest for the sake of the larger collective. In the ensuing century, social scientists tried to break down the idea of overintegration into more precise and testable theories of group alignment and identity (Swann et al. 2012; Tajfel & Turner 1979), psychological kinship (McNamara & Henrich 2017), and parochial altruism (Bernhard et al. 2006). But the relationships between these constructs and their underlying causes have, until recently, been quite unclear.

This paper sets out an integrated theoretical framework, drawing on an extensive programme of empirical research into the causes and consequences of identity fusion – a visceral sense of oneness with the group (Swann et al. 2012) that has been linked to extreme self-sacrifice in a wide range of special populations, ranging from Muslim fundamentalists in Indonesia to armed insurgents in Libya and from football hooligans in Brazil to tribal warriors in Melanesia. For highly fused individuals, the boundary between personal and group identity is porous, and an attack on the group is taken personally. Identity fusion is highly correlated with an expressed willingness to fight and die to defend the group against external threats (Swann et al. 2010b; 2014a; Whitehouse et al. 2014b). It is argued here that enduring fusion with the group results from perceptions of shared essence, established via at least two distinct pathways (see Fig. 1).

One pathway involves undergoing transformative experiences with other group members (e.g., life-changing ordeals) that shape the personal and group identities of participants (Whitehouse 2013). To the extent that such shared experiences are remembered as distinct episodes, prompting subsequent reflection, they form part of one's personal life history although also being group defining (Jong et al. 2015). Some emotionally intense experiences take the form of collective rituals, orchestrated in culturally prescribed ways (Kavanagh et al. 2018).

CAMBRIDGE UNIVERSITY PRESS

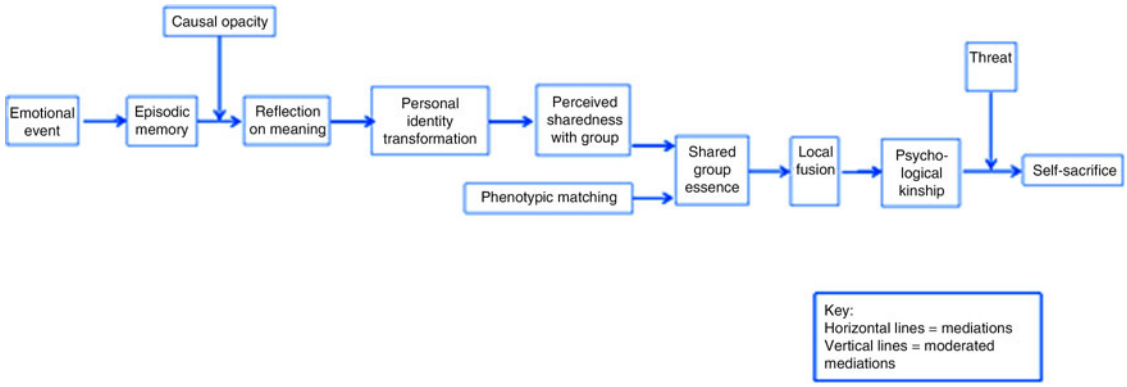

Figure 1. Pathways to local fusion and self-sacrifice.

Highly arousing rituals, because they are causally opaque, can generate prolonged processes of reflection and meaning-making, contributing to the elaboration of both personal and group identities (Richert et al. 2005). Initiations, for example, are explicitly designed to permanently transform novices, often by putting them through shared traumatic ordeals that are never to be forgotten and are rich with symbolism and semantic connotations (Barth 1987; Whitehouse 1996).

A second pathway to fusion entails the perceived sharing of essentialized biological properties with the group in the form of inherited phenotypic characteristics (Park & Schaller 2005). Recent studies have shown that identical (monozygotic) twins report higher levels of fusion with each other than their nonidentical (dizygotic) counterparts (Vázquez et al. 2017). Further, it has been shown that fusion with twins mediates the impact of zygosity on a range of measures of pro-sociality, and that identical twins are more likely to prioritize each other even over their own children on questions probing willingness to engage in self-sacrificial behaviour (Vázquez et al. 2017). Although phenotypic matching occurs naturally among family members who share genetically transmitted physical or behavioural traits, it can also be triggered by norms and terminological practices emphasizing familial ties, for example, referring to group members as brothers or sisters and emphasizing obligations of kinship and common ancestry (Swann et al. 2014a).

Group bonding based on perceptions of shared essence among individuals who know each other personally may be described as "local fusion" (Swann et al. 2012; Whitehouse 2013). This type of fusion is strongly associated with a willingness to fight and die when the group comes under attack. In a study of revolutionary groups in Libya, many of whose members laid down their lives during the 2011 insurgency, local fusion emerged as a more powerful cohesive force than bonds with larger group categories, such as revolutionaries in general and supporters of the revolution (Whitehouse et al. 2014b). When combined with perceptions of out-group threat, high levels of local fusion are capable of motivating extreme self-sacrifice for the group. Gaddafi's forces in Libya presented a very obvious mortal threat to rebel groups in the region, but out-group threat can also play an important role in less deadly forms of intergroup conflict. For example, for highly fused supporters of football teams, rival supporters trigger perceptions of out-group threat that motivate high-risk behaviours, such as fan violence and hooliganism, as revealed by recent studies with hardcore fans in several countries (Buhrmester et al., in preparation; Newson et al. 2018).

The theory outlined in Figure 1 constitutes the first effort to synthesize findings from a global programme of interdisciplinary research spanning several decades. Each of the boxes refers to a psychological event or process forming part of two distinct causal chains. One of these chains begins with the perception of an emotional event that is subsequently stored in episodic memory. To the extent that these memories relate to causally opaque events (e.g., collective rituals), they prompt reflection, producing rich representations that form part of the core narrative self. When such representations are perceived to be shared with a group, this produces feelings of shared essence, in turn giving rise to fusion. There is also a second pathway to fusion in which feelings of shared essence result from phenotypic matching – the perception of common biologically inherited characteristics. Stable perceptions of shared essence created by either of these pathways is predicted to give rise to fusion with a locally bounded group or relational network. Fusion produces a strong impression that members of the group are one's kin, eliciting a willingness to pay high personal costs to support the group and, in the face of out-group threat, to fight and die if necessary to protect members of the group.

The aim in what follows is to build a testable theory of extreme self-sacrifice, capable of explaining the willingness of some individuals to fight and die for their groups. Section 2 argues that suicide terrorism may be understood as a form of homicidal self-sacrifice. Section 3 considers evidence that willingness to fight and die for a group, even when the odds of dying are extremely high, can be motivated by identity fusion, rooted in perceptions of shared suffering and/or common ancestry. Section 4 explores potential evolutionary explanations for the patterns described above. Section 5 argues that ritual ordeals (such as the trials of initiation and hazing) may serve as culturally evolved gadgets for generating identity fusion in armed groups, ranging from warrior tribes to modern military units and terrorist cells. Section 6 considers whether large-scale group alignments, based on

Harvey Whitehouse, Professor of Social Anthropology at the University of Oxford, is currently the recipient of an ERC Advanced Grant examining the role of ritual in group bonding and intergroup competition, including warfare. Whitehouse's lab group is the Centre for Anthropology and Mind, and he is also a founding director of *Seshat*: Global History Databank. His books on ritual and group cohesion include *Inside the Cult* (Oxford University Press, 1995), *Arguments and Icons* (Oxford University Press, 2000), and *Modes of Religiosity* (AltaMira, 2004).

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

identification and extended fusion, can motivate self-sacrificial behavior. Finally, Section 7 provides an overall assessment of the theory presented here, emphasizing limitations as well as strengths and identifying priorities for future research.

2. Suicide terrorism as extreme self-sacrifice

In his classic discussion of altruistic suicide, Durkheim detailed many examples of individuals taking their lives for the glorification of the group. Durkheim cited Charlevoix's colourful observations in Japan as exemplars of the category:

> Nothing is commoner than to see ships along the seashore filled with these fanatics who throw themselves into the water weighted with stones, or sink their ships and let themselves be gradually submerged while singing their idol's praises. Many of the spectators follow them with their eyes, lauding their valour to the skies and asking their blessing before they disappear. The sectarians of Amida have themselves immured in caverns where there is barely space to be seated and where they can breathe only through an air shaft. There they quietly allow themselves to die of hunger. Others climb to the top of very high cliffs, upon which there are sulphur mines from which flames jet from time to time. They continuously call upon their gods, pray to them to accept the sacrifice of their lives and ask that some of these flames rise. As soon as one appears they regard it as a sign of the gods' consent and cast themselves head-foremost to the bottom of the abyss…. The memory of these so-called martyrs is held in great reverence. (Charlevoix quoted in Durkheim 1897/1951, pp. 224–225).

In the passage where this quotation occurs, and in many others, Durkheim is at pains to emphasize that altruistic suicide is an expression of "underindividuation" – the sublimation of the personal self to the greater and nobler will of the group. Durkheim associated underindividuation with what he called "the lower societies" – small-scale traditional societies where the division of labour was sufficiently simple that persons seemed eminently replaceable, one person substituting more or less easily for any other. Durkheim famously argued that the emotionally arousing rituals of simple societies served to heighten "collective conscience" to a point of great fervour and excitement, eclipsing or even obliterating any sense of personal agency and individuality. He regarded the military as one of the last refuges of this primitive mentality in otherwise civilized societies, and used this to explain the high incidence of altruistic suicide in various armies and navies, as well as self-sacrifice on the battlefield (Durkheim 1897/1951, pp. 234–37).

In what follows, however, a somewhat different view is presented. Fusion resulting from the perception of shared essence does not sublimate individual identity but enables group alignments to tap into the motivational power of personal agency, strengthening and emboldening it. Fused individuals see themselves not merely as instruments of the group, but as willing to do more for the group than other members. They see their personal self as encompassed, but not eclipsed, by the group. From this view, altruistic suicide is not caused by "underindividuation" as Durkheim conceived of it, but by a visceral sense of oneness between self and group.

Suicide terrorism, the act of laying down one's own life in an effort to weaken or destroy an out-group, may also be regarded as a form of altruistic suicide (Pape 2005). As such, it forms part of a much larger class of extreme behaviours that involve sacrificing oneself for the group, ranging from nonhomicidal forms of suicide (such as taking a bullet for a comrade or setting fire to oneself) through to so-called "suicide missions" in conventional armies. Although suicide terrorism may be shaped by sophisticated strategic considerations (e.g., careful selection of targets to maximally advance terrorist objectives), altruistic motivation is a necessary condition for implementing these strategies, inasmuch as the individual is required to give up his or her own life for the sake of a group. Such actions may be described as *extreme* because they are (or are most likely to be) fatal. Efforts to explain the phenomenon have often emphasized its seemingly irrational nature, for example, attributing such suicides to extreme religious beliefs or to individual pathology (Pape 2005, p. 16).

The notion that religious extremism (e.g., via indoctrination) motivates suicide terrorism may seem a little more than common sense. Indeed, according to some public intellectuals (Harris 2004), religious doctrines extolling the righteousness of waging holy wars or of exterminating infidels self-evidently explain extreme self-sacrifice such as suicide bombing. And it is easy to find examples throughout the history of suicide terrorism linked to religious beliefs of various kinds, from the Jewish Zealots and the Sicarii of antiquity to the many Islamist terror groups of today. Less convenient for those who favour this line of argument is the fact that most suicide attacks, at least until 2000 (Atran 2006), have been carried out by secular organizations and not by religious extremists (Gambetta 2005; Post et al. 2009). Moreover, studies in the lab and in natural settings suggest that religious beliefs lead to pro-social action because they serve as markers of group alignment. That is, it would seem to be attachment to a collective, forged through shared rituals or other identity markers, and not beliefs *per se* that motivate pro-group action (Bloom 2012). For example, in a series of studies (Ginges et al. 2009), frequency of participation in collective rituals has been shown to predict support for suicide attacks, whereas frequency of prayer (as a less groupish devotional act) does not. Ginges et al. found that for Palestinian Muslim adults, frequency of mosque attendance predicted stated willingness to die for one's religion as well as support for suicide attacks, but again, frequency of prayer did not.

It is possible that some extreme beliefs become so closely linked to the group that they take on an aura of sacredness (Atran 2010), but if that is so, then what connects those values to acts of self-sacrifice may well be fusion with the group rather than commitment to any kind of explicit belief system or ideology *per se* (Whitehouse 2016a). Efforts to disambiguate the effects of sacred values and group alignment are hard to interpret given that the measures of sacred values so far used in such studies are related to similar measures of willingness to sacrifice for sacred values (Gómez et al. 2017).

The theoretical framework presented here suggests that willingness to fight and die is not motivated by doctrines and ideologies, religious or otherwise, but by a particularly intense love of the group. For highly fused individuals, the survival of the group constitutes a form of personal immortality in ways that may be more real psychologically than any religious dogma alone could convey.

Nevertheless, those who argue that suicide terrorism is a result of *pathology* may not regard such behavior as an act of self-sacrifice at all. For example, Lankford (2014b) has argued that jihadist martyrs may simply be suicidal individuals (see also Merari 2010) who choose this method of killing themselves because it is socially approved and even glorified by the groups with which they identify, although also providing conveniently reliable methods (e.g., fatal explosive devices). In this view, the

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

suicide bomber is not embracing death to achieve some greater goal but is actually engaging in a cowardly and selfish act. "For many suicide terrorists, blowing themselves up may feel like the least risky thing they could do – it could offer the greatest certainty that their overwhelming crisis will no longer plague them. For these individuals, the risky thing may be to face their uncertain future, tackle their problems one day at a time, or swallow their pride and ask for help" (Lankford 2014b, p. 360). Lankford (2014b, p. 360) argues also that acts of suicide terrorism and genuine acts of self-sacrifice differ in the manner of their planning. Suicide attacks are generally planned long in advance, whereas heroic self-sacrifice, such as leaping on a grenade and shielding a comrade in a hail of bullets, is more typically a split-second reaction to unforeseen events. Moreover, the suicide terrorist plans to die, whereas genuine military heroes hope to survive, despite appalling risk to life and limb (2014b, p. 359).

The distinction between laying down one's life for a group and merely risking one's life may not be easy to draw, however. Expressed in terms of probabilities, it has been calculated that the chances of surviving an act for which a Victoria Cross medal has historically been awarded in the British and Commonwealth forces is just 1 in 10 (Gambetta 2005, p. 272). Salim Jawha, a former colonel in Gaddafi's army who joined the insurgency in Misrata on the first day of the revolution, put it to me like this: "When the revolution began, there was no compulsion to join. We just called our friends and asked them, 'Do you want to die or not? If you want to die, come with us. If not, go home and stay out of harm's way'" (Jawha, quoted in Whitehouse 2016a). Of course, there was no guarantee that one would die as a result of joining the revolutionary forces. But the chances of dying in action were dauntingly high, and those choosing to fight were well aware of this. Nevertheless, thousands made the decision to go ahead anyway. They were not suicidal but they were surely prepared to lay down their lives.

Lankford's argument that suicide terrorists are suicidal has deservedly triggered much instructive debate but has also prompted criticism, mainly highlighting limitations of the supporting data (Atran 2003; Beit-Hallahmi 2014; Egan 2014; Funder 2014; McCauley 2014; Merari 1993; Qirko 2014; Sela & Shackelford 2014; Tobeña & Vilarroya 2014; Weiss & Weiss 2014). Although these debates remain unresolved, according to Post et al. (2009), there is a well-established consensus among researchers that group, social, and organizational factors provide the key to understanding most suicide attacks. Factors frequently implicated in this form of terrorism are collective identity (Post 2009), kin psychology (Gray & Dickens 2014), and out-group hostility (Ginges et al. 2009). New research into the causes of identity fusion suggests that these seemingly disparate theories of suicide terrorism may in fact be highlighting different aspects of a single process. As with some past approaches to suicide terrorism, the fusion theory emphasizes group alignment and psychological kinship, but it also focuses on the role of shared essence combined with perceptions of out-group threat in motivating extreme self-sacrifice. This general theoretical framework is further elaborated and empirically substantiated in the next section.

Nevertheless, studying the role of identity fusion in motivating suicide attackers is fraught with practical difficulties. Successful suicide attackers are, by definition, already dead, and those who are foiled, even if they can be interviewed, may be unable or unwilling to provide accurate information on the psychological processes that drew them to violent extremism in the first place. The studies reported below have focused largely on measuring identity fusion and extreme self-sacrifice among currently serving members of armed groups, ranging from revolutionary insurgents to conventional military forces, especially those who, having witnessed the violent deaths of many of their fellow fighters, nevertheless voluntarily expose themselves to the same high risks. Much recent research also investigates the role of identity fusion among those who strongly endorse the use of violent self-sacrifice to accomplish group goals (Swann et al. 2010b; 2014a). Despite the difficulties of conducting research into these topics, there is growing evidence that fusion can motivate extreme pro-group action (Whitehouse et al. 2014b; 2017) and that this process could plausibly explain at least some, if not most, instances of suicide terrorism as well as other forms of violent extremism.

3. Shared essence, fusion, and willingness to fight and die for a group

Fusion – a visceral feeling of oneness with a group (Swann et al. 2009) – entails an identity configuration such that essential features of one's social identity are also considered to be essential features of one's personal self. Essentialized conceptions of the personal self or of a group presume the presence of nonobvious properties that are necessary for the entity to exist in its current form (Medin & Ortony 1989). This is an all-or-nothing mode of categorization in that the person or group must have this nonobvious property or would no longer be the person or group in question (Diesendruck & Gelman 1999, p. 339). But how do people come to attribute essences to persons and groups? One possibility is that the essential personal self derives from inherited biological attributes (Gil-White 2001), another that it is formed through life-defining experiences (Whitehouse 2013; Whitehouse & Lanman 2014). That is, we can imagine ourselves as being products of inherited traits as well as being moulded by unique personal histories (Whitehouse et al. 2017).

A series of recent studies sought to compare the effects on fusion of shared biology versus shared life experiences. In one study (Whitehouse et al. 2017), 198 participants were assigned to three priming conditions in which they wrote about either a self-shaping experience, a set of traits transmitted genetically, or the changing seasons (as control). They were then asked to imagine meeting somebody who either had shared their transformative life event, had turned out to be a long-lost sibling, or was a complete stranger (control). Those in the shared experience and shared biology conditions reported higher levels of fusion with the imaginary person, although interestingly, the effects were notably stronger for shared experience. In a further study, actual, rather than imaginary, shared genes and shared experience were experimentally manipulated (Whitehouse et al. 2017). Two hundred and sixty monozygotic and 246 dizygotic twins were asked to describe transformative experiences shared with their twin, and measures of fusion with twin were then taken. The results showed that both shared biology (as measured by zygosity) and shared experience predicted fusion levels independently.

Hence, sharing either biological or autobiographical essence with other group members, or both, produces identity fusion. Highly fused individuals report intense family-like connections to other group members, high levels of personal agency, and feelings of invulnerability in their group. Therefore, when the group is felt to be threatened, it feels personal. This may help explain why so many groups committed to violence describe themselves as victims acting to defend themselves against external aggressors

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

(Furedi 2015). The desire to protect the group is experienced by fused individuals as an urgent and compelling act of self-defence. This process may resemble the way in which mortality salience stimulates in-group defence and support in the population at large (Fritsche et al. 2008) but more acutely in the case of highly fused individuals, as a result of amplified feelings of personal agency (Swann et al. 2010b). Highly fused individuals exhibit an urge to make personal sacrifices for their group, ranging from donations of blood to helping victims of terrorist attacks (Buhrmester et al. 2015) to fighting on the front lines at grave personal risk (Whitehouse et al. 2014b).

Efforts to investigate the shared experience pathway to fusion have focused on the role of self-defining episodic memories (Whitehouse 2013). Psychologists have long appreciated that memories for transformative experiences have an impact on the development of personal identity (Conway 1995; Singer & Salovey 1993), and considerable empirical research has been conducted into the mechanisms linking memory of and reflection on life-changing experiences to autobiographical narratives and the construction of the personal self-concept (Çili & Stopa 2014). What fusion theory adds is the insight that some emotionally intense experiences are not only transformative in shaping the personal self but – insofar as these experiences are shared with relevant others – they also define the group (Whitehouse 2004), producing a visceral sense of "oneness" or shared essence. Consequently, the personal self and the group self are uniquely conjoined in fused individuals – being forged through the same potent experiences that endure in memory (Whitehouse & Lanman 2014).

To investigate these processes, recent empirical research has focused on populations that have undergone emotionally distressing experiences together. Events involving psychological or physical suffering appear to have an especially enduring impact on memory and subsequent reflection (Conway 1995; Pillemer et al. 1987; Whitehouse 2002). In the literature on shared experience and identity fusion, such events are typically described as "dysphoric" (Jong et al. 2015; Whitehouse et al. 2017), but they are often also accompanied by feelings of elation, for example, upon surmounting the ordeal, and it may be that an emotional "high" is partly responsible for the long-term memory effects of such experiences and their impact on fusion (Kavanagh et al. 2018). The theory elaborated here is concerned primarily with the impact of shared emotional events on the fusion process (via the mediating effects of memory, reflection, etc., as set out in Fig. 1). Some of the research described in the remainder of this section suggests that dysphoric events have a bigger effect on fusion than euphoric ones, but it is not yet clear whether negative valence or merely overall emotional intensity is the key factor.

A cluster of studies focused on the effects of recalling terrorist attacks in New York, Madrid, and London have shown that the simple act of remembering such experiences increases reported levels of fusion with and willingness to die for one's country (Buhrmester et al., in preparation). Moreover, the extent to which dysphoric experiences are felt to be transformative or "self-defining" predicts their effects on fusion. Similarly, the more that nationalists and unionists in Northern Ireland have reflected on their sufferings during the history of sectarian conflict in that region, the more fused they are with their respective communities (Jong et al. 2015). Further, to demonstrate that such reflection actually causes elevated fusion, Bostonians affected by the 2013 Marathon bombings were primed with memories of the atrocity (versus controls who were invited to recall memories of running errands in Boston), and those who felt more intense negative emotions as a result of the prime were indeed more fused with their fellow Bostonians (Jong et al. 2015).

Similar patterns have been observed among spectators at football matches where fans who felt they had been most shaped personally by their memories of especially emotional club events also reported higher levels of fusion (Newson et al. 2016). For example, a recent survey of Premier League football supporters in the United Kingdom found that sharing the dysphoric experience of losing soccer matches made fans more willing to sacrifice themselves for each other, an effect that was mediated by identity fusion (Whitehouse et al. 2017). Losing seems to fuse fans more effectively than winning, and, consequently, the less successful teams are likely to have the most loyal fan bases. Of course, this also means that the more embattled supporters would show greater eagerness to fight on the terraces, but, although such fervent commitment to club does sometimes spill over into violence, intergroup rivalry is more typically expressed in relatively harmless symbolic acts such as chanting and song.

Some aspects of the process by which shared dysphoric experiences lead to fusion have now been measured physiologically, as well as by using psychometric tests and self-report. For example, a recent longitudinal study of Brazilian fans during the 2014 FIFA World Cup revealed that increased heart rate and cortisol levels during live matches predicted higher levels of fusion over time (Newson et al., under review). Efforts have also been made to explore the physiological processes by which out-group threat motivates self-sacrifice in highly fused individuals. For example, studies using brain scans to monitor activity in the medial prefrontal cortex, a brain region associated with group membership processing, have explored the effects of fusion on the brain when deciding to pay a personal cost to harm a rival out-group. In these studies, football supporters playing economic games with rival fans showed a marked tendency to punish fair and unfair offers alike, at cost to self. Activity across ventral and dorsal portions of medial prefrontal cortex, however, was affected by levels of fusion in these participants; the more highly fused players showed the strongest evidence for fairness by group membership interaction in the relevant brain regions (Apps et al. 2018).

In the preceding examples, sharing emotionally intense experiences was shown to give rise to fusion and, therefore, willingness to fight and die for the group. Nevertheless, most of these studies rely mainly on self-report measures and hypothetical cooperation problems. Although behavioural measures, such as economic games and trolley problems, have been used in some of the studies reported above, these are not ideal proxies for extreme self-sacrifice, our main interest in the present context. To test this theory properly requires investigation of processes of fusion among people who *actually* lay down their lives for each other. The ethical and practical impediments to conducting psychological research with suicide bombers undergoing training are severe, however. And, although it may be possible to interview thwarted terrorists serving prison sentences, this approach, too, is fraught with difficulties, including the need to build rapport and trust with interviewees, as well as to overcome incentives for offenders to provide self-serving or misleading responses.

Recent efforts to investigate violent extremism operating outside the rule of law have focused on studies with frontline fighters in military groups such as members of revolutionary battalions in Libya during 2011, the year of the Arab Spring. The vast majority of Libyans who took up arms in 2011 were ordinary civilians,

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

many of whom had never even held a gun prior to the uprising. All of them knew their chances of survival were poor. Many thousands were killed or suffered devastating injuries, and all of them lost friends and family during the conflict.

Interviews were conducted with 179 insurgents in the city of Misrata (Whitehouse et al. 2014b). Half the sample were frontline fighters, and the others were providers of logistical support to the fighters. All reported near-ceiling levels of fusion with their families, with their closest friends in the battalions, and even with the members of other battalions, but not with pro-revolutionary Libyans who never joined a battalion and therefore did not fully share the intensely dysphoric experiences of participation in the 2011 uprising. In view of these high levels of fusion with multiple groups, a forced-choice question was introduced: If you had to choose only one group as your primary fusion target, which would it be? This produced a striking difference between those who faced the most traumatic ordeals of the war and those who suffered, but not as intensely, by working behind the scenes. Frontline fighters were nearly twice as likely (compared with providers of logistical support) to choose fellow revolutionaries over their families.

A limitation of this study, however, is that there was no way of ascertaining whether shared dysphoric experience in battle led to high levels of fusion, or fusion drove Libyan insurgents to the front line in the first place. To adjudicate on this question, studies have been undertaken with conventional troops that lacked control over their deployment on the front lines. For example, a survey of 380 Vietnam war veterans in the United States found that intensity of dysphoric combat experience predicted fusion with fellow fighters and that this fusion also mediated willingness to make personal sacrifices for other veterans (Whitehouse et al. 2017). Although there are many practical impediments to conducting research with groups whose members have sacrificed their lives in appreciable numbers, and the evidence drawn upon here is limited, efforts to access more participants in other troubled regions of the world are ongoing. Data collection using much the same methods as those employed in Libya in the research described above has been undertaken among fundamentalist Islamist groups (Kavanagh et al., in preparation; Yustisia et al., under review), and efforts are also underway to collect data from convicted terrorists in prison.

4. The evolution of fusion and extreme self-sacrifice

From a gene's eye point of view, the vehicle for its transmission (the individual organism) should usually preserve its own life and maximize its reproductive advantage at all costs, but kin selection famously presents an exception. Kin selection causes genes to increase in frequency when the degree of genetic relatedness of individuals benefiting from an altruistic act, multiplied by the benefit thereby procured, is greater than the reproductive cost to the altruist. Self-sacrifice to save fellow group members might make evolutionary sense if all members of the in-group are genetically very similar, as in the case of some eusocial insects. In the case of humans, taking a fatal spear to protect one's kinsmen might be similarly adaptive if, under evolutionarily stable conditions, self-sacrificing individuals stood a better chance of passing on their genes via surviving relatives than by mating successfully themselves.

Fusion may have arisen as a psychological adaptation to facilitate cooperation among kin in the face of extreme adversity, such as lethal out-group threat (Whitehouse & Lanman 2014), but it may simply be a by-product of the way autobiographical memory evolved in humans. Further evolutionary explanations for fusion are considered below. Nevertheless, even if fusion was a psychological adaptation that arose through kin selection, social institutions could hijack the fusion mechanism in novel ways. For example, male initiations involving extreme privations and sufferings could mimic the trials and tribulations of kin groups struggling to survive in tough environments, producing similar psychological effects and behavioural outcomes. An important difference is that the ordeals of initiation deliberately maximize emotional and sensory impact, so as to create a stable impression of shared essence in an imaginary "brotherhood" (Whitehouse 1996; 2004). In everyday life, by contrast, the shared sufferings and setbacks of kin groups occur more unpredictably, and their emotional intensity, causal opacity, and consequentiality for group members are more variable, taking many years to assemble and, therefore, to produce fusion and psychological kinship (Whitehouse 2013). In short, some social institutions may have arisen through cultural evolution that exploit our biologically evolved systems for supporting and defending kin in the face of adversity.

It is also conceivable that culturally evolved discursive practices exploit intuitions of shared biology to some extent, for example, by referring to priests as "fathers" or group territory as the "motherland." In a recent survey covering 11 countries on six continents, 86.1% of the 2,438 respondents expressed willingness to die for their families before any other group (Swann et al. 2014a), but the same survey also showed that priming feelings of shared biology among people already fused with their countries made them more willing to make extreme sacrifices for their fellow countrymen. Mediation analyses showed also that fusion had an impact on willingness to fight and die for country via feelings of kinship. These findings are supported by studies of groups actually (as opposed to hypothetically) experiencing an external threat. For example, in the wake of the 2013 Boston Marathon bombings, the willingness of locals fused with America to give blood or money to help the victims was mediated by feelings of psychological kinship with fellow countrymen, expressed by endorsing statements like "members of my country are like family to me" (Buhrmester et al. 2015).

The kin selection account for the evolution of fusion suggests that shared life-shaping experiences, just like biologically inherited traits, may have served as reliable phenotypic markers in ancestral groups composed mainly of closely related individuals (Lieberman et al. 2007; Whitehouse & Lanman 2014), and this also seems consistent with the finding that sharing core values or attitudes signals genetic relatedness (Park & Schaller 2005; Swann et al. 2014a). A common cause of shared life-shaping experiences prompting fusion and extreme self-sacrifice may have been chronic intergroup raiding and warfare. There is some debate on the prevalence of warfare in the Pleistocene, but some scholars estimate that up to 40% of all male deaths in human prehistory can be attributed to intergroup conflict (Keeley 1996). Even if this seriously exaggerates war-related mortality rates (Ferguson 2013), there is little doubt that intraspecies violence is a widespread and persistent feature of human behaviour (Gómez et al. 2016b), and ancient foragers probably always faced threats of predation that were best parried by standing together, despite strong temptations to defect or run away.

Previous research has likewise emphasized family-like bonds as a powerful motivator of suicide terrorism (Atran 2003; Mandel & Litt 2013) and of self-sacrifice for comrades in conventional

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

military groups (e.g., Stouffer et al. 1949; Vaughan & Schum 2001). Gray and Dickens (2014) link this urge to protect one's "brothers-in-arms" to perceptions of shared biology based on phenotypic matching. In an interesting application of kin selection theory to the phenomenon of suicide in general, it has been suggested that individuals with little chance of reproducing may constitute a drain on the resources of their kinsmen, such that committing suicide might actually increase their inclusive fitness by improving their chances of passing on genes via their surviving relatives (deCatanzaro 1980; Syme et al. 2015). One might object that the act of suicide could itself cause serious collateral damage, impairing the prospects of bereaved kinsmen, not least because of social stigma. And Joiner (2015) has argued that suicide, in general, results from a pathological underestimation of one's own evolutionary worth and overestimation of the burden one is inflicting on others. But Joiner's argument could be turned on its head in the case of suicide bombers, in that martyrdom may indeed serve to improve the circumstances of their families. For example, Blackwell (2008) has argued that Palestinian suicide attackers increased their inclusive fitness outcomes by contributing, through the celebrity of their deaths, to the well-being and reproductive prospects of their close kin.

Following a closely argued discussion of these issues, Orbell and Moriwaka (2011) consider whether Blackwell's argument can shed light on the motivations of kamikaze pilots in World War II. Based, however, on extensive analysis of letters, poems, wills, and memoirs left behind by 661 Japanese pilots who perished in suicide attacks, the authors conclude that the act of self-sacrifice was not undertaken to increase the welfare of close kin. Rather, the writings of kamikaze pilots placed much greater emphasis on the desire to die for the nation or for the emperor. One possibility, considered by Orbell and Moriwaka, is that an evolved algorithm to sacrifice self for kin had somehow been hijacked by nationalistic ideology, such that the country or its ruler had taken on the status of family. Nevertheless, as these authors also observe, evolution should act strongly against mistaking fellow countrymen for kin, especially where the stakes are so high. Rather, they suggest that when warfare becomes genocidal, a distinct psychological mechanism comes into play that enables kin groups to form coalitions:

> To be successful (thus to survive in the event of genocide), coalitions of kinship groups would have to include significant numbers of individuals who were prepared to fight and perhaps die for individuals who were *not* close kin – whatever primary loyalties might be owed *to* close kin. A coalition of kinship groups whose members fought only for their own group would be a notably ineffective coalition, likely to be defeated by a coalition of kinship groups *whose members mobilized kinship-based emotions on behalf of the entire coalition, kin and nonkin*…. In the context of coalitional warfare, therefore, natural selection could favor genes that led an individual to respond to all members of a coalition as if they were close kin – and not just to those members of the coalition who were *in fact* close kin. (Orbell & Moriwaka 2011, pp. 20–21).

Intriguing as this argument undoubtedly is, it is by no means clear that genocidal out-group threat, as envisaged by Orbell and Moriwaka, was sufficiently acute and widespread in human prehistory for such a mechanism to evolve under natural selection. At any rate, it would be wise to consider a range of alternatives to kin selection to explain how extreme self-sacrifice may have evolved under natural selection.

One recent study presents a mathematical model predicting that any group suffering negative experiences, not only kin groups or coalitions of kin groups, should be more cooperative in the future (Whitehouse et al. 2017). The model, based on a multilevel selection approach, considered an imaginary population divided into numerous groups whose survival depended on overcoming two kinds of collective problems: "us versus nature" contests (e.g., hunting game, defending against predators) and "us versus them" contests (e.g., conflict with other groups over access to resources). In the real world, failure of any given group in an "us versus nature" contest might have little impact beyond the group itself; by contrast, doing well or badly in "us versus them" contests would likely have a significant impact on surrounding groups participating in conflict. In the model, "doing well" equated to a euphoric experience with a corresponding positive impact on the fitness of group members, as measured by their capacity to leave offspring. By contrast, "doing badly" equated to dysphoric experience and had the opposite effect. Groups that did so badly they died out were replaced by the offspring of more successful groups.

The setup consisted of two rounds. In the first round, euphoric (fitness-increasing) or dysphoric (fitness-reducing) experiences were randomly assigned. If that was all there was to it, then groups undergoing euphoric, fitness-enhancing experiences would obviously do better than those that had dysphoric experiences. But the model also contained a second round in which the consequences of each group's efforts overall to solve collective action problems were measured. Every individual was allocated a pair of genes, one of which was capable of triggering cooperative behaviour only after a euphoric experience and the other of which was capable of doing so only after a dysphoric experience. But only one of these genes could be expressed in any given individual, and all individuals of the same group shared this capacity. Thus, the model was designed to study the evolution of genetic endowments controlling behaviour. Although these genetic endowments made cooperation possible, they certainly did not make it inevitable. In fact, the model was set up so as to make the chances of cooperation close to zero. However, we ran not one, but many simulations, allowing for mutation, recombination, and migration. Each group lineage went through both euphoric and dysphoric experiences at equal frequencies. The question was whether cooperative behaviour would evolve over repeated simulations. The finding was that the gene effects on cooperation resulting from dysphoric experiences evolved to be larger than gene effects on cooperation resulting from euphoric experience. This pattern was even more pronounced with groups engaged in "us versus them" contests than with those engaged in "us versus nature" contests, the former involving more intense intergroup competition.

5. Ritual and local fusion

Throughout most of prehistory, our ancestors lived in hunter–gatherer bands, confronted with both "us versus nature" and "us versus them" contests. If the fusion mechanism originally evolved in small, relational groups of this kind, then it should come as no surprise that terrorists are also usually tied to highly cohesive cells comprising around 10 core individuals on average (Richardson 2006). We refer to this as *local fusion* (Swann et al. 2012; Whitehouse 2013), as distinct from *extended fusion* discussed in the next section. Whereas fusion in ancestral foraging bands may have come about through exogenously caused dysphoric events, such as enemy ambush and natural disaster, some prehistoric groups probably also engaged in rare,

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

emotionally intense rituals, serving as cultural gadgets to increase levels of fusion among warriors and hunters.

Many scholars have observed that collective rituals are a potent source of cohesion in social groups and that the more physically or psychologically arduous the rituals in question, the more powerfully they bond participants (Durkheim 1912; Henrich 2009; Irons 2001; Olivola & Shafir 2013; Xygalatas et al. 2013). Early examples come from evidence for initiation rituals in Upper Paleolithic deep cave sites involving altered states of consciousness and manipulation of the visual and auditory affordances of underground labyrinths (Rossano 2010). In the early stages of the Neolithic too, rare and emotionally intense rituals probably occurred, for example, in the form of hunting ancestor cults at sites like Cataloyuk, where pictorial art suggests the sporadic performance of dramatic feasting events involving the baiting of large and dangerous animals (Whitehouse & Hodder 2010; Whitehouse et al. 2014a). Emotionally intense rituals, fusing participants into small relational groups, may also have been necessary for ancient foragers coping with natural hazards (Rossano 2010, p. 91). The association between rare, emotionally intense ritual ordeals, on the one hand, and social cohesion and self-sacrifice for the group, on the other hand, is even more readily apparent in the much richer data sets relating to contemporary small-scale societies. For example, based on an analysis of ethnographic data stored in the standard cross-cultural sample, it has been argued that the severity of traumatic initiation rites is positively correlated with warfare intensity (Sosis et al. 2007).

The pain and fear evinced by some collective rituals documented by anthropologists are so extreme that they have been described as "rites of terror" (Whitehouse 1996). Procedures entailed in such rituals bear comparison with techniques of torture entailing beatings, whippings, mutilation, burning, and evulsion of the fingernails (Barth 1987; Strehlow 1947). Pain is often inflicted on especially sensitive regions of the body, such as the genitals (Barth 1975). In addition to direct assault, such rituals commonly inflict suffering by depriving participants of rest, sleep, food, warmth, light, social contact, and other basic needs, often for extended periods (Allen 1967). One of the effects of agonizing ritual ordeals is that they bond participants together so tightly that they will stop at nothing to defend each other and their fellow tribesmen from external threats. Often these extreme rituals are associated with warrior cults and may be accompanied by oaths to defend the group and commitments of unwavering loyalty (Weisfeld 1979).

Rites of terror have been documented all around the world, and evidence of their existence is present throughout human history and prehistory, so the need for a general explanation has long been recognized. Inspired by Festinger's (1957) theory of cognitive dissonance, Aronson and Mills (1959) proposed that the endurance of painful initiations into the group is inconsistent with disliking the group. Consequently, initiates convince themselves that the group is worthy of their loyalty and affection. Others have suggested that participation in painful rituals serves as a costly signal of commitment to the group, thereby promoting trust and pro-sociality among group members (Bulbulia et al. 2013; Sosis 2003). A drawback with both dissonance and costly signalling explanations of rites of terror, however, is they assume that participation is voluntary. Although that may be true in some cases, very often it is not. Failure to submit to the ritual tortures typically carries heavy penalties, ranging from social exclusion to execution (Cimino 2011). Moreover, these theories often assume that the ritual ordeals are used to mark entry into groups, and often this is not the case; they may be performed by already established groups for a wide range of stated purposes that have little or nothing to do with initiation or the conferment of membership (Atkinson & Whitehouse 2011; Whitehouse 1996).

An alternative perspective is provided by the theory of "imagistic practices" (Whitehouse 2000), which is consistent with the "shared experience" pathway to fusion discussed previously (and which it largely inspired). Unlike cognitive dissonance and costly signalling approaches, the theory of imagistic practices applies to a wider range of intensely emotional rituals and not only voluntary initiations (Whitehouse 2004). An early account of imagistic bonding focused on a single case study: a cargo cult in the rainforest of New Britain, Papua New Guinea, known as the Pomio Kivung (Whitehouse 1995). Observations and interviews in the field suggested that emotionally intense rituals, particularly those involving negative valence (such as pain, fear, and disgust), produced vivid and enduring memories (Whitehouse 1992). In view of the causally opaque, seemingly arbitrary nature of ritualized behaviour, episodic memories for cult rituals prompted efforts to interpret the meaning and significance of what had occurred, a process that has been dubbed "spontaneous exegetical reflection" (Whitehouse 2001; 2004). The sharing of traumatic ordeals and subsequent process of reflection on their significance and value seemed to contribute to group bonding among splinter group members (Whitehouse 1995).

Based on all of the real-world research conducted so far, both quantitative and qualitative, it appears that imagistic rituals produce social cohesion through the sharing of exceptionally thought-provoking and life-shaping experiences encoded in episodic memory (Whitehouse 1992; 1995). Because these kinds of memories specify who else was present at the time, the groups they generate have rigid boundaries – members cannot be added if they are not part of the recalled episode nor can anyone who participated be excised from memory. As such, imagistic practices are associated with relatively fixed, small, face-to-face groups, an observation based on both ethnographic data (e.g., Whitehouse & Laidlaw 2004) and historical materials (e.g., Whitehouse & Hodder 2010; Whitehouse & Martin 2005). Fine-grained qualitative case studies have provided useful insights into the nexus of relations between ritual, emotion, memory, reflection, group cohesion, and pro-social commitment, including willingness to fight and die for the group under conditions of intergroup conflict and warfare (Whitehouse & McQuinn 2012). This qualitative information has been gradually augmented by quantitative correlational studies of large data sets (Atkinson & Whitehouse 2011; Gantley et al. 2018; in press; Whitehouse et al. 2013). Research on these topics has also led to the creation of by far the most ambitious longitudinal data set on ritual and social complexity ever constructed, known as *Seshat*: Global History Databank. This vast storehouse of historical data is now making it possible to explore the relationship between shared emotion, ritual frequency, group size and structure, warfare, and agricultural intensity over thousands of years and on a global scale (Currie et al. 2015; Turchin et al. 2012; 2015; 2018; Whitehouse et al. 2015).

Central to the theory of imagistic practices is the idea that rare or unique emotionally intense experiences give rise to vivid, long-lasting memories for episodic details (such as what happened, how it felt, who else was present). These memories in turn become a locus for subsequent reflection, infusing the episodes recalled with meaning and salience (Barth 1975; 1987; Whitehouse 1992; 2003). If experiences of suffering and trauma

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

are especially memorable and thought provoking, this should be all the more so in the case of strongly valenced rituals, which, like all rituals, are by definition "causally opaque," that is, actions for which nobody would expect there to be a rational physical-causal explanation (Whitehouse 2011). Ritual procedures are the way they are because that is the conventional way of performing them. This, in turn, makes them interpretable in a wide range of ways (Humphrey & Laidlaw 1994; Whitehouse 2004). Emotionally charged rituals, because they are both causally opaque and remembered long afterwards, prompt a protracted search for meaning, a feature frequently observed in mystery cults and other esoteric religious traditions (Chinnery & Haddon 1917; Martin & Pachis 2009; Whitehouse 1992; 2001; 2002; Williams 1928). Undergoing especially salient, symbolically charged rituals, as well as the process of revelatory meaning-making ensuing from them, is at once a very personal experience but also one that is shared with the group. For participants, these rituals are not only self-shaping; they are also group defining. In part, this is because the memories for such experiences are unique and unrepeatable, specifying who else was present. Groups formed in this way have somewhat rigid boundaries – those who were not present cannot be inserted into one's memories after the fact, nor can anybody who has been through the ordeals be excluded subsequently (Whitehouse 2004).

Early efforts to investigate these processes in carefully controlled experiments used artificial rituals with sufficient emotional intensity to prompt both episodic recall and subsequent reflection on their meaning. In one such study, participants were invited to participate in what they were told was a reconstruction of an ancient Amazonian fertility rite (Richert et al. 2005). According to the cover story, anthropologists were seeking to puzzle together the long-forgotten meanings of the ritual acts and artefacts and were eager to learn from the impressions and interpretations of participants in the reconstruction. As part of the ritual sequence, participants were invited to place their hands in a hole in the ground while a drum played in the background. In this between-subjects design, the actions were varied such that participants in a high-arousal condition wore blindfolds when reaching into the hole. This made the experience considerably more frightening, as evidenced by self-reports of emotional intensity gathered immediately afterwards. All participants were asked to describe their ideas about the meaning of the ritual a week later, allowing time for reflection in the intervening period. Those experiencing the ritual as more frightening scored significantly higher on the meaning-making measures, suggesting that dysphoric intensity is linked to spontaneous reflection on the symbolism of ritual actions. These findings have been further supported by experiments using more objective measures of physiological arousal (Richert et al. 2005) and other methods of inducing dysphoria, such as the trauma film paradigm (Russell et al. 2014). In addition to experiments using made-up rituals, studies of real-world rituals suggest that the more frightening or painful the ritual experience, the more exegetical is the reflection it provokes (Xygalatas 2007). Moreover, recent studies of hazing rituals have shown that elevated exegetical reflection on the meanings of collective rituals mediates the relationship between dysphoric intensity, identity fusion, and willingness to sacrifice oneself for the group (Whitehouse et al. 2017).

Although modern-day hazing rituals are usually illegal and therefore difficult to study directly, especially in high-security environments such as the military, it is possible to conduct research on the phenomenon in certain contact sports such as Brazilian Jiu-Jitsu (BJJ). BJJ is a martial art based on principles derived from Judo. BJJ practitioners must progress through a system of grades associated with distinctive belts. In some BJJ schools, promotion to a higher grade entails a form of hazing via agonizing belt whippings, producing severe welts and bruises to the back and shoulders. A recent study of 564 BJJ practitioners showed that those who had suffered the most intense whippings reported higher levels of fusion to their school and also expressed greater stated willingness to risk their lives fighting for the club (Kavanagh et al. 2018; Whitehouse et al. 2017). In a related study, 146 members of American college fraternities and sororities were asked about their experience with hazing or other initiatory ordeals. The more central such ritual experiences were to the participants' personal identities, the higher were their reported levels of identity fusion with their fraternity or sorority and the more willing they were to sacrifice themselves for the sake of the group (Whitehouse et al. 2017).

In view of the above, it should come as no surprise that a recent exhaustive survey of modern suicide terrorism identified bonding via intense initiation rituals as one of the features common to most suicide groups (Pape 2005, p. 8). But whereas imagistic practices in the small-scale societies of prehistory would have supported efforts to fend off other groups of similar size, wielding more or less equivalent levels of lethal force, such practices took on a whole new significance with the emergence and spread of states and empires. Jewish Zealots who set out to assassinate Herod during the Roman occupation of Judea or Ismaili Assassins undertaking suicide missions in eleventh- and twelfth-century Persia, Syria, and Lebanon willingly gave their lives for the sake of a group, but they did so in a highly asymmetric theatre of operations, where the outgroup was more or less certain to overpower them as individual actors (Gambetta 2005). Through their martyrdom, they intended to instil fear in the powerholders and motivate others to rise up in support of their cause. The same logic, albeit without the element of murderous intent, motivated the hunger strikes of Mahatma Gandhi in 1940s India and the self-immolations of Buddhist monks and nuns in 1960s South Vietnam, both of which resulted in massive movements of popular support. In the same way, suicide terrorists of recent decades have harnessed the motivating power of fusion, whether generated through naturally occurring shared experiences of oppression or artificially induced ritual ordeals (or, more likely, both), to mobilize would-be martyrs to strategic effect (Pape 2005).

Not only in the specific case of terrorist cells but also in other kinds of interest groups, embedded in religions, professional guilds, and even schools and universities, imagistic practices have posed a threat to centralized states, empires, and priesthoods and have historically played a prominent role in many civil wars and revolutions as well as religious splintering and reformations (Whitehouse 2004; Whitehouse & Martin 2004). Efforts throughout history to suppress, contain, or wipe out imagistic organizations have met with varying success (Whitehouse & Martin 2005). The same may be said of America's global "war on terror," which in many cases amounts to an effort to eliminate unauthorized imagistic cells, especially those with a revolutionary vision to establish alternative states or empires. But ruling elites have also opportunistically harnessed the imagistic mode by endorsing rituals that foster local fusion among elite groups and crucially also in the military. And this continues today, for example, in the form of secretive hazing practices in the institutions through which ruling classes are recruited, in the fraternities of elite

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

universities and masonic lodges, and in the armed forces. These practices give rise to fusion in much the same way as imagistic rituals have done for many millennia in small-scale societies and, today, in a wide range of non–state-armed groups (Whitehouse & McQuinn 2012).

6. Extended fusion, identification, and self-sacrifice

So far, we have been focusing on fusion within a local group. The members of such groups fuse as a result of undergoing transformative, self-defining experiences together or sharing biological traits. As such, the bonds of fusion are based on relational ties among particular individuals: family members, fellow fighters in a military unit, co-participants in a ritual, and so on. But there is also evidence that people can fuse with much larger group categories, such as country, ethnic group, and world religion. This has been described as "extended fusion" (Swann et al. 2012; Whitehouse 2013).

The notion of extended fusion raises a number of conceptual challenges. One of these is the thorny question of how it relates to the more extensively studied phenomenon of "identification," which is essentially a measure of the strength of one's commitment to a social category (Tajfel & Turner 1979). Another is how extended fusion might fit with the theory of "tribal social instincts" (Richerson & Henrich 2012), which includes an evolutionarily grounded account of how ethnic markers arise and spread (Boyd & Richerson 1987). Identification is a depersonalizing form of group alignment in which group members perceive themselves to be interchangeable (Swann et al. 2009) because they are merely the bearers of prototypical traits that have been socially acquired from others (Whitehouse & Lanman 2014). By contrast, fused individuals regard their group identities as grounded in personal experience (Whitehouse 2013), producing a "strong autonomous self" that is "merged with the group" and, therefore, capable of motivating extreme pro-group action in non-prototypical ways (Swann et al. 2009; 2014a; Whitehouse & McQuinn 2012). In contrast, identification with a group motivates self-sacrificial behaviour only to the extent that it is endorsed by the group *and* that one's personal self does not become salient and trigger self-preservation motives that conflict with group values or interests (Whitehouse 2013). The first empirical demonstration of the fundamental differences between identification and fusion was a study in which participants were asked first about their willingness to defend themselves personally when threatened (priming personal identity) and then about their willingness to defend their group when threatened (priming group identity). Compared with a control condition that did not prime personal identity, the personal identity prime increased willingness to defend the group at cost to self in strongly fused individuals. But the personal identity prime had no effect on willingness to defend the group among those who were highly identified but not highly fused with the group (Swann et al. 2009). Subsequent studies further support the view that identification and fusion are fundamentally distinct forms of group alignment (Gómez et al. 2011b; Swann et al. 2012).

Nevertheless, extended fusion, like identification, entails alignment with group categories, rather than with a network of local, relational ties. Some of these group categories specify enormous populations – far too large for their members to know each other personally. Such groups may be described as "imagined communities" (Anderson 1983) in the sense that one cannot actually perceive one's fellow members directly; instead, one can only imagine the coexistence of others in the group that share the same identity markers. It has been argued that semantic memory for shared beliefs and procedural memory for shared practices both play a crucial role in the formation of imagined communities (Whitehouse 2004). Such memories take the form of schemas and scripts in which the slots for actions, actors, patients, and instruments are not populated by particular individuals and artefacts, but are generic representations of prototypical ones (Whitehouse 2005). Semantic memory provides us with most of the knowledge required to be a competent member of a large social group, such as a nation or a world religion, but it is a very impersonal kind of knowledge, in which the relevant agents are faceless bearers of social roles. Such memories are not anchored in personal experience; in fact, they are acquired through social learning from others in ways that are rapidly detached from any single episode in time or space (Whitehouse & Lanman 2014).

Unlike fusion, which taps directly into personal experience, identification is "deindividuating" (Diener et al. 1980). Activation of social identities makes personal experience (and, therefore, the personal self) less salient – it is as if one loses oneself in the crowd. Because identification does not tap into personal agency in the same way as fusion, we should expect identification to be a comparatively weaker basis for group cohesion (Whitehouse 2013; Whitehouse & Lanman 2014). True, identification motivates many forms of cooperation in society, including submission to higher authority, following and enforcing norms, participating in democratic institutions, and dutifully paying tax or tribute. It may even lead to heartfelt sympathy for those who lay down their lives for the group. But sympathy for the sacrifices of other group members, including the actions of suicide bombers, is not the same as being willing to undertake such actions oneself. Because identification is not a sufficiently powerful social glue to overcome selfish drives and impulses, penal systems are often required to sanction selfishness. This is particularly noticeable where conflicts of interest between individual and group are most extreme and the temptations to defect are high. A case in point would be participation in the military during wartime. But although shooting deserters and punishing criminality in general may have a deterrent effect, these are not the most effective ways of inspiring commitment to the group. Military leaders have long appreciated that combatants motivated by fear of punishment are far less effective in battle than those motivated by love of the group, of the kind that only fusion can produce. This may be one reason why terrorist and guerrilla forces, even when greatly outnumbered, can present such a stubbornly persistent threat to states with only conventional armies at their disposal.

Although identification with large group categories may be a relatively weak motivator, at least when it conflicts with personal self-interest, it is reasonable to ask whether extended fusion fares any better. Extended fusion is thought to entail the extension of bonds of kinship to larger groups (Whitehouse 2013), such that the metaphor of brotherhood triggers similar emotional responses, via norm internalization, as genetic relatedness (Richerson & Henrich 2012, pp. 62–63). This might be conceptualized as a process of "projection" (Swann et al. 2012) whereby bonds forged in small groups, such as the family, come to permeate our feelings about larger groups, such as church or nation. Consistent with this view is the pervasive use of metaphors of kinship when talking about country (e.g., as motherland, fatherland), fellowship (e.g., as brotherhood), and ethnicity (e.g., emphasizing

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

common genealogical roots). Nevertheless, the bonds forged in small relational groups, such as families, are often rooted in memories quite different from those uniting larger social categories. This is very apparent in the way different kinds of rituals bond participants.

As we have seen, imagistic rituals rely heavily on shared *episodic* memories deriving from rare, emotionally intense, and personally consequential events, such as initiation and frontline combat (see above). Relying as it does on self-defining episodic memory, fusion taps into the agentic personal self at the same moment it activates social identities (Swann et al. 2012). To the extent that these kinds of episodic memories may be associated with much larger group categories, we can fuse with "imagined communities." But note that this process of fusion, if correctly conceptualized, must be grounded in concrete personal experience, and consequently, it must be "local" before it can be "extended."

Although fusion with country has been shown to correlate highly with stated willingness to fight and die to protect one's fellow countrymen (Swann et al. 2010b), it remains doubtful whether anyone would prefer to die for an extended fusion target over a local one. The fact that the beliefs and practices defining large groups are acquired from others (Whitehouse 2004, pp. 123–24), rather than arising from internal processes of reflection and individual learning, may be one reason why identification fails to tap into personal agency, as noted above. Consequently, even if collective beliefs and practices can be "personalized" via the projection of local fusion onto an extended group, such a process may dilute the authenticity and uniqueness of the episodic memories upon which the fusion of personal and group identities depends. For example, the Christian evangelist might have experienced uniquely episodic and personal revelations even though her conversion narrative is at the same time heavily shaped by socially learned and often quite highly standardized cultural schemas. To the extent that the experience of being "born again," for example, can be shared with others in one's group, it might really be just the socially learned semantic schemas that are common to conversion rather than the self-defining experiences of converts.

There is also the question of whether sharing life-shaping experiences firsthand produces stronger fusion and associated behavioral consequences than would be the case if the evidence for sharedness is indirect. Tribal initiates or frontline fighters, for example, can actually recall who else was there during the most salient rituals or battles, suffering by one's side. It is possible that this kind of memory fosters the strongest fusion and motivates the most extreme pro-social actions in defending other members of the group. At the other end of the spectrum might be bonds based only on indirect evidence of shared experience, such as wearing the same medals or other insignia. Viewed in this light, war wounds or scars of initiation might serve as evidence of intermediate reliability, a compelling testimony to common suffering but without the episodic "time travel" quality of remembering particular group members actually being present during shared ordeals. In the study of Libyan revolutionaries reported above, participants expressed ceiling levels of fusion both with members of their own battalions (local fusion) and with those they had not met from other battalions who fought bravely (extended fusion), but on a forced-choice question they overwhelmingly chose their relational network over any extended group (Whitehouse et al. 2014b). Although it is not yet known whether differences in the strength of local and extended fusion are due to the directness of evidence for shared experience or some other factor, it is quite possible that only local fusion is capable of motivating extreme self-sacrifice. All of these topics should be explored more systematically in future research.

7. Conclusions and next steps

Why die for a group? This paper integrates core insights from the literature on suicide terrorism into a novel theory in which identity fusion, combined with perceptions of out-group threat, motivates extreme self-sacrifice. It is argued here that fusion is caused by perceptions of shared essence, whether as a result of shared biology, shared experience, or both (although there may be additional, as yet unknown, factors that give rise to fusion). This theoretical framework results from a synthesis of several decades of research on religious groups, together with a wide range of more recent studies measuring willingness to fight and die for the group in special populations including football fans, martial arts clubs, Islamic fundamentalists, and other highly cohesive organizations, as well as data from groups whose members actually laid down their lives for each other on the battlefield, including non–state-armed groups in Libya and conventional forces serving in Iraq and Afghanistan.

Several theories of the evolutionary origins of the fusion mechanism are considered here. One proposes that fusion is the outcome of kin selection, motivating high levels of cooperation and mutual support among close genetic relatives (Whitehouse & Lanman 2014). Another proposes that conditioning cooperation on past experience is sufficient to fuse groups of distantly related individuals in the face of adversity (Whitehouse et al. 2017). These theories are not mutually exclusive and could both help explain the biological evolution of the fusion mechanism under natural selection. In much of human prehistory, fused groups probably comprised small warring bands bound together in adversity. However, in contemporary complex societies, fused groups are often embedded in much larger organizations, such as armies, religious sects, and terrorist organizations. In many cases, fusion results not only from ordeals triggered by external factors, such as enemy attacks and natural disasters, but also through culturally evolved cohesion gadgets such as traumatic initiations. So-called "imagistic practices" of this kind are found not only in small-scale societies traditionally at war, but also in modern military units and terrorist cells, including those using suicide attacks as a strategic weapon.

The theory of extreme self-sacrifice proposed in this paper is falsifiable, hinging as it does on the following testable hypotheses regarding the psychological causes and behavioural consequences of identity fusion (see Fig. 1): Perceptions of shared essence lead to local fusion; perceptions of shared essence are outcomes of at least two distinct processes (experiencing emotionally intense events with others and/or believing that one shares inherited biological traits); local fusion motivates psychological kinship and self-sacrifice for the group. A number of similarly testable subsidiary hypotheses have also been presented regarding the causal pathways linking shared emotional events to fusion and self-sacrifice. For example, it is proposed that episodic memories for shared events are "group defining" to the extent that they also prompt reflection on the meanings of those experienced events. Causally opaque events are hypothesized to generate more reflection than causally transparent ones. It is also proposed that fusion and psychological kinship motivate violent self-sacrifice only when a plausible out-group threat of sufficient magnitude is present. Evidence has been presented in support of each of these

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

hypotheses, but there remains a need for wider independent replications to validate existing findings.

The pathways to fusion and self-sacrifice proposed here could turn out to be mistaken in some of their details without being completely wrong. What would be fatal for the theory is if it turned out that convictions of shared essence failed to predict high fusion scores, or if fusion (plus out-group threat) were shown to be a poor predictor of actual (as opposed to declared) willingness to fight and die for the group. These two claims are so central to the conceptual framework that, if shown to be false, the entire edifice would collapse. Somewhat less disastrous for the theory, but still a setback, would be a significant reduction in its explanatory provenance. For example, the theory may eventually prove to be applicable only to some armed groups but not all, and perhaps most crucially not to suicide terrorists. Although there would seem to be many similarities between the self-sacrificial acts of armed militia (whose fusion levels with numerous target groups have been measured) and those of suicide bombers (whose fusion levels are unknown), these similarities may turn out to be more apparent than real. If, as some have argued (see sect. 2), most suicide terrorists are motivated by pathology (e.g., suicidal depression) rather than the desire to act in the interests of a group, that would be a serious problem for the theory as articulated in this paper. Decisive evidence on this question may require more extensive research among would-be suicide terrorists and those who have attempted unsuccessfully to carry out such attacks (the previously acknowledged difficulties of conducting such studies notwithstanding).

The theory presented here also raises many new, empirically tractable questions, for example, concerning the relationship between local and extended fusion. Future research should investigate whether perceptions of shared essence are stronger if they are based on direct observation rather than on the testimony of others. Would remembering who else was there alongside you in a decisive battle or a traumatic rite of passage or perceiving shared phenotypic traits in a sibling provide more compelling evidence of shared experience or shared biology than merely displaying the same kind of medals or reciting myths of shared ancestry? Relational ties to a local group often incorporate episodic memories for self-defining events, which other group members indelibly inhabit. By contrast, categorical ties to an extended group are based largely on "knowing that" certain identity markers serve as indirect testimony to shared experience. Indirect evidence of shared experience may not be capable of motivating acts of self-sacrifice to the same extent as bonds forged through episodic memories of shared ordeals within a band of brothers.

Research into the causes of extreme pro-group action is not merely of scientific interest; there is potential also to use the findings in practical ways. For example, deradicalising Islamist militants might be reframed as a process of *defusing* extremists. Given that we now have a well-substantiated account of the causal pathways to fusion, together with evidence that priming the mediating variables in this pathway increases fusion (Whitehouse et al. 2017), it may be possible to reduce the effects of mediating variables so as to obstruct or reverse the fusion process. This has yet to be demonstrated in practice, but the general approach is well motivated theoretically. Such an approach should not be confused with the notion of "deprogramming" because the goal would not be to alter people's beliefs or goals against their will. Indeed, the aim would not be to challenge the validity of ideologies or doctrines at all, but only to facilitate a process of reflection on past experiences and their relevance to group alignments. The process would need to engage the wider participation not only of extremists but also of members of their social networks and surrounding communities (such as parents, schoolteachers, and religious leaders), although the ethics of any interventions would require careful scrutiny and monitoring.

Yet another potential application of this new framework would be neither to create nor to obstruct group alignments but to harness existing ones. There are a number of potentially desirable ways in which this could be done, not least in rebuilding societies devastated by conflicts or natural disasters. For example, during the uprising of 2011, many Libyans fought passionately and at huge cost to clear the way for a prosperous future under a more consensual system of governance. The social cohesion needed to build that vision was available in abundance at the end of the revolution, but there was a failure to harness it for the public good both on the part of the international community and on the part of Libyan leaders vying for power at the time. The same pattern repeats itself endlessly in other conflicts around the world. Only by better understanding the underlying causes of pro-group commitment can we benefit from its potential for building trust and cooperation while limiting its capacity to stoke intergroup conflict.

Acknowledgments. Thanks to Michael Buhrmester, Sergey Gavrilets, Rohan Kapitany, Christopher Kavanagh, Jonathan Lanman, and the BBS reviewers for comments and suggestions. This work was supported by a Large Grant from the UK's Economic and Social Research Council (REF RES-060-25-467 0085), an Advanced Grant from the European Research Council (ERC) under the European Union's Horizon 2020 Research and Innovation Programme (Grant Agreement 694986), and an award from the Templeton World Charity Foundation entitled "Cognitive and Cultural Foundations of Religion and Morality" (TWCF0164).

Open Peer Commentary

What motivates devoted actors to extreme sacrifice, identity fusion, or sacred values?

Scott Atran[a,b] and Ángel Gómez[c,d]

[a]Centre National de la Recherche Scientifique, Paris, France; [b]Changing Character of War Centre, University of Oxford, Oxford, United Kingdom; [c]Universidad Nacional de Educación a Distancia, Madrid, Spain and [d]Artis International, Scottsdale, AZ 85824.
scott.atran@pmb.ox.ac.uk
http://www.hmc.ox.ac.uk/people/professor-scott-atran/
agomez@psi.uned.es
https://angelgomezjimenez.webnode.es/

doi:10.1017/S0140525X18001565, e193

Abstract

Why do some individuals willingly make extreme sacrifices for their group? Whitehouse argues that such willingness stems from a visceral feeling of oneness with the group – identity fusion – that emerges from intense, shared dysphoric experiences or from perceived close kinship with others. Although Whitehouse's argument makes a valuable contribution to understanding extreme sacrifice, factors independent of identity fusion, such as devotion to sacred values, can predict self-sacrifice.

Ever since Darwin (1871), scientists have puzzled over why some people, such as heroes and martyrs, willingly self-sacrifice, even when facing overwhelming odds and apparent defeat. The global advent of suicide attacks has transformed the issue into a paramount policy challenge for governments and their publics. Whitehouse's article is informative and timely, focusing its explanation of violent extremism on an interrelated complex of cognitive and emotional means for binding groups (perceptions of shared essence, actual and imagined kinship, shared episodic memories, and intense emotional experiences), while offering general understanding of self-sacrifice applicable to many cultural contexts and times. However, Whitehouse risks overstating his case by claiming that identity fusion is the primary, if not unique, driver of extreme sacrifice.

In the last decade, experiments performed on five continents have shown identity fusion is a reliable predictor of willingness to fight, kill, and die for one's group. Identity fusion theory originated with William Swann and Ángel Gómez in 2005. It was initially conceived to help explain the September 11, 2001 attacks and March 11, 2004 Madrid train bombings (Europe's worst terrorist attack to date). It was then empirically validated in several publications (Gómez et al. 2011a; Swann et al. 2009). Whitehouse subsequently joined the effort (Swann et al. 2012), applying the theory with colleagues to an impressive set of field settings from initiation rites in New Guinea to the Libyan insurgency against Gaddafi (Whitehouse et al. 2014b).

The target article is compelling when extending fusion theory to explain the group-binding functions of intense, dysphoric experiences in painful rituals or other emotional life-shaping experiences (e.g., frontline combat). Whitehouse convincingly relates such experiences to kin psychology: attitudes and feelings associated with immediate familial ties, which can be extended to larger groups – from tribes to transnational movements – via participation in intensely emotional rituals or attention to symbols that evoke shared intense experiences. Previous fusion research supports the connection between these mechanisms and fusion. For example, individuals diagnosed with gender dysphoria (i.e., transsexuals), when fused with their preferred gender, are willing to suffer painful experiences (e.g., major surgery) to belong to their desired sex group (Swann et al. 2015). Other studies also show that fusion promotes self-sacrifice, including dying for a group, by fostering perception of familial ties (Swann et al. 2014a).

Less compelling is Whitehouse's argument that identity fusion is generally the principal determinant of willingness to self-sacrifice. Other anthropological and psychological research indicates that commitment to so-called sacred values can motivate extreme and costly behaviors (Baron & Spranca 1997; Graham & Haidt 2013; Rappaport 1971; Tetlock 2003). Whitehouse dubiously acknowledges sacred values by assimilating them to identity fusion. Thus, "extreme beliefs [may] become so closely linked to the group that they take on an aura of sacredness"; however, "what connects those values to acts of self-sacrifice may well be fusion with the group rather than commitment to any kind explicit belief system" (sect. 2, para. 6).

Yet, among Itza' Maya in lowland Guatemala, we find strong commitment to spiritual values that summarize millennial experience – but no significant contemporary group bonding, ritualized or otherwise – driving very costly rainforest management (Atran et al. 2002). Studies in Western Europe, North Africa, and the Middle East reveal sacred values and identity fusion to be uncorrelated, independent predictors of willingness to engage in, and suffer, extreme violence. When individuals perceive a threat both to their fused group and to sacred values, identity fusion and sacred values interact, leading to greater willingness to sacrifice than for either factor alone (Atran et al. 2014; Sheikh et al. 2016). Sometimes identity fusion takes precedence over sacred values (Gómez et al. 2016a). In other circumstances, sacred values prove more important. For example, in our study of frontline combatants in Iraq (Kurdish PKK and Peshmerga, Sunni Arab militia, Iraqi Army, captured Islamic State fighters), those most willing to make costly sacrifices (as verbally expressed and in terms of actually being wounded and voluntarily returning to fight) were ready to forsake their fused group, whether their genetic family or any other group with which they were fused, rather than their sacred values. This finding was replicated among subjects most willing to make costly sacrifices in a sample of more than 6,000 Western Europeans (Gómez et al. 2017) and with young men just emerging from Islamic State rule in the Mosul area of Iraq (Atran et al. 2018).

Whitehouse questions these findings, arguing that "measures of sacred values … are related to similar measures of willingness to sacrifice for sacred values" (sect. 2, para. 6). Our sacred value measures chiefly concern unwillingness to trade the value against material gain or loss (Ginges et al. 2011), although in some studies additional indicators of sacredness include insensitivity to discounting, immunity to peer pressure, and blindness to exit strategies (Sheikh et al. 2013). But in our frontline studies, for example, we see no support for Whitehouse's intimation that refusing material incentives for assessing sacred values, such as Sharia law, is conflated with outcome measures of costly commitments such as "dying, letting one's family suffer, undertaking a suicide attack, torturing women and children" (Gómez et al. 2017, p. 678).

Whitehouse surmises: "willingness to fight and die is not motivated by doctrines and ideologies, religious or otherwise, but by a particularly intense love of the group" (sect. 2, para. 7). Previous research suggests that even for some suicide attacks in the name of religion or for a political goal, group dynamics can be more important than confessional or ideological affiliation (Atran 2010; Sageman 2004). But in other circumstances, devotion to sacred values may be primary (Atran et al. 2018; Gómez et al. 2017) or be important even without any longstanding relationship to religious or ideological doctrine (e.g., right to nuclear capability among some Iranians [Dehghani et al. 2010]). Whitehouse (2000) distinguishes ideologies and doctrines from the imagistic and emotion-laden aspects of ritual and dysphoric experiences that, by and large, distinguish spiritual life in small-scale societies (e.g., pre-state cultures, contemporary New Guinea tribes) from the "doctrinal" religions and political ideologies of large-scale societies (e.g., empires, nations). Sacred values, though, appear to have privileged connections to emotions and can be as imagistic and intensely felt (Atran & Ginges 2012; Durkheim 1912; Ginges et al. 2007; Gómez et al. 2017), as they can be part of religious or ideological doctrine.

A general theory of extreme self-sacrifice should consider, at a minimum, that people can make extreme sacrifices for a group, but also, or even independently, for a cherished cause.

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

Self-sacrifice for in-group's history: A diachronic perspective

Maria Babińska and Michal Bilewicz

Faculty of Psychology, University of Warsaw, Warsaw, Poland.
maria.babinska@psych.uw.edu.pl bilewicz@psych.uw.edu.pl
http://cbu.psychologia.pl

doi:10.1017/S0140525X18001796, e194

Abstract

The problem of extended fusion and identification can be approached from a diachronic perspective. Based on our own research, as well as findings from the fields of social, political, and clinical psychology, we argue that the way contemporary emotional events shape local fusion is similar to the way in which historical experiences shape extended fusion. We propose a reciprocal process in which historical events shape contemporary identities, whereas contemporary identities shape interpretations of past traumas.

Whitehouse proposes a novel view of how emotional events (both dysphoric and euphoric), stored in an individual's memories, contribute to group fusion and self-sacrifice for the group. In discussing group-level phenomena, he suggests that such extended fusion "entails alignment with group categories rather than with a network of local, relational ties" (sect. 6, para. 3).

Group identification (referred to as "extended fusion" by Whitehouse) is a complex phenomenon comprising three elements: centrality, in-group affect, and in-group ties (Cameron 2004). Contrary to the view presented by Whitehouse, relational ties within a group lead to group engagement (i.e., sacrifice for a group cause) to a greater extent than mere alignment defined as centrality of the group in the structure of self and positive emotions felt toward the group. Evidence for that can be found in both ethnic and national groups (Bilewicz & Wojcik 2010), as well as in groups of interest or neighborhood groups (Obst & White 2005).

More so, although on the individual level, people are motivated to achieve and maintain a perception of the self as being time consistent (Vignoles 2011), studies have indicated that this motivation is also central to group identification and can predict the strength of relational ties to the in-group (Smeekes & Verkuyten 2013). The need for self-continuity is satisfied by seeing oneself as a part of a group that is perceived as temporally enduring (Smeekes & Verkuyten 2014).

Based on our own research, as well as findings by other political and social psychologists, we propose a more diachronic approach to the problem of extended fusion and identification. Whitehouse suggests that shared experiences contribute to self-sacrifice and greater local fusion. We propose that shared historical experiences (dysphoric and euphoric) shape extended fusion in a similar vein as contemporary emotional events shape local fusion. The relationship between historical experiences and extended fusion is a reciprocal one – historical traumas affect contemporary identities, whereas strong identification affects interpretations of past traumas as collective phenomena (see Fig. 1).

Studies on trans-generational transmission of trauma show that historical experiences, such as wars, disasters, and atrocities,

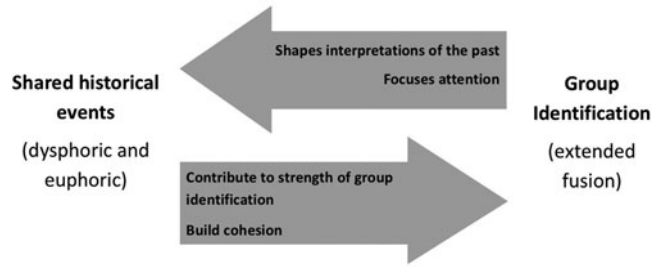

Figure 1. (Babińska & Bilewicz) The reciprocal relationship between group identification (extended fusion) and shared historical events.

may lead to enhanced identification, higher cohesion, and self-sacrifice for the group's causes (Staub & Vollhardt 2008). Transmission of traumatic experiences can occur both on societal levels (Klar & Schori-Eyal 2013) and through epigenetic processes (Yehuda et al. 2014). More so, research on past victimization suggests that such experiences could lead to greater in-group favoritism and engagement in conflict with other groups (Noor et al. 2008; Vollhardt & Bilewicz 2013; Vollhardt et al. 2015). Inflating cultural and historical in-group continuity and strengthening group ties can be seen as means of terror management: Being a part of an entity that transcends time can help people cope with concerns related to individual mortality (Sani et al. 2008).

At the same time, extended fusion and higher identification with the in-group in the present affect the ways historical events are remembered. People highly fused with their groups tend to deny negative aspects of their group's history (Bilewicz 2016) and show greater group-serving biases in explanations of historical events (Bilewicz et al. 2017). They also express collective moral emotions related to past in-group wrongdoings to a lesser extent (Klein et al. 2011). People highly identified with their group are motivated to protect its positive image by shifting unjust standards of judgment of past wrongdoings, concluding, for example, that the in-group wasn't "that" racist or didn't act "that" unjustly (Miron et al. 2010). This provides yet another example of the identity–history link, such that high identifiers evaluate past events differently than those with low ties to the in-group.

More evidence of this process can be found in research on defensive forms of group attachment (collective narcissism [Cichocka 2016]). For example, Bilewicz and Babinska (2018) found that collective narcissism is positively related to idealistic interpretations of an in-group's past. People with strong and narcissistic ties to their nation underestimate past immoral behaviors of their fellow in-group members and overestimate in-group heroism. Moreover, studies have shown that collective narcissists interpret an in-group's past through the lenses of victimization and defensiveness, a phenomenon known as siege mentality (Golec de Zavala & Cichocka 2012), and try to censor information on historical misdeeds of fellow in-group members (Klar & Bilewicz 2017).

Studies on intergroup conflict show that the content of identity that is derived from past victimization can have distinct effects on justifications of present wrongdoings (Schori-Eyal et al. 2017). Lessons from traumatic in-groups' pasts may lead to different strategies in current intragroup and intergroup relations. On the one hand, they can lead to moral apprehension of wrongdoing (Klar & Schori-Eyal 2013) and to shared victimhood-based identity (inclusive victimhood consciousness [Vollhardt 2012]). On the other hand, interpretations of the past can lead to perpetual in-group victimhood orientation, which allows the present in-group

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

to rationalize harming other groups (Schori-Eyal et al. 2017), as well as to exclusive victimhood, which leads to competition with other historically victimized groups (Bilewicz et al. 2013; De Guissmé & Licata 2017). These processes lead to further strengthening of in-group ties in opposition to other victimized groups.

Social identity shapes the way public events of large-scale importance are remembered. Growing bodies of research on flashbulb memories (long-lasting vivid memories of collectively experienced events [Brown & Kulik 1977]) underline that social identity shapes the intensity of emotions that the relevant event triggers, affecting their memory and rehearsal and cognitive reconstruction (Curci & Luminet 2006). This provides yet another example of the reciprocal relationship between collective identity and memories of relevant events (Wang & Aydin 2008).

The narrative about historical events shared within a group contributes to greater fusion, which, in turn, leads to further biases in perception of history. This reciprocal process shows how strong group identification, together with epistemic conformity (Klar & Bilewicz 2017), allows people to distort historical truth for the sake of the group's cohesion. At the same time, such distortion of historical truth makes significant euphoric and dysphoric aspects of a group's history more salient, thereby contributing to higher levels of group fusion.

Acknowledgment. This article was funded by NCN grant DEC 2014/15/G/HS6/04589.

Note. The funding information was listed incorrectly in the original online version of this commentary. An erratum has been published.

Dying for your group or for your faith? On the power of belief

Maarten Boudry

Department of Philosophy & Moral Sciences, Ghent University, Ghent 9000, Belgium.
maartenboudry@gmail.com www.maartenboudry.be

doi:10.1017/S0140525X18001656, e195

Abstract

Whitehouse's theory offers one plausible pathway toward extreme self-sacrifice, but it fails to explain sacrificial acts that are inspired by heartfelt ideological beliefs, including jihadi terrorism and mass suicide in cults. If he wants to offer a "single overarching theory" of self-sacrifice, he will need to take seriously the power of belief.

Good scientific theories have to make risky predictions. Whitehouse shows an admirable willingness to "sacrifice" his theory on the altar of empirical evidence, helpfully laying out two ways in which it can be falsified. I will argue for what he calls the "somewhat less disastrous" scenario: a reduction in explanatory scope. His theory of identity fusion offers support for one pathway toward extreme self-sacrifice, but it fails to account for the most important case on which he brings his theory to bear, namely, jihadi suicide terrorism.

According to Whitehouse, extreme self-sacrifice is motivated by identity fusion, in which people form such strong bonds with their groups that they become willing to lay down their lives for them. But how does this theory account for mass suicides, in which the *whole* group perishes? In 1997, the leader of the Heaven's Gate cult, Marshall Applewhite, persuaded 38 of his followers to commit collective suicide. After the destruction of their physical bodies, these people believed their souls would board a spacecraft trailing comet Hale–Bopp. In another example, on November 18, 1978, 918 members of the People's Temple in Jonestown, including cult leader Jim Jones, poisoned themselves in an act of "revolutionary suicide."

In a heroic act on the battlefield, one soldier might jump on a grenade so that his comrades may be saved, but this logic breaks down for mass suicides. What is the point of sacrificing yourself for the sake of the group, when the objective of the mission is for the whole group to perish along with you? Can one explain the extreme self-sacrifice of the Heaven's Gate cult members without mentioning their professed beliefs about the spacecraft rescue?

Many jihadi terrorist plots, such as the 9/11 attacks, can also be seen as cases of mass suicide. The 9/11 terrorist cells were highly cohesive, and their members may well have achieved identity fusion, but they were in it to die together. Perhaps Whitehouse can retort that the hijackers also intensely loved the "brotherhood" of the Al Qaeda organization as a whole, which is certainly true. But as he himself writes, bonds with larger group categories are weaker than "local fusion" between people who know each other personally. Another, somewhat opposite problem is the recent phenomenon of "lone wolf" attacks. These are carried out by individuals who typically pledge allegiance to ISIS (e.g., in a video recording) before carrying out their suicide mission, but who have radicalized themselves online, having had little or no contact with the organization itself (Juergensmeyer 2005; Stern & Berger 2015). Being relatively isolated, how could these loners have undergone the "collective experiences" required by Whitehouse's theory, such as painful initiation rites?

Is it possible that jihadist terrorists are motivated by specific ideological beliefs after all? One major incentive for extreme self-sacrifice is the belief, professed by many jihadists, that a martyr who dies in the righteous cause of jihad will be cleansed of all his sins and gain direct entrance to paradise (along with 70 family members, according to some). Strictly speaking, suicide is forbidden in Islam, but fundamentalist scholars have developed arguments to work around this problem. In effect, as long as the objective of the attack is to kill unbelievers, while the death of the attacker is merely incidental, the attacks do not qualify as suicide for these religious jurists (Cook 2005, pp. 141–46). As Bernard Lewis summarizes, the "suicide bomber is … taking a considerable risk on a theological nicety" (Lewis 2004, p. 38). Do these theological justifications play a role in real life? In *The Looming Tower,* Lawrence Wright recounts the story Mohamed Al-Owhali, one of the perpetrators of the 1998 U.S. embassy bombings. Al-Owhali's job was to force the guard to raise the drop bar so that the truck filled with explosives could be driven as close as possible to the embassy. However, when he threw a stun grenade into the courtyard, attracting potential victims, he suddenly faced a theological dilemma:

> He had expected to be a martyr; his death in the operation would assure him his immediate place in Paradise. But he realized that his mission of setting off the stun grenade had already been accomplished. If he were to go forward to his own certain death, that would be suicide, he explained, not martyrdom. Damnation would be his fate, not salvation. Such is the narrow bridge between heaven and hell. (Wright 2006, p. 271)

Many jihadi terrorists talk about afterlife rewards in their video testaments (Hafez 2007; Kruglanski at al. 2009; Oliver & Steinberg 2006) and about of the joys and honor of martyrdom. Their families receive gifts when the martyr's mission is completed. Some mothers even encourage their sons to volunteer for suicide missions, and are overjoyed when they succeed (Barlow 2015). According to Pentagon intelligence documents, the 9/11 hijackers doused themselves with flower water in preparation for meeting the dark-eyed virgins in paradise (Sperry 2005). In one of his speeches, Osama bin Laden said: "[These youths] have no intention except to enter paradise by killing you. An infidel, and enemy of God like you, cannot be in the same hell with his righteous executioner" (Greenberg 2005, p. 182). During the Iran–Iraq war, thousands of Iranian children were sent to walk through minefields to die as martyrs. They had signed "Passports to Paradise" and were even given plastic keys to ensure entry into heaven (Kumar 2017, p. 170).

Hard though it may be for secular Westerners to accept, some people really believe that 72 dark-eyed virgins await them in paradise (Boudry & Coyne 2016a; 2016b; van Leeuwen 2014). Unfortunately, Whitehouse does not even mention afterlife rewards and rejects the role of belief out of hand: "willingness to fight and die is not motivated by doctrines and ideologies, religious or otherwise, but by a particularly intense love of the group" (sect. 2, para. 7). Of course, most people who intensely love their group (e.g., sports fans) don't commit suicide attacks. If Whitehouse wants to fulfill his ambition of offering a "single overarching theory" of extreme self-sacrifice, he will need to take seriously the power of belief.

The role of entitativity in perpetuating cycles of violence

Virginia K. Choi[a], Joshua C. Jackson[b] and Michele J. Gelfand[a]

[a]Department of Psychology, University of Maryland, College Park, MD 20742. and [b]Department of Psychology and Neuroscience, University of North Carolina, Chapel Hill, NC 27510.
vavkc@umd.edu mgelfand@umd.edu
https://www.michelegelfand.com/joshcj@live.unc.edu

doi:10.1017/S0140525X18002042, e196

Abstract

Whitehouse's theory on fusion can explain why suicide terrorists are willing to make the ultimate sacrifice for their groups, but the following questions on violent extremism remain: (a) Why are victims of suicide terrorism often innocent bystanders? (b) Why do terrorists seem motivated by ancient conflicts? We incorporate findings from the entitativity literature to provide insights into how perceptions of in-groups and out-groups are key processes influencing violent extremism.

Why do people engage in suicide terrorism? In his target article, Whitehouse summarizes a comprehensive research program devoted to answering one aspect of this question. Whitehouse focuses on why terrorists will sacrifice their own lives for the benefit of their group, arguing that a sense of group fusion – fostered through shared dysphoric events – explains their willingness to make this ultimate sacrifice. But other puzzles of violent extremism remain. For example, why do terrorists feel vindicated carrying out their attacks against innocent bystanders? And why is current-day violent extremism so often rooted in ancient disputes involving past generations?

Here, we outline a broader perspective on violent extremism that addresses these questions and adds another dimension to Whitehouse's contribution using the psychological concept of *entitativity* – the perception of group members as a single entity (Campbell 1958). Whereas fusion captures the oneness that individuals feel toward their in-group, entitativity applies to entitative perceptions of any group (Lickel et al. 2000). Entitativity theory, therefore, can explain the puzzle of why people will engage in self-sacrificial behavior against uninvolved out-groups and across generations, causing continued cycles of violence.

Out-group entitativity and vicarious revenge

Typically, a conflict erupts between two parties with an initial act of aggression that is followed by revenge. However, acts of violent extremism, including suicide terrorism, have a unique structure, in which retaliation for some perceived offense is directed at innocent bystanders. Consider the events of 9/11. Al-Qaeda claimed that its attack was in retaliation to the U.S. government's support of Israel and the presence of American troops in Saudi Arabia, yet their attacks targeted civilians who were not involved in these events. Violent extremism often involves such acts of "vicarious revenge" – retaliation directed toward individuals not involved in an initial conflict (Jackson et al. in press; Lee et al. 2013).

Past research suggests that vicarious revenge can be traced to perceptions of out-group entitativity. When out-groups are perceived as a single entity, all members of a group are seen as equally blameworthy – and substitutable – for an offense committed by the group. For example, if a street gang is viewed as highly entitative, the whole gang is also seen as responsible for one member's wrongdoing (Denson et al. 2006). Out-group entitative perceptions can have damaging consequences. After the American Columbine mass shootings, the shooters' families were perceived as entitative with the shooters themselves, which led to overt aggression and death threats (Lickel et al. 2003). When applied to violent extremism, this suggests terrorists view innocent out-group members as entitative with other out-group members and equally deserving of revenge. These perceptions of out-group entitativity allow terrorists to rationalize unjustifiable acts of aggression against blameless individuals.

Transgenerational entitativity and the persistence of conflict across generations

Cycles of violent extremism are often rooted in ancient conflicts involving long deceased individuals. These conflicts can often revolve around historical religious figures (in the case of Islamic extremists fighting on behalf of the prophet Muhammad), biblical conflicts (in the case of Hamas and Israeli radicals), or extinct political systems or figures (in the case of Neo-Nazism). Nevertheless, violent extremists give up their lives for these historical groups and individuals in the same way they might give up their lives for their current-day family or battalion.

Past research on transgenerational entitativity may explain this paradoxical behavior. Perceptions of an in-group as transgenerational – as a totality of past, present, and future members – have been found to increase willingness to endure losses for the benefit of the group's posterity (Kahn et al. 2017). Groups perceived to have essential qualities and histories that are passed down

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

transgenerationally facilitate stronger esteem for one's in-group (Sani et al. 2007; 2008) and greater opposition to out-groups (Jetten & Wohl 2012; Smeekes & Verkuyten 2014; Warner et al. 2016). Moreover, stories about conflicts that get passed down across generations become increasingly biased, with in-group blame minimized and out-group blame accentuated over time (Lee et al. 2014), further escalating conflicts over time. A transgenerational group perception can explain why cycles of revenge often persist and escalate across multiple generations (Lee et al. 2014; Stillwell et al. 2008) and why fused extremists sacrifice themselves for the sake of in-group members who lived long before they were born.

By applying past literature on entitativity, we show how Whitehouse's research on fusion could be integrated into a broader theory of how group perceptions influence violent extremism. When individuals perceive their entitative in-groups as strongly interconnected with the past and future, it guides them to make extraordinary sacrifices on behalf of their groups. On the other hand, when they perceive out-groups as entitative, they will rationalize acts of aggression against innocent out-group members. Fusion, out-group entitativity, and transgenerational entitativity are all processes that are needed in combination to understand the puzzle of violent extremism. These largely separate lines of research all have in common basic perceptual processes that lead to the recognition of groups as cohesive entities based on their shared essential features. Future research is needed to examine the interrelationship among these different perceptual processes and the factors that can break cycles of conflict.

Altruism, collective rationality, and extreme self-sacrifice

Andrew M. Colman and Briony D. Pulford

School of Psychology, University of Leicester, Leicester LE1 7RH, United Kingdom.
amc@le.ac.uk bdp5@le.ac.uk
https://www2.le.ac.uk/departments/npb/people/amc
https://www2.le.ac.uk/departments/npb/people/bdp5

doi:10.1017/S0140525X18001632, e197

Abstract

Puzzlement about extreme self-sacrifice arises from an unarticulated assumption of psychological egoism, according to which people invariably act in their own self-interests. However, altruism and collective rationality are well established experimentally: people sometimes act to benefit others or in the interests of groups to which they belong. When such social motives are sufficiently strong, extreme self-sacrifice presents no special problem of explanation and does not require out-group threats.

Asking why people are sometimes willing to lay down their lives for the sake of their groups implies that extreme self-sacrifice is incomprehensible or perplexing. What, precisely, needs explaining? The perplexity seems to arise from a deep-rooted but usually unarticulated assumption that people are inherently selfish and invariably motivated to act in their individual self-interests. Within that implicit theory of human motivation, deeply embedded in individualistic societies such as the United States, extreme self-sacrifice is indeed inexplicable, but the theory itself is false and misleading.

The philosophical doctrine that we are all motivated solely to maximize our individual welfare is called psychological egoism (May 2011; Slote 1964). It asserts that everything we do, no matter how beneficial to others, is actually calculated to benefit ourselves. It allows the possibility of mistakes (acting in ways that fail to maximize one's welfare through errors or oversights) and akrasia (trying to do the best for oneself but failing through weakness of will), but it rules out altruism (benefiting another person at some cost to oneself) and leaves no room for collective rationality (acting in the interests of a group to which one belongs). Psychological egoism is either tautological or false: tautological if we interpret any deliberately chosen action as selfish by definition, or false if we adopt a more intuitive interpretation of selfishness. The economist and Nobel laureate Paul Samuelson (1993) poured scorn on the tautological interpretation:

> I will not waste ink on face-saving tautologies. When the governess of infants caught in a burning building reenters it unobserved in a hopeless mission of rescue, casuists may argue: "She did it only to get the good feeling of doing it. Because otherwise she wouldn't have done it." Such argumentation (in Wolfgang Pauli's scathing phrase) is *not even wrong*. It is just boring, irrelevant, and in the technical sense of old-fashioned logical positivism "meaningless." (p. 143)

There is overwhelming experimental evidence that altruistic behavior can be elicited reliably through experimental procedures designed to arouse empathy (Batson 2011; Batson & Shaw 1991; Batson et al. 1988). It is hard to escape the conclusion that empathic emotions evoke genuinely altruistic motives that have the ultimate goal of benefiting those who elicit the empathy and not those who feel it. Furthermore, there is evidence that people sometimes choose to act in the interests of their groups, rather than their individual selves (Bardsley & Ule 2017; Bardsley et al. 2010; Butler 2012; Colman et al. 2008; 2014). These findings confirm everyday observations of people acting in what they believe to be the interests of their families, companies, universities, or religious, ethnic, or national groups, even when those interests do not coincide with their own selfish interests. When these social motives are sufficiently powerful or fanatical, they can lead to extreme self-sacrifice.

The theory of social value orientation (SVO) was introduced by Messick and McClintock (1968) and McClintock (1972) to provide a rigorous conceptual framework for interpreting altruism, collective rationality, and other social motives. In its simplest (dyadic) interpretation, an SVO represents a person's preferences regarding the allocation of a resource between self and another individual. In terms of utility theory, suppose t_i and t_j are objective payoffs – for example, amounts of money – to two people i and j. Then i's utility $u_i(t_i, t_j)$ is a function of both objective payoffs. Under the individualistic SVO, i is motivated to maximize $u_i = t_i$, selfishly optimizing i's own objective payoff without regard to j's. This is the only motivation recognized under the doctrine of psychological egoism, although from a contemporary neurobiological perspective, it can be viewed as pathological (Sonne & Gas 2018). There is also persuasive experimental evidence for an altruistic SVO, when i is motivated to maximize $u_i = t_j$, hence being concerned solely to maximize another's welfare, and a cooperative SVO, when i is motivated to maximize $u_i = t_i + t_j$, the collective payoff of both individuals (for reviews of SVO theory and evidence, see Balliet et al. [2009], Bogaert et al.

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

[2008], and Murphy & Ackermann [2014], who also discuss competitive and equality-seeking SVOs that do not concern us here).

Once we acknowledge that people are sometimes motivated to perform actions intended to benefit others, the puzzle of extreme self-sacrifice evaporates, and we do not need out-group threats to interpret social motivation. In a Stag Hunt game, for example, two hunters are motivated to act in the joint interest of the dyad in catching a stag, although each is tempted selfishly to chase a hare that can be caught without the other's help. No external threat is involved, but collective preferences need to be supplemented with team reasoning (Bacharach 1999; Sugden 1993). Team reasoners first search for an outcome that they believe would be best for the dyad or group; if such an outcome exists and is unique, they then play their parts in the joint enterprise. In these theories, orthodox decision theory is a special case of team reasoning when the team is a singleton (for a comprehensive review of team reasoning theories and experimental evidence, see Colman & Gold [2017]).

People occasionally perform acts of extreme self-sacrifice to benefit others or to act in what they believe to be the interests of the groups to which they belong. Such self-destructive actions can arise from nonselfish motives of altruism or collective rationality. How people come to hold social motives so fervently is worth investigating; in many instances of self-sacrificial mass murder, religion evidently plays a key role. According to the physicist and Nobel laureate Steven Weinberg (1999), "With or without religion, good people can behave well and bad people can do evil; but for good people to do evil – that takes religion." However, why people practice extreme self-sacrifice given their fervent altruistic or collectivistic social motives is hardly puzzling once we free ourselves from the debilitating misconception of psychological egoism.

Extreme self-sacrifice beyond fusion: Moral expansiveness and the special case of allyship

Daniel Crimston and Matthew J. Hornsey

School of Psychology, University of Queensland, St. Lucia, QLD 4072, Australia.
d.crimston@uq.edu.au m.hornsey@psy.uq.edu.au
https://psychology.uq.edu.au/profile/2698/dan-crimston
https://psychology.uq.edu.au/profile/2236/matthew-hornsey

doi:10.1017/S0140525X18001620, e198

Abstract

As a general theory of extreme self-sacrifice, Whitehouse's article misses one relevant dimension: people's willingness to fight and die in support of entities not bound by biological markers or ancestral kinship (*allyship*). We discuss research on moral expansiveness, which highlights individuals' capacity to self-sacrifice for targets that lie outside traditional in-group markers, including racial out-groups, animals, and the natural environment.

Whitehouse argues that extreme self-sacrifice for the benefit of the group emerges through two pathways. First, people may go through transformative experiences with other group members (e.g., life-changing ordeals or highly arousing rituals), creating a visceral sense of oneness between the self and the group. Second, people may perceive that they share essential biological properties with the group, either because they literally have shared phenotypic characteristics (local fusion) or because group norms and practices emphasize obligations of kinship and common ancestry (extended fusion).

As an account of why people might die for *their own* group, the target article provides an impressive and plausible theoretical perspective. However, even the broader conceptualization of extended fusion – fusion among "much larger group categories, such as country, ethnic group or world religion" (sect. 6, para. 1) – is limited to explaining extreme self-sacrifice within the bounds of shared biological or ideological markers. Therefore, as a "general theory of extreme self-sacrifice," the article misses one relevant dimension: people's willingness to risk their lives in support of people and entities that are not bound by biological markers or a sense of ancestral kinship (*allyship*).

Allyship refers to individuals becoming committed participants in collective action to improve the treatment of disadvantaged out-groups (Droogendyk et al. 2016). Examples of allyship that potentially involve extreme self-sacrifice include Anglo-Americans risking their lives in support of African Americans (e.g., the civil rights movement, the Charlottesville protests) and radical environmentalism in support of wildlife and non-human animals (e.g., Greenpeace, Sea Shepard). We propose an extension to the target article that accounts for the occurrence of extreme self-sacrifice in circumstances where shared essence is less conceivable or apparent. Just as fusion can motivate extreme self-sacrifice for the benefit of local and extended groups, we propose that an expanded sense of moral obligation can motivate extreme sacrifice for the benefit of those beyond it.

History shows that we continually expand our moral sensibilities to defend the moral standing of entities beyond biologically predictable limits (Pinker 2011; Singer 1981). Research on the psychological construct of moral expansiveness has uncovered that some individuals perceive "distant" others (e.g., members of national and religious out-groups and non-human animals) to possess high levels of moral worth. As a result, they feel a moral obligation to defend these entities, even at personal cost (Crimston et al. 2016; 2018). Singer (1981) proposed that this extension of the moral circle is accompanied by the perception that – from the perspective of the universe – one's life holds no unique moral value.

In line with this, we found that the higher individuals were in moral expansiveness, the more they reported a willingness to make costly sacrifices to benefit people and entities that lie outside traditional notions of in-group membership or common ancestry (Crimston et al. 2016). For example, those high in moral expansiveness were more willing to donate a kidney to "distant" others, including refugees and murderers. In other studies, we introduced a hypothetical evil dictator game: Participants were asked to imagine that a dictator had passed laws that placed a range of specific groups and entities at risk of being wiped out. However, if somebody volunteered to sacrifice him- or herself, the groups would be saved. Participants were asked how many of these groups and entities would need to be killed before they would lay down their own lives to save them. Those high in moral expansiveness indicated a willingness to sacrifice themselves earlier, not just to save people from their hometown, but also Africans, chimpanzees, and redwood trees. Crucially, these relationships held after controlling for numerous alternative constructs, including extended identification with humanity, connectedness with nature, endorsement of universalism values, and empathy. This highlights the unique role of moral expansiveness in predicting extreme sacrificial attitudes.

Additional work from the field of moral psychology can shed light on why an individual might engage in – or, at the very least, report a strong urge to engage in – these acts of extreme self-sacrifice. People typically consider the rights and well-being of entities at the center of their moral circles to take precedence over other considerations. It is likely that these perceived obligations are held with such deep moral conviction that they become "moral mandates" (Skitka et al. 2005). Indeed, moral convictions have been identified as a potential antecedent of allyship, as they provide powerful motivation for a call to action (van Zomeren et al. 2011). Such deeply embraced moral convictions go beyond mere attitudes or beliefs; rather, they are held with extreme significance and certainty, and produce visceral emotional responses with high action potential (Mullen & Skitka 2006). Therefore, moral conviction may serve as a catalyst for these extreme self-sacrificial acts beyond the bounds of the group.

In sum, Whitehouse's work offers a compelling theoretical account of why individuals may be willing to lay down their lives for the sake of their groups and the crucial role of identity fusion in this process. We offer an extension, highlighting the powerful and unique role an expansive sense of moral obligation can play in the occurrence of extreme self-sacrifice beyond the boundaries of shared markers.

Identity fusion and fitness interdependence

Lee Cronk and Athena Aktipis

Department of Anthropology, Rutgers University, New Brunswick, NJ 08901; Department of Psychology, Arizona State University, Tempe, AZ 85287.
lcronk@anthropology.rutgers.edu aktipis@asu.edu
https://anthro.rutgers.edupeople/department-undergrad-a-grad-faculty/89-lee-cronk
http://www.athenaaktipis.org

doi:10.1017/S0140525X18001711, e199

Abstract

Fitness interdependence is the degree to which two or more organisms influence each other's success in replicating their genes. Identity fusion may be a proximate mechanism that aligns behavior with fitness interdependence. Although identity fusion may usually lead to behaviors that are fitness enhancing, in evolutionarily novel environments, it may be hijacked in ways that are highly detrimental to fitness.

Humans are highly social animals, and, since our evolutionary beginnings, our fitness outcomes have been deeply interdependent with those around us. From parent–child relationships to war parties, to mating relationships, our ability to transfer our genes to the next generation is often tied to others' success. Here, we suggest that the idea of identity fusion, which Whitehouse describes as "a visceral sense of oneness with the group" (abstract), may be a proximate mechanism for aligning human behavior with degrees of fitness interdependence.

Fitness interdependence can be defined as the degree to which two or more organisms influence each other's success in replicating their genes (Aktipis et al. 2018; Brown 1999; Brown & Brown 2006; Kelley & Thibaut 1978; Roberts 2005). Fitness interdependence can arise for many reasons, including genetic relatedness (Hamilton 1964a; 1964b), mating, having common descendants (Dow 1984; Hughes 1988), food sharing, risk pooling (Aktipis et al. 2016; Cronk et al. 2018), and, perhaps most importantly for the concept of identity fusion, intergroup competition and conflict. The concept of fitness interdependence applies to human interactions including many that Whitehouse describes, but it also applies to other interactions in the biological world. Any organisms that have positive impacts on one another's survival and reproduction, for example, in biological mutualisms, can be considered to have fitness interdependence.

Whitehouse proposes that extreme self-sacrifice – for example, altruistic suicide – is possible because of the process of identity fusion. Extreme self-sacrifice of this kind is seen in many biological systems where there is an extremely high level of fitness interdependence. For example, cells in clonal multicellular bodies are highly fitness interdependent, and these cells are equipped with the ability to undergo apoptosis – cell suicide – if they are malfunctioning and potentially threatening the viability of the multicellular organism of which they are a part (Aktipis et al. 2015). Perhaps even more relevant to the idea of identity fusion is the biology of the slime mold *Dictyostelium discoideum*, which has a unicellular life stage, but which can also join together into a multicellular slug when resources are low, moving along the forest floor and then turning into a stalk and spore (Strassmann et al. 2000). The cells that end up in the stalk are engaging in the kind of extreme self-sacrifice that Whitehouse describes, and the *D. discoideum* cells literally fuse together during the multicellular stage. Therefore, identity fusion is not a uniquely human phenomenon, but one that has parallels in biological systems where fitness interdependence is very high.

If identity fusion is indeed a mechanism for aligning motivation and behavior with fitness interdependence, then identity fusion would be expected to occur in those situations characterized by high fitness interdependence and, in particular, during transitions to situations in which fitness interdependence becomes so high that it is practically at unity (i.e., a one-to-one correlation of fitness between the involved parties). In looking at human relationships, we see that some physical interactions, such as sexual intercourse and nursing, can increase oxytocin and subsequent feelings of bonding. These are both situations where there is a potential shift from lower to higher fitness interdependence of the involved parties. Similarly, in situations of intergroup conflict, there can be a shift from lower to higher fitness interdependence, which may facilitate the process of identity fusion, as with the "band of brothers" phenomenon in combat units during wartime (Shakespeare, *Henry V*, Act IV, scene iii [Ambrose 1992]).

Whitehouse also suggests that rituals may play an important role in the procession of local identity fusion. This idea corresponds well with thinking among cooperation theorists that rituals are important for social coordination more broadly. Rituals help create both the common knowledge and the common meta-knowledge (i.e., common knowledge that there is common knowledge), among both participants and observers, that is needed for solving coordination problems (Chwe 2003; Cronk & Leech 2013). In the small-scale, highly interdependent societies in which our ancestors lived, the process of local fusion, perhaps enhanced through the use of rituals to create common knowledge and the use of kin terms to indicate fitness interdependence, may have routinely led to behaviors that, although very costly to the individual actor, were

worthwhile in an evolutionary sense, thanks to the underlying fitness interdependence among the individuals within the group.

Large-scale societies, on the other hand, create the possibility of mismatches between perceived and actual fitness interdependence. This possibility may sometimes be exploited by the process of extended identity fusion that Whitehouse describes. As with local identity fusion, kin terms as markers of fitness interdependence may sometimes play a role in this process. As Whitehouse notes, such terms as "brother," "sister," "fatherland," and "motherland" are common in political rhetoric, and such usage increases the persuasiveness of such rhetoric (Salmon 1988). In addition, people are more tolerant of violence toward out-group members if those who act violently use kin terms such as "brothers" and "family" among in-group members (Abou-Abdallah et al. 2016). Kin terms are also routinely employed by groups that demand such extremely fitness-reducing behaviors from their members as celibacy and suicide. Consider, for example, Roman Catholics' use of terms such as "mother," "father," "sister," and "brother," and the fact that organizations that train suicide bombers use kin terms to manipulate and motivate their recruits (Qirko 2004; 2009).

Identity fusion may be one of the proximate mechanisms that motivate us to behave in ways that are consistent with our fitness interdependence with others. In other words, we may have a "visceral sense of oneness" with others when our fitness interests are highly aligned, perhaps even completely aligned. The identity fusion mechanism may be designed to be triggered only in extreme circumstances, characterized by high degrees of fitness interdependence. As with the cells of the slime mold *D. discoideum* that join together as a self-sacrificial slug only when their ability to survive and thrive as single cells is compromised, humans might join together in a self-sacrificing group when their fitness literally depends on it.

Self-sacrifice as a social signal

Jean-Louis Dessalles

LTCI Telecom ParisTech, Université Paris-Saclay, Paris 75013, France.
jean-louis.dessalles@telecom-paritech.fr http://www.dessalles.fr

doi:10.1017/S0140525X18001590, e200

Abstract

Self-sacrifice can be modeled as a costly social signal carried to the ultimate extreme. Such signaling may be evolutionarily stable if social status is, in part, inherited.

Self-sacrifice remains an evolutionary puzzle in a species like ours in which individuals live in large groups composed of unrelated or loosely related individuals. Whitehouse considers various evolutionary accounts to explain voluntary self-sacrifice: kin selection, multilevel selection, and – through various references – gene-culture co-evolution. All of these accounts pose difficulties, many of them being mentioned by the author. He does not, however, mention an important alternative, social signaling, or mentions it only in passing when discussing costly rituals.

Social signaling (Dessalles 2014; Gintis et al. 2001) is a special case of the theory of costly signaling introduced by Zahavi (1975) and Grafen (1990). By definition, the purpose of social signals is to attract friends. Costly social signals are evolutionarily stable if they are correlated with some definite qualities that increase the fitness of friends (Dessalles 2014). For example, if having friends that are courageous or generous increases one's fitness, then courageous or generous individuals are socially in demand. As a consequence, displaying costly signals correlated with courage or generosity becomes a valid strategy to attract friends.

Social signaling provides robust explanations for a variety of pro-social behaviors, such as competitive helping and overt food sharing (Bliege Bird & Smith 2005). More generally, altruistic acts toward non-kin can be favored by natural selection if they are used to advertise some quality that may be valuable to the signaler's actual or potential friends. The real targets of an altruistic act are its witnesses, who are not necessarily the recipients.

Competition for signaling can lead to extreme costs. This is consistent only if costs (e.g., death probability in risk-seeking behavior to prove one's bravery) are compensated by even greater potential benefits. Social signaling offers such high-benefit situations. The best signalers get high social status, as the emerging result of the will of many to become their friends. Achieving higher social status is known to provide a variety of material and reproductive advantages.

> The underlying motivation of men to undertake the somatically risky behaviors associated with warfare is not some form of group altruism; rather, it is a form of enlightened self-interest in which the benefits are measured in terms of personal status, which on average has led to reproductive advantage in the environments of our evolutionary past. (Patton 1996, p. 7)

Social signaling offers an elegant explanation of extreme bravery (and, correlatively, of cowardice avoidance), as far as it is advantageous to be friends with such a person (rather than with a coward). Similarly, being acquainted with someone who is committed to the group is expected to be desirable in situations of intergroup conflict. The explanation does not hold for self-sacrifice, however, because performers do not survive to enjoy the advantages of having earned high status. An additional hypothesis is needed. The missing element may be that social network and social status are highly heritable in our species. The high status of an individual "raises the status of every member of his family above ordinary families" (Service 1971, p. 140). Such an advantage may be sufficient to make martyrdom an evolutionarily stable strategy as long as it remains a low-frequency behavior (the fewer the heroes, the higher is their status). Martyr candidates do not need to consider, or even be aware of, the positive material consequences for their family (Ginges & Atran 2009), as long as they are sensitive to the future glory of their name.

One aspect of this account is left unexplained. Why would it be profitable to become acquainted with a hero's brother or daughter? Having courageous friends makes sense for protective reasons, but courage is not supposed to be heritable. Why do heroes' family members become socially desirable? One answer is that social status spreads through the social network: Being close to high-status individuals automatically increases one's own status. This would be true for the heroes' kin, for their friends, and for their kin's friends.

Another hypothesis may provide a further reason why heroic acts are especially likely to benefit heroes' families. Honoring heroes and heroes' families appears to be a second-order social signal, that is, a signal about a signal. Those who pay tribute

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

through conspicuous ceremonies to heroic acts and heroes' names signal that they are patriots themselves. The first-hand signal, performing heroic acts, and the second-hand signal, paying tribute to heroes, reinforce each other. On the one hand, self-sacrifice becomes an evolutionarily profitable strategy if many individuals find a social interest in honoring the hero's memory and name, because it benefits the hero's kin. On the other hand, the crowd needs to honor heroes' names to signal their own commitment to the group. This mutual reinforcement system is expected to emerge in situations such as intergroup conflict, in which it is crucial that one's friends be committed to the group and cannot be suspected of any sympathy for the opposite camp.

Analyzing costly behavior, such as heroic acts and even self-sacrifice as social signals, sheds an entirely new light on their biological motivation, which should not be confused with their displayed motivation (increased collective benefit). Both extreme heroic acts and their conspicuous celebration become parts of the same logic, which is to advertise one's commitment to the group in situations of intergroup conflict.

The importance of environmental threats and ideology in explaining extreme self-sacrifice

Abdo Elnakouri, Ian McGregor and Igor Grossmann

Department of Psychology, University of Waterloo, Waterloo ON N2L 3G1, Canada.
abdo.elnakouri@uwaterloo.ca ian.mcgregor@uwaterloo.ca
igor.grossmann@uwaterloo.ca
https://uwaterloo.ca/psychology/about/people/aelnakou
https://uwaterloo.ca/psychology/people-profiles/ian-mcgregor
https://uwaterloo.ca/psychology/people-profiles/igor-grossmann

doi:10.1017/S0140525X18001723, e201

Abstract

We argue that Whitehouse's group-based model neglects two key contextual variables: environmental threats and ideology. Environmental threats lead to extremism outside of group settings and predispose individuals toward joining ideologically zealous groups. Ideologies and environmental threats can also explain why certain groups adopt norms that encourage violent self-sacrifice.

Whitehouse draws from several disciplines to propose a framework that helps explain violent self-sacrifice. We agree that cultural mechanisms appear to be co-opting evolved, kin-based, and tribal psychology, to facilitate readiness to sacrifice for the group. However, Whitehouse's theory is unable to answer questions concerning (a) processes leading individuals to sign up for these groups and (b) factors shaping martyrdom-promoting group norms. We suggest that such factors include environmental threats and ideology. Environmental threats can cause extreme reactions within individuals and urge them to join ideologically rigid groups engaged in self-sacrifice. Ideologies and environmental threats also help shape group norms that are conducive to violent self-sacrifice.

Environmental threats promote palliative zeal and extremity in attitudes and behavioral responses (Jonas et al. 2014), with the endorsement of martyrdom being a specific application of this general trend (Pyszczynski et al. 2006). Even minor, seemingly unrelated, threats induced in the lab can lead to ideological extremism: Attempts to understand an incomprehensible (vs. a simple) text passage that was said to be diagnostic of academic abilities resulted in greater endorsement of religious zeal on items such as "If I really had to, I would give my life for my religious beliefs" (McGregor et al. 2010). Hundreds of similar experiments indicate that environmental threats move individuals toward diverse varieties of ideological zeal, with or without involvement of group processes, to help dampen threat-induced distress (McGregor 2003; reviewed in Jonas et al. 2014), an effect that holds when controlling for macro-level factors such as political and economic grievances (Rink & Sharma 2018).

In a similar vein, in response to environmental threats in the surrounding ecology (such as scarce resources), groups often turn toward stricter norms to deal with the threat (Gelfand et al. 2017; Thornhill & Fincher 2014; Varnum & Grossmann 2016; for a review, see Varnum & Grossmann 2017). This increased rigidity is fertile ground for more tribal and dogmatic norms conducive to jingoistic expressions of violent self-sacrifice, thereby making environmental threats an important precursor to the group dynamics that Whitehouse takes for granted. For example, when resources are scarce, costly displays of loyalty might be more valued by the group to ensure lack of free-riding. The stakes are higher, and therefore, people need to jump through more hoops to prove themselves as invested, contributing group members. In turn, norms like those promoting binding ritualistic experiences described by Whitehouse become more valued, leading to a greater willingness to self-sacrifice.

Why would some people be attracted to groups that are extreme and demand intense conformity? Research indicates that, under threat, individuals are attracted to well-defined and active groups with highly purposeful and moralistic ideologies (Fritsche et al. 2013; Hogg et al. 2007; Kruglanski et al. 2018). Groups with ideologies that provide a clear purpose and moralistic call to action are attractive to potential recruits, especially those feeling threatened, as they provide unambiguous conviction; this conviction would help excite the same, basic, agency-based motivational processes that relieve distress for individuals outside of group settings (Jonas et al. 2014; Kruglanski et al. 2018).

Notably, Whitehouse explicitly discounts the role of ideologies in shaping violent self-sacrifice: "[sacrifice to the group] is not motivated by doctrines and ideologies, religious or otherwise, but by a particularly intense love of the group" (sect. 2, para. 7). For Whitehouse, it seems that intense love for the group is sufficient to explain motivation for self-sacrifice. But are all groups equally likely to encourage extreme self-sacrifice? Research suggests that certain ideological beliefs are maintained culturally because they encourage behaviors that promote group interests (Norenzayan 2016; Norenzayan et al. 2016; Vail et al. 2010). Moreover, being active and engaged with a group in a religious context can lead to greater pro-sociality (Putnam & Campbell 2012), but also greater endorsement of suicide (Ginges et al. 2009). Reminders of religious beliefs associated with magnanimous ideals led adherents to greater pro-sociality when exposed to threats (Schumann et al. 2014), but those associated with jingoism encouraged extremism under threat (Rothschild et al. 2009). These divergent outcomes are partly explained by different ideological beliefs within the group,

whether religious or otherwise, shaping what it is that groups find sacred and valuable – a tendency that likely extends to the group norms governing the appropriateness of self-sacrifice and how it can be expressed (Gómez et al. 2017; McGregor et al. 2015).

Self-sacrifice can happen outside of a group setting, as in the case of celebrity suicide imitation (Stack 1987). It can also happen in a group setting in response to collective threats, but in a non-violent way, as in the case of self-immolation (Biggs 2005; Somasundaram et al. 2016). A violence-justifying ideological narrative is needed to help shape expressions of self-sacrifice toward terrorism and other violence-inflicting acts for the sake of the group (Kruglanski et al. 2018). Evidence suggests that specific scriptural passages help encourage violence (Bushman et al. 2007), and religious beliefs have been found to play a key role in explaining religious extremism (Appleby 1999; Dawson 2018; Dawson & Amarasingam 2017; Wood 2016). In some cases, religiosity has been found to correlate with the increased endorsement of violent self-sacrifice (Cinnirella et al. 2010; Rink & Sharma 2018).

In conclusion, Whitehouse's model can be enriched with the acknowledgments (1) that environmental threats can lead individuals to become extreme outside of a group setting and predispose them to dogmatic ideologies, and (2) that environmental threats and ideologies can shape group norms that help facilitate readiness to violently self-sacrifice within groups. Integration of these factors would enrich Whitehouse's model, informing scientific understanding of the broader context of self-sacrificial acts and informing practical interventions oriented toward preventing suicide terrorism.

Motivational (con)fusion: Identity fusion does not quell personal self-interest

Lowell Gaertner[a], Amy Heger[a] and Constantine Sedikides[b]

[a]Department of Psychology, University of Tennessee, Knoxville, TN 37996 and [b]Centre for Research on Self and Identity, School of Psychology, University of Southampton, Southampton SO17 1BJ, United Kingdom.
gaertner@utk.edu aheger@vols.utk.edu
https://psychology.utk.edu/faculty/gaertner.php cs2@soton.ac.uk
https://www.southampton.ac.uk/psychology/about/staff/cs2.page

doi:10.1017/S0140525X18001607, e202

Abstract

We question whether altruistic motivation links identity fusion and extreme self-sacrifice. We review two lines of research suggesting that the underlying motivation is plausibly egoistic.

We question whether altruistic motivation mediates the link between identity fusion and extreme self-sacrifice. Whitehouse argues that "altruistic motivation is a necessary condition" (sect. 2, para. 4) for acts such as suicidal terrorism and offers identity fusion as a catalyst, because, unlike other forms of self-group alignment (e.g., tribal instincts, social identification [Richerson & Henrick 2012; Tafel & Turner 1979]), it is a "powerful social glue to overcome selfish drives and impulses" (sect. 6, para. 4). In contrast, we review two lines of research indicating that identity fusion does not quell personal self-interest and propose, instead, that egoism is the motivational link.

One line of research examines the motivational significance of three forms of identity: the personal self, which reflects a person's subjective uniqueness; the relational self, which reflects attachments to close others; and the collective self, which reflects memberships in valued groups. Primary experiments (Gaertner et al. 1999; Nehrlich et al. 2018), meta-analysis (Gaertner et al. 2002), and cross-cultural comparisons (Gaertner et al. 2012) constitute evidence of a motivational hierarchy topped by the personal self, followed by the relational self, and tailed by the collective self (Sedikides et al. 2013). Relative to their other selves, for example, people respond more intensely to threat and enhancement of their personal self, attribute more of who they are to their personal self, associate more future goals with their personal self, and accredit greater worth to their personal self. But, does fusion moderate this hierarchy?

Given that fusion entails a union of the personal and collective selves and a strong sense of relational ties to in-group members (Swann et al. 2012; 2014a), it is possible that the hierarchy disintegrates, and all three selves are equally valued when the collective self is derived from a fused group. Two experiments, however, suggest that this is not the case (Heger & Gaertner 2018a). Participants in both experiments were randomly assigned to describe an in-group to which they are fused or not fused and were continuously primed with that in-group while performing a subsequent task. One experiment used a pronoun preference task in which participants ($N = 155$) rated how well a personal pronoun (I, me, my) and a collective pronoun (we, us, our) fit each of 20 sentences (e.g., "The sun went in just when [I, we] decided to go outside" [Wegner & Guiliano 1980]). The other experiment used a self-description task in which participants ($N = 126$) wrote 20 descriptions to the question "who are you?" and then rated how much each description represented their personal self, relational self, and collective self. Although the fusion manipulation was successful in both experiments (confirmed by the verbal identity fusion scale [Gómez et al. 2011a]), fusion did not alter the motivational hierarchy. When thinking of either a fused or not fused in-group, participants preferred the fit of personal over collective pronouns and considered their self-descriptions to be more representative of their personal self than of either their relational or collective selves.

The other line of research examines identity fusion and reported willingness to sacrifice the in-group for the benefit of the personal self (Heger & Gaertner 2018b). As Whitehouse reviews, fusion positively predicts reported willingness to sacrifice the self for the in-group. Based on the identity synergy principle of fusion theory (i.e., activation of the collective self activates, in turn, the personal self and vice versa [Swann et al. 2012]), we reasoned that fusion would similarly promote willingness to sacrifice the in-group for the self. To test this possibility, we revised the scale typically used to assess self-sacrifice (i.e., fight-and-die scale [Swann et al. 2009]) to measure group sacrifice. A pilot study ($N = 120$) and two primary studies ($N = 190$ and 189) replicated the typical finding that fusion positively predicts reported willingness to sacrifice the self for the in-group and additionally found, in those same participants, that identity fusion positively predicts reported willingness to sacrifice the in-group for the personal self.

The reviewed lines of research suggest that if fusion promotes suicidal self-sacrifice, it does so by increasing personal self-interest, rather than diminishing it. Egoism, not altruism, is the motivational link. Given that persons and in-groups are positively interdependent and share a common fate, actions that benefit the in-group can be driven by self-interest (Gaertner & Insko 2000; Gramzow & Gaertner 2005). Empirical efforts to distinguish altruistic from egoistic motivation often dissect the emotional precursors of behavior with (1) an empathic emotional state of feeling for others, leading to altruistic motivation, and (2) emotional states of personal distress and feeling as others feel, leading to egoistic motivation (Batson 2011). The assertion that with identity fusion "when the group is felt to be threatened, it feels personal" (sect. 3, para. 3) implies personal distress or feeling as others feel and points to the possibility of egoism (O'Mara et al. 2011). Whitehouse's theory emphasizes the moderating role of out-group threat. Perhaps in such a context, where the loss of one's way of life and/or the death of valued others is imminent, the anticipated psychological pain of living without having tried at all costs to preserve and protect (i.e., an egoistic, not altruistic, concern) overpowers survival and culminates in the ultimate sacrifice.

Self-sacrifice for a cause: The role of ideas and beliefs in motivating human conflict

Jeremy Ginges and Crystal Shackleford

New School for Social Research, New York, NY 10011.
gingesj@newschool.edu shacc319@newschool.edu
https://www.newschool.edu/nssr/faculty/Jeremy-Ginges/

doi:10.1017/S0140525X18001693, e203

Abstract

The role of ideas and beliefs is generally underplayed in Whitehouse's account. However, just as people may feel that their identity is fused with a collective, they may also feel that their identity is fused with an idea (god, history, justice), which can motivate the same type of behaviors that Whitehouse seeks to explain.

In a fascinating paper, Whitehouse makes perhaps the strongest case yet for the importance of identity fusion in motivating self-sacrificial behavior of individuals in human conflict. His thesis is that when individual identities are "fused" with the group, a threat to the group is experienced as a threat to self, thereby motivating self-sacrificial behavior such as suicide attacks. Whitehouse's argument gives a primary role to identity fusion and explicitly discounts the theoretical relevance of belief. Here, we argue for the importance of beliefs in motivating much human conflict and sacrifice in the name of the cause.

How can we understand the type of violent self-sacrifice that occurs so frequently in human conflict? Identity fusion seems important, but the fact that an individual is fused to a common identity tells us little about what types of behaviors he or she will carry out for the collective under threat. To explain this, we need to understand how people reason about ideas and beliefs that motivate specific behaviors. Many young groups of Germans in the 1940s were fused with each other, but few sacrificed their lives to oppose the Nazi regime, as was the case with the White Rose nonviolent resistance group (Dumbach & Newborn 2017). People who feel fused with a group in the face of a threat may kill and die, but they may also decide to negotiate and compromise to end intergroup conflict, or they might offer nonviolent resistance. These different modes of behaviors are tied to shared beliefs about the nature of their group, the nature of morality, and intergroup relations (Kruglanski et al. 2013; Rai & Fiske 2011). Sprinzak (1990) described the way the changing nature of such beliefs correlates with changing collective behavior, from nonviolent protest to political violence. Indeed, the stated aim of much political violence is to change the way an already-fused collective views itself, making it ready for rebellion (Ginges 1997).

Whitehouse's argument is that threat translates identity fusion into action. Although this is likely to be true, threats are more than material in nature. Often, people will be motivated to sacrifice themselves because of threats not to material survival, but to an abstract idea (Bélanger et al. 2014). Shared ideas and beliefs about the world help us to coordinate and cooperate. We use shared beliefs to define self (Atran & Ginges 2012) and tell stories to promote within-group cooperation (Smith et al. 2017). Such beliefs can become so cherished that they acquire transcendental meaning or sacredness, for which people are willing to sacrifice their lives, their family, or their community (Ginges et al. 2007; 2011). Threats to sacred values can motivate noninstrumentally rational commitments to violent action (Ginges & Atran 2011). We die for the group, but we also die for ideas.

A complete explanation of self-sacrifice in human conflict needs to consider the way people conceptualize self relative to collective identities, but also the way they conceptualize self relative to other abstract beliefs. Beliefs are often markers for collective identity, but they cannot be reduced to this. The opposite can be true: Groups are formed because of common beliefs, and a group may split because of different beliefs among its members (Sprinzak 1990). Moreover, sometimes self-sacrifice is carried out for a belief at the expense of a group with which one feels fused. Some years ago, one of us, in the course of carrying out fieldwork with Jewish Israelis living in the West Bank ("settlers"), was told by interviewees that they would refuse to leave their land and homes if the government or even their community voted to leave, because the value of the land trumped all else. In studies with frontline combatants in Iraq and Spanish civilians, Gómez et al. (2017) found that (a) when given a choice between an important sacred value and a group with which they feel fused, frontline combatants are more likely to choose the value over the group, and (b) among frontline combatants, willingness to choose the value over the group predicts willingness to sacrifice in the conflict. Of course, the opposite will also sometimes occur, where people might sacrifice a cherished value for a cherished group.

Why do individual humans sacrifice their own lives, and those of others, for non-kin? One possibility is that neither sacred values nor fused identities have primary roles in facilitating the types of self-sacrifice Whitehouse is seeking to explain. Rather, both are important. Humans frequently sacrifice all in the name of abstract causes. It is not the nature of the cause that is important. The cause may be the group or another abstract belief like

kurdeity, sacred land, or god. Regardless, it seems likely that a "visceral sense of oneness" between self and cause is an important psychological mechanism that facilitates self-sacrifice.

The analytic utility of distinguishing fighting from dying

Ian Grant Hansen

Department of Behavioral Sciences, York College, City University of New York, New York, NY 11451.
ihansen@york.cuny.edu
https://www.york.cuny.edu/portal_college/ihansen

doi:10.1017/S0140525X18001772, e204

Abstract

Fighting and dying, or what Whitehouse calls "out-group hostility" and "extreme self-sacrifice," are not conceptually overlapping, but in fact are highly distinguishable, both theoretically and empirically. I present empirical evidence from a reanalysis of Ginges et al. (2009, Study 4), demonstrating the potentially inverse relationship between "parochial hostility" – fighting and "sacrificial altruism" – dying.

As promising as Whitehouse's fusion theory is, he often references "extreme self-sacrifice" and "out-group hostility" (even "murderous" inclinations, sect. 1, para. 1) as if conceptually overlapping. This muddies the theory's utility for understanding the subjects of his inquiry. For example, Whitehouse uses the phrase "fight and die" 12 times. Fighting, of the "murderous" killing kind at least, is not the same as dying. Admittedly, this linkage is not unprecedented. Killing and dying are typically conjoined in highly vulnerable military operations, as Whitehouse notes regarding the risks undergone by those awarded Britain's Victoria Cross medal (sect. 2, para. 9). They are also conjoined in violent martyrdom operations (Ginges et al. 2009).

It is possible to separate killing from dying, however. For example, one can risk, or even practically guarantee, dying for a morally aspirational cause, and do so without killing. Such moral heroism often occurs in grassroots civilian rescue operations against genocide (Doughty & Ntambara 2005; Liphshiz 2018; Samaha 2015) and various other forms of nonviolent resistance, to civil wars (Ouellet 2013), to colonial oppression (Easwaran 1999), to kleptocratic national corruption under dictators (Farrell 2011), and to diplomatic outrages (Schwartz & Jones 2018). Complementarily, it is possible to kill without risking death, as with targeted assassinations using weaponized drones (Enemark 2017) and soldiers firing live ammunition into crowds of predominantly nonviolent protestors (Da Silva 2018; Lusher 2017). Therefore, a separation between willing martyrdom and willing murderousness is theoretically conceivable and existentially demonstrable. Is it also empirically likely?

Whitehouse (sect. 2, para. 5) references Ginges and colleagues (2009), specifically their finding that Palestinian Muslims attending mosques are more likely to support suicide attacks. However, that article's focus is not primarily Muslims or mosques, but rather how, across a variety of religious contexts, the less religious

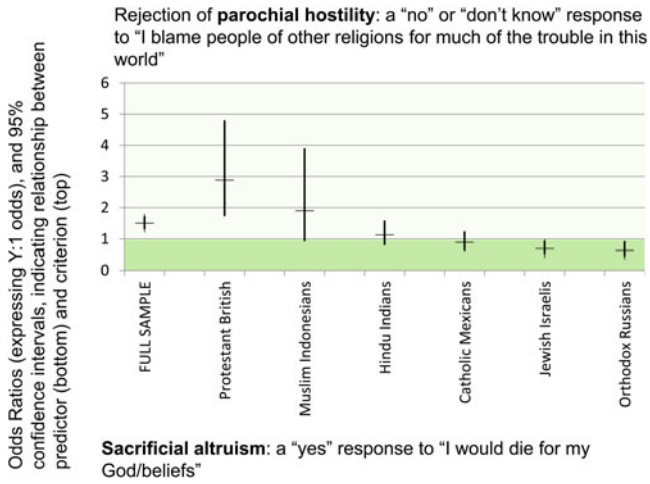

Figure 1. (Hansen) Odds of rejecting parochial hostility as predicted by sacrificial altruism, in the six subsamples analyzed by Ginges et al. (2009, Study 4).

aspects of religiosity (attending religious services) predict support for suicide attacks, and the more religious aspects (regular prayer) do not. Most relevant to the question at hand, Ginges and colleagues' Study 4 examines how prayer and religious attendance predicted "parochial altruism," a compound construct measuring the simultaneous endorsement of two separate measures: "I would die for my God/beliefs" (sacrificial altruism), and "I blame people of other religions for much of the trouble in this world" (parochial hostility). As Ginges and colleagues note, "The suicide attack can be thought of as belonging to an extreme subset of parochial altruism" (p. 224).

The data from Ginges and colleagues' Study 4 (the "Ginges sample") offer an opportunity for investigating the relationship between sacrificial altruism (SA) and parochial hostility (PH) as separable inclinations. Figure 1 illustrates the results of a new analysis of the relation between SA and rejection of PH in the Ginges sample.

Figure 1 suggests that, although the relationship varied somewhat from subgroup to subgroup, SA manifested distinctly antihostile tendencies in the full Ginges sample. This finding may reflect sacrificial altruism being a core feature of religiosity, specifically embodying the "commitment" aspect identified by Atran and Norenzayan (2004).

Indeed, Hansen et al. (2018), referencing Atran and Norenzayan's (2004) taxonomy of religious features, includes sacrificial altruism in their index of religiosity ($\alpha = .72$). This index also includes belief in God, attendance at religious services, belief in the afterlife, and regular prayer (Hansen et al. 2018, pp. 380–81). Among countries of comparable human development, this index was (a) positively related to Freedom House ratings of national protection of political rights and civil liberties and (b) negatively related to the number of refugees fleeing the country – the latter being an indicator not only of lack of liberty but also of violent conflict (Hansen et al. 2018). This finding provides indirect evidence that religiosity – possibly including SA – is a potentially *anti*-hostile inclination and corroborates the finding in Figure 1.

To address this question more directly, Table 1 outlines how the remaining variance in SA, independent of the four other religious index items, independently predicted PH in the Ginges sample. Supporting the hypothesis of SA as inherently antihostile, Table 1 shows SA was *negatively* related to PH even when controlling the other four indices of religiosity, which themselves were all

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

Table 1. (Hansen) Odds of blaming people of other religions for the world's problems (parochial hostility) as predicted by sacrificial altruism and other religiosity measures

Predictor	Model	Odds ratio	95% CI	Wald	Odds of supporting parochial hostility, given affirmative response to predictor
Sacrificial altruism	Zero order	0.67	0.58–0.77	33.35***	1.50:1 against
	Independent	0.82	0.69–0.96	6.10*	1.23:1 against
Belief in God	Zero order	0.54	0.45–0.64	47.07***	1.87:1 against
	Independent	0.72	0.59–0.88	10.16**	1.39:1 against
Regular prayer	Zero order	0.53	0.46–0.61	83.82***	1.89:1 against
	Independent	0.54	0.45–0.64	49.76***	1.86:1 against
Afterlife belief	Zero order	0.91	0.79–1.04	1.88	1.10:1 against
	Independent	0.98	0.85–1.13	0.09	1.02:1 against
Regular religious attendance	Zero order	0.88	0.77–1.01	3.38†	1.14:1 against
	Independent	1.41	1.19–1.67	15.77***	1.41:1 for

†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

nominally or significantly negatively related to PH zero order. The independent relations of prayer and belief in God to PH remained negative in binary logistic regression, though religious attendance became positively related, and belief in the afterlife remained unrelated. Controlling for the demographic variables previously controlled by Ginges and colleagues did not change these relationships.

This negative relationship between SA and PH is also evident in reanalyses of data from Hansen et al. (2018), as well as two additional data sets measuring SA's relationship to other forms of PH. These analyses (Hansen, in preparation, Study 3) confirm that SA, like basic religiosity in general, negatively predicts Freedom House-rated oppression in a country and the number of refugees fleeing that country. The analyses also confirm that SA is negatively related to support for killing religious others and "the wicked," at least when "coalitional rigidity" variables (Hansen & Ryder 2016) are controlled.

To understand phenomena conjoining killing and dying (like violent martyrdom operations), step one should be to address the inherent tension between them, specifically the potentially inverse relationship between SA and PH. Whitehouse's fusion theory might yet prove relevant to identifying processes that can modulate this tension, but first the tension itself needs acknowledgment. I am concerned that Whitehouse's fusion theory, which neglects this tension, applies more readily to identifying antecedents of SA than of PH, particularly given his claim that Gandhi's hunger strikes followed the "logic" of Jewish zealots and Ismaili assassins (sect. 5, next-to-last paragraph). What makes this concerning is the potential for increased governmental interest in discerning emergent signs of fusion in certain social and political groups. If fusion theory proves influential to, say, strategists at SRI International, the Human Resources Research Organization, and the Office of Naval Research, will the possibly vast amounts of money and manpower directed to profiling and targeting "fusers" be most effective at preventing (a) mass murder or (b) the courageous risk of life and limb to rescue others from it?

Note. There was an error in the abstract to the commentary by Hansen in the original online version. It has been corrected and an erratum has been published.

Does identity fusion give rise to the group – or the reverse? Politics- versus community-based groups

Elias L. Khalil

Department of Economics, Monash University, Clayton, Victoria 3800, Australia.
elias.khalil@monash.edu
https://research.monash.edu/en/persons/elias-khalil

doi:10.1017/S0140525X18001668, e205

Abstract

This comment questions Whitehouse's theory. This comment proffers that people first choose their identity and later employ shared facts from the past to cement it. This is true with respect to two kinds of group identity: politics- and community-based identities. Contrary to Whitehouse, neither shared biology nor shared experience from the past is necessary for the constitution of either kind.

It is a truism that group identity is the fused identities of the individuals that make up the group. But Whitehouse is proffering the following theory:

Identity fusion of individuals → The group

As Whitehouse details, individuals largely undergo identity fusion as a result of shared biology or/and shared experience, especially in the light of extreme or episodic pain, whereas the group is the outcome.

Facts inherited from the past, surely go a long way to support group identity. However, at first approximation, the causality might be the reverse:

The group → Identity fusion of individuals that make up the group

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

Indeed, this comment registers that people first choose the group, given that all choices are forward looking. Facts inherited from the past are ultimately backward looking and, hence, cannot ultimately determine how people choose their group identity. As they look forward, people choose groups that suit their needs and consequently search their past for motifs, anecdotes, and memories to manufacture group identity that cements the chosen group.

To demonstrate the reversed causality, it is important to distinguish between two broad kinds of group identities: politics-based group identities and community-based group identities. People choose politics-based groups to advance collective interest and aspiration, which is defined by a territory and its natural resources. In contrast, people choose community-based groups – such as families, temples, and gender- and ethnic-based organizations – to fulfill the need for friendship, communal solidarity, sense of belonging, and emotional comfort.

Adam Smith observed the difference. He identified "the love of country" as the emotion that cements the politics-based group, whereas he identified "the love of humankind" as the emotion that cements the community-based group (Khalil 2018; Smith 1982, pp. 228–230).

Let us examine the proposed reversed causality with respect to the politics-based identity, the love of country, with respect to the rise of the American Republic and its 1776 Declaration of Independence. The British people and their colonial subjects had shared biology. They also had shared experience, as attested by the recent French and Indian War, led by no less than George Washington. Still, people in the American colonies chose a separate group from the "motherland" and became very busy in creating a new past.

The history of international relations is replete with instances of how people create new group identities in accordance with changing economic and strategic conditions. To make sense of this history, we should start with forward-looking decision makers as they assess their collective interest and aspiration; then we can make sense of why people are ready to fight for the chosen group while defending its territorial integrity and are even ready to die to further its imperial boundary at the expense of other people.

Let us examine the proposed reversed causality with respect to the community-based identity, the love of humankind, with regard to aiding other people in the case of earthquakes or other natural disasters. The criterion for the commonality of the interacting individuals is the set of human features. But the criterion need not be always cosmopolitan. The criterion can be more limited, such as sharing a common language, love of some ethnic cuisine, a hobby, communion (i.e., common religious faith), gender, age and race. Such community-based groups do not necessarily require a territory to subsist. The expected benefit is usually the emotional comfort of belonging, to have friends, and to call a place home.

At first approximation, again, the person chooses the community-based group that suits his or her needs the most. The past history cannot be determinant because the past holds enormous repertoires, and one has to be selective, especially as one grows older. To wit, the example of hazing, which Whitehouse discusses at length, supports the thesis that shared experiences are not essential for the group. Once one determines the best community group, and if the group members do not have much shared experience but still want to bond, hazing rather acts as a substitute for the missing history.

Besides illustrating the reversed causality, there is another payoff of distinguishing community- and politics-based identities. The benefit from community-based groups varies according to the scale: one usually benefits more from identifying with the local church or the local sports club than from the worldwide church or club. Scale seems to be relevant for community-based groups.

Scale, however, does not seem as relevant to politics-based groups, such as the nation-state. The benefit from such a group arises from the collective action to defend against outsiders, take advantage of common resources, and so on. The benefit is the outcome of the effort of abstract citizens, where such citizens are important for their effort and not for the friendship or comfort that they afford.

Whitehouse somehow senses the asymmetry of the relevance of scale. He invokes the terminology "local fusion" and "extended fusion" to capture this scale asymmetry. For him, local fusion is bottom-up fusion of identities at the local level, whereas extended fusion, or what he calls "identification," is top-down fusion that takes place in the abstract when the person identifies with a belief or an ideology.

The local/extended terminology is confusing, however. There are gradations of community-based identity along the scale of distance from local to global, where the "global" can be confused with "extended." So, it is not clear whether Whitehouse's "extended fusion" is simply global church or denotes what is called here politics-based groups.

Besides illustrating the reversed causality, there is another payoff of distinguishing community- and politics-based identities: how to deal with terrorists dying for the group. Let us take Islamic-inspired suicide terrorists. Are they upset at the perceived threat to their religion, that is, community-based identity? If so, it is easy to undermine their ideology by pointing out how the targeted governments permit the building of mosques and so on. Or, are they upset at the perceived threat to their autonomy, that is, politics-based identity? If so, this requires a totally different response, a response that points out that the targeted governments actually respect their autonomy.

Toward a more comprehensive theory of self-sacrificial violence

Jordan Kiper[a] and Richard Sosis[b]

[a]Department of Anthropology, University of California, Los Angeles, CA 90095 and [b]Department of Anthropology, University of Connecticut, Storrs, CT 06269.
jordan.kiper@ucla.edu https://www.jordankiper.com
richard.sosis@uconn.edu https://richard-sosis.uconn.edu/

doi:10.1017/S0140525X18001802, e206

Abstract

We argue that limiting the theory of extreme self-sacrifice to two determinants, namely, identity fusion and group threats, results in logical and conceptual difficulties. To strengthen Whitehouse's theory, we encourage a more holistic approach. In particular, we suggest that the theory include exogenous sociopolitical factors and constituents of the religious system as additional predictors of extreme self-sacrifice.

Whitehouse offers a compelling general theory of extreme self-sacrifice, insofar as it draws from an impressive body of empirical work on social cohesion and extreme group behavior. However, as researchers who investigate similar phenomena and wish to build upon Whitehouse's theory, we have two primary concerns. First, we are uncertain about the underlying logic of Whitehouse's central thesis. Second, Whitehouse's focus on identity fusion as the determinant of extreme self-sacrifice is outwardly too limiting. We suspect that other pertinent factors, such as exogenous sociopolitical dynamics and constituents inherent to the functioning of religious systems, will be essential to building a general theory of extreme self-sacrificial behavior.

Beginning with the logic underlying Whitehouse's theory, we are uncertain about privileging only identity fusion and group threats as the necessary conditions of extreme self-sacrifice. To illustrate this point, consider the heart of Whitehouse's explanation regarding the pathway from fusion to sacrifice (his Fig. 1):

> Stable perceptions of shared essence created by either of these pathways [i.e., intense collective experiences or shared biology] is predicted to give rise to fusion with a locally bounded group or relational network. Fusion produces a strong impression that members of the group are one's kin, eliciting willingness to pay high personal costs to support the group and, in the face of out-group threat, to fight and die if necessary to protect members of the group. (sect. 1, para. 6)

Accordingly, if person P is willing to engage in extreme self-sacrifice, then P is identity fused and P's group is threatened. The difficulty in accepting this proposition, given that it accurately reflects Whitehouse's central thesis, is that research on collective violence in the social sciences suggests that other conditions – besides identity fusion and group threat – are equally as necessary for extreme self-sacrifice. For instance, minimal group contact between P and the out-group targeted by P's sacrifice seems necessary, because increased and sustained contact between two groups reduces one's willingness to harm the out-group in question (Al Ramiah & Hewstone 2013). Additionally, postconflict ethnographies find that sociohistorical grievances toward an out-group, or perceptions of perpetual in-group victimhood, strongly motivate combatants, who willingly engage in the act of killing to protect or avenge their group (Hinton 2004; Mamdani 2001; Schori-Eyal et al. 2017). Finally, persons who willingly sacrifice for their group, such as combatants who volunteer for conflict or undertake acts of collective violence, are often incited to do so by inflammatory media, propaganda, or group leaders whose vitriolic speech inspires their actions (Leader et al. 2016).

A more striking problem is that the core proposition of Whitehouse's theory seems to beg the question, given Whitehouse's conceptions of identity fusion and extreme self-sacrifice. He writes that identity fusion, especially local fusion, is characterized by a willingness to fight and die when the group is under attack (sect. 1, para. 2). He then defines extreme self-sacrifice as a form of altruistic suicide, in which one gives his or her life for the group (sect. 1, para. 2). Therefore, saying one is willing to engage in extreme self-sacrifice, which is to die for the group, whenever one is identity fused, which is characterized by a willingness to die for the group, appears circular.

Granted, we do not intend to oversimplify Whitehouse's overall theory, which is quite promising, but the purported circularity in the underlying argument is apparent in a few key passages, such as the conclusion, where Whitehouse says:

> What would be fatal for the theory is if it turned out that convictions of shared essence failed to predict high fusion scores or if fusion (plus out-group threat) were shown to be a poor predictor of actual (as opposed to declared) willingness to fight and die for the group. (sect. 7, para. 4)

Although we admire Whitehouse for positing such a bold proposition, we are again puzzled by the circularity of the statement before the disjunct. Put simply: Because high fusion scores measure convictions of shared essence, it is unclear how they could then fail to predict fusion scores.

Circularity aside, limiting the determinants of extreme self-sacrifice to identity fusion and group threat is likely to weaken the theory as opposed to strengthening it. After all, the above passage implies that a person's willingness to engage in extreme self-sacrifice is determined by identity fusion and group threat alone. We suspect that research will falsify this claim, given the limitations of identity fusion as a measurement. For instance, Kiper (2018), undertook fieldwork among former combatants and survivors of the Yugoslav Wars in Croatia, Bosnia Herzegovina, and Serbia, where he surveyed hundreds of participants on identity fusion (based on Swann et al. 2012). He found that many communities had individuals who scored high on identity fusion scales, but were expressly against going to war for their group. Kiper also noted that many communities reached saturation points with identity fusion, with nearly everyone maximally fused, rendering data difficult to interpret. Specifically, although many Serbs and Bosnians were maximally fused, measurements did not reveal whether they had similar understandings of what it meant to be maximally fused with their group. Furthermore, identity fusion was often unpredictive of one's willingness to participate in collective violence. Whether these findings are anomalous or cohere with the next generation of scholars investigating identity fusion remains to be seen.

As a final point, we stress that we agree with Whitehouse that identity fusion plays an important role in understanding terrorism, ethnoreligious violence, and self-sacrificial violence (Kiper & Sosis 2016a), and we agree that ritual is vital to this process (Sosis & Kiper 2014). Nevertheless, we think his theory would be strengthened by recognizing that such violence is also characterized by a manipulation of recurrent features of religious and quasi-religious traditions, such as myths, sacred values, symbols, and both meaning and moral systems (Kiper & Sosis 2016b). In other words, understanding self-sacrificial violence will likely require a more holistic approach that includes the sociopolitical factors highlighted above, as well as those factors that motivate sacrificial behavior across religious systems (Sosis et al. 2012).

A potential explanation for self-radicalisation

Justin E. Lane[a,b,c,d], F. LeRon Shults[b,e] and Wesley J. Wildman[d,f]

[a]Institute for Cognitive and Evolutionary Anthropology, University of Oxford, Oxford OX2 6PN, United Kingdom; [b]NORCE Center for Modeling Social Systems, 4630 Kristiansand, Norway; [c]LEVYNA, Masaryk University, 602 00 Brno, Czech Republic; [d]Center for Mind and Culture, Boston, MA 02215; [e]Institute of Religion, Philosophy and History, University of Agder, 4604 Kristiansand, Norway and [f]Boston University School of Theology, Boston, MA 02215.

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

justin.lane@spc.ox.ac.uk
https://www.researchgate.net/profile/Justin_Lane
leron.shults@uia.no http://www.leronshults.com/
wwildman@bu.edu www.mindandculture.org

doi:10.1017/S0140525X18001760, e207

Abstract

We believe that Whitehouse's model could be extended in a way that can help us make sense of self-radicalised individuals who are not active in cliques. We believe that conceptual ties may be important to this process and present a brief analysis of a database collected by the national consortium for the Study of Terrorism and Responses to Terrorism (START), to suggest future research to complement Whitehouse's proposal.

Whitehouse's emphasis on the role of "relational ties" in the justification of extreme acts of self-sacrifice holds great promise for illuminating this perplexing phenomenon. We believe that his model, which focuses on groups of interacting individuals who perceive one another as fictive kin, could be extended in a way that can help us make sense of self-radicalised individuals who are not active in cliques relevant to their fused identity. Previous research suggests that individuals can incorporate concepts of other people, concepts of "God," and even concepts related to their social identity into their self-image (Aron et al. 1991; Hodges et al. 2013; Mashek et al. 2003; Sharp et al. 2015; Smith & Henry 1996).

As a complement to Whitehouse's use of relational ties, we suggest the idea of "conceptual ties," which are ties between beliefs that define one's social group and one's own personal identity. Conceptual ties can be formed without local interaction between individuals affiliated with an extremist group. Reflection on emotionally arousing experiences can lead some individuals to incorporate beliefs from a group's social schema into their own self-image. We hypothesize that the formation of such conceptual ties can help explain self-radicalisation in cases where there is no clear evidence of direct interaction of the sort that typically facilitates fusion. Examples include the 2013 Boston Bombing by the Tsarnaev brothers and the 2015 San Bernardino attack by Rizwan Farook and Tashfeen Malik. Although these were not suicide bombings, the perpetrators were ready to become martyrs and die for their religion (Baker & Santora 2015; Chappell 2013).

Data collected by the START project (National Consortium for the Study of Terrorism and Responses to Terrorism 2018), which profiles individuals radicalised in the United States, lend support to both Whitehouse's and our own proposal. Previous analyses of the START project's data set indicate that two of the key factors that drive radicalisation are "community crisis" and "cognitive frame alignment." The former refers to "collective feelings of intense trouble, difficulty, or danger that often produce instability within a community" (Jensen et al. 2018, p. 7). This strengthens Whitehouse's claims about group threat as an important moderating variable. Cognitive frame alignment refers to "the learning processes an individual undergoes in forming radical beliefs" (p. 14). The discovery of this radicalisation-promoting factor lends some support to our claim that the internalisation of group beliefs at a distance through conceptual ties could play a role in motivating extreme self-sacrifice.

Our own analysis of the START data also provides warrant for our hypothesis about conceptual ties. Of the radicalised individuals in that data set, 58.5% were not known to be part of a clique, and 64.59% of those individuals who were known to be part of a clique were radicalised prior to membership in the clique. Radicalisation clearly coincides with clique membership for 33.97% of individuals, who were known to be part of a clique. This suggests that local fusion may be relevant in one third of the sample. Furthermore, there is a statistically significant association between the maximum extent of radicalisation manifested in behaviour and clique-mediated individual radicalisation ($\chi[30] = 75.90$, $p < .01$), suggesting that more extreme behaviours are not performed by those individuals who were radicalised as part of a clique. The data also reveal that individuals' beliefs radicalise gradually more often (27.7%) than suddenly after a key moment (12.2%). Individual behaviours also radicalise gradually (26.4%) more often than suddenly (17.5%). This highlights the role of reflection as a key component in the radicalisation process and suggests that there are instances when one might "prefer to die for an extended fusion target over a local one" (sect. 6, para. 7).

We argue that relational ties – either actual or perceived – might not be the only means by which individuals become fused to a group and commit extreme violent acts on its behalf. As noted above, many radicalised extremists in the U.S. context are not part of cliques. These data trends suggest that, in some cases, extreme pro-group behaviour and self-sacrifice can result from the gradual internalisation of a group's beliefs into an individual's personal self-schema, which creates conceptual ties (which may act as "sacred values" [Atran et al. 2007]). We suggest that this results in extended fusion by means of "conceptual ties." Naturally, the data here are suggestive at best; more empirical research is needed to provide additional warrant for our amendment to Whitehouse's theory.

Strength in numbers: A survival strategy that helps explain social bonding and commitment

Adam Lankford

Department of Criminology & Criminal Justice, University of Alabama, Tuscaloosa, AL 35487.
adam.lankford@ua.edu http://adamlankford.com

doi:10.1017/S0140525X18001553, e208

Abstract

We seek strength in numbers as a survival strategy, so it seems unlikely that social bonds would make us want to intentionally die. However, our deep desire to be protected may explain our attraction to exaggerated notions of intentional self-sacrifice – even though research on suicide terrorists, kamikaze pilots, and cult members suggests they were not actually dying for their group.

We are "survival machines" (Dawkins 1976). Survival increases our inclusive fitness because once we die, we lose the opportunity to propagate our genes or help our genetic kin (Dawkins 1976; Lankford 2015). But although it is indisputable that we have

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

many evolved tendencies that keep us alive, it is unclear whether we have any that drive us to intentionally die.

One of our primary survival strategies is to seek strength in numbers. The survival of many young mammals depends on staying close to adults, and the survival of many adult mammals depends on staying close to each other (Boesch 1991). Strength in numbers makes it possible for wolves to challenge a grizzly bear, for wildebeest to hold off lions, for chimpanzees to chase away leopards, and for one group of chimpanzees or humans to avoid being slaughtered by another intraspecies group.

I propose that this strength in numbers and survival strategy is a better explanation for all of the findings Whitehouse cites on social bonding and commitment (which he labels "identity fusion") than purported tendencies for fatal self-sacrifice.

Humans often draw together when we become cognizant of an out-group threat, experience fear, or experience pain. This is when strength in numbers becomes salient and social bonds become strongest, because this is when our survival instincts kick in. As Whitehouse notes, after the 2013 Boston Marathon bombings, some people were suddenly more willing to give blood or donate money. After other attacks, some people were suddenly more eager to unite, join the military, and destroy the enemy before it could strike again. These responses are not driven by self-sacrifice, but by self-preservation. Deadly threats remind people of their dependence on the group to protect them, so they act to strengthen those bonds. When we feel safe, the group is less important.

Not surprisingly, this social bonding tendency can be elicited by current events, memories of suffering, or even contrived experiences like watching scary movies, which trigger a fear response and often result in people literally holding each other for protective reassurance. Military units, cults, college fraternities, and sports teams are among the many examples of groups that tap into these deep drives when they use painful initiation rituals or hazing to promote bonding.

In many scenarios, strength in numbers requires commitment, because the entire strategy fails if we are abandoned and left alone. This explains a paradox: We want the increased strength of joining with others, but often do not accept them without vows or proof of commitment. Before marrying, we make them endure courting rituals and declare "till death do us part"; before combat, we make them endure initiation rituals and declare they are not afraid to die.

These vows should not be taken as proof that most newlyweds would rather die than part with their spouses or that most soldiers would welcome death. But Whitehouse often makes such assumptions, misinterpreting commitment statements from survey research as respondents' actual "willingness to lay down their lives for the sake of the group." Of course, both human and nonhuman mammals will risk their lives to fight enemies, defend kin, and pursue other objectives, but that is very different from intentionally sacrificing their lives.

Even when a military commander (quoted by Whitehouse) allegedly told fighters "If you want to die, come with us. If not, go home and stay out of harm's way" (sect. 2, para. 9), that is not evidence that the fighters were volunteering for intentional self-sacrifice. It is evidence that they passed a basic screening test. Before combat, people often use scare tactics to identify potential abandoners in advance. They do this precisely because they want to survive.

As I have shown in other research, however, these social bonds and commitments typically have a breaking point (Lankford 2015). Nonhuman mammals do not intentionally sacrifice their lives to protect their offspring or group. Instead, they predictably flee to save themselves (Lankford 2015). Humans are prone to do the same, which is why for millennia, fighters had to be drafted, coerced, shamed, or bribed to appear on the battlefield if their likelihood of death was high, and then threatened with execution for desertion (Pinker 2012).

Perhaps we are so attracted to the notion of intentional self-sacrifice – and, so, likely to exaggerate it in religious texts, works of fiction, and journal articles – because our drive to seek strength in numbers is so powerful. Being protected by other people increases our sense of security, but it feels even better to believe that they care more about our survival than their own.

Whitehouse falls into this trap by citing suicide terrorists, Japanese kamikaze pilots, and the Jonestown cult members as examples of extreme self-sacrifice, despite not having studied these individuals in depth.

I have done that research. Most volunteer suicide terrorists decide they want to die before they join the group: they were community members who barely knew other terrorists, let alone "fused" with them (Lankford 2013; 2014a; 2015). Groups like the 9/11 hijackers are the exception, but even if some of them bonded closely with each other, the notion that they were dying for the group makes no sense, because they all perished, so none of them benefited.

Furthermore, many of Whitehouse's examples were actually responding to coercion (Lankford 2013; 2014a; Merari 2010; Ohnuki-Tierney 2007). The United Nations has reported that ISIS, Al Qaeda, Boko Haram, and other terrorist groups have kidnapped, sexually assaulted, beaten, and threatened victims before forcing them to commit suicide bombings. Similarly, kamikaze survivors recall that anyone who dared to refuse "volunteering" for a suicide mission for Japan was told to go back and pick the "right answer." And audio tapes reveal people crying and disagreeing with cult leader Jim Jones's orders to drink poison, but he surrounded them with armed guards and forced them to kill their children first.

If we indeed "fuse" with others, it is because strength in numbers increases our chances of survival, so it seems unlikely that these social bonds would make us want to intentionally die.

The power of norms to sway fused group members

Winnifred R. Louis[a], Craig McGarty[b], Emma F. Thomas[c], Catherine E. Amiot[d] and Fathali M. Moghaddam[e]

[a]School of Psychology, University of Queensland, St. Lucia, QLD 4072, Australia; [b]School of Social Sciences and Psychology, Western Sydney University, Penrith, NSW 2751, Australia; [c]College of Education, Psychology and Social Work, Flinders University, Bedford Park, SA 5042, Australia; [d]Department of Psychology, Université du Québec à Montréal, Montréal, Québec H3C 3P8, Canada and [e]Department of Psychology, Georgetown University, Washington, DC 20057.
w.louis@psy.uq.edu.au http://www.socialchangelab.net/winnifredrlouis.html
c.mcgarty@westernsydney.edu.au
https://www.westernsydney.edu.au/staff_profiles/uws_profiles/professor_craig_mcgarty

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

Emma.Thomas@flinders.edu.au http://www.flinders.edu.au/people/emma.thomas
amiot.catherine@uqam.ca https://psychologie.uqam.ca/professeur?c=amiot.catherine
moghaddf@georgetown.edu fathalimoghaddam.com

doi:10.1017/S0140525X18001644, e209

Abstract

Whitehouse adapts insights from evolutionary anthropology to interpret extreme self-sacrifice through the concept of identity fusion. The model neglects the role of normative systems in shaping behaviors, especially in relation to violent extremism. In peaceful groups, increasing fusion will actually decrease extremism. Groups collectively appraise threats and opportunities, actively debate action options, and rarely choose violence toward self or others.

The commentary by Whitehouse draws on evolutionary anthropology and psychology to analyze extreme self-sacrifice through the lens of identity fusion. Surprisingly, given the title, this fascinating theoretical integration lacks a deep consideration of the roles of intergroup processes and normative systems in shaping the expression of fused identities. This neglect is particularly problematic for understanding violent extremism.

Groups have systems of norms – social rules or standards for behavior – that prescribe correct behavior for group members (Smith & Louis 2009). When individuals fuse with groups, they appropriate not just perceived kinship to others in an abstract sense, but the normative content of the identities: what others do (the behavioral or descriptive norms) and what others think should be done (the moral or injunctive norms) (Cialdini et al. 1990). Fused members of different groups need not act alike. Even if all are willing to sacrifice themselves for their groups, they will follow their different groups' norms regarding how to sacrifice.

To take another lesson from Durkheim (1897), there is a division of labor, and that extends to suicide. Therefore, fusing with nation or religious groups will be more likely to lead to extreme actions such as self-starvation and suicide terrorism when the norms of the groups encourage such violence, but not when the norms encourage peaceful acts. For example, we would expect fused charity workers to be less violent in reacting to threats than fused soldiers. When group norms are peaceful, increasing fusion promotes pro-social actions, such as charitable giving (Buhrmester et al. 2015; Swann et al. 2010b). With peaceful groups, group identification inhibits violence (Jiménez-Moya et al. 2015). Therefore, collectively constructed normative systems are a missing moderator from the model: norms create facilitating but also inhibiting relationships of fusion with violent extremism (Louis 2014; Domínguez et al. 2017).

A related concern is that Whitehouse's model underspecifies the social interactions that shape extremism. Dysphoric rituals not only create fused identities, but establish norms for group behavior: we are people who go to extreme lengths (including harm) to express our commitment to the group. More generally, interacting groups provide the basis for people to negotiate their extremism and select options (Louis et al. 2015; Thomas et al. 2014). These small group processes are the crucibles of broader societal changes (Thomas et al. 2016) that enable the formation of social movements that are themselves based around norms (Smith et al. 2015). Although Whitehouse clearly has in mind a social dynamic, the model shown in his Figure 1 is asocial and linear: the bystanders, target, and team of the violent extremists and the state actors all are absent; there are no feedback loops (e.g., from action to emotion or reflection); the model is static rather than dynamic.

We endorse Whitehouse's core premise that groups react to threats and that those fused with the group are more motivated to do so. We note, however, that the outcome is rarely violent extremism (McCauley & Moskalenko 2017). Public support for violence increases when peaceful, nonviolent alternatives seem likely to fail (Thomas & Louis 2014). In the face of threat, different normative systems will lead fused members to engage in a range of behaviors, including prayer and fasting, political protest and civil disobedience, palliative support and emotion-focused coping, and also (but rarely) violent extremism (Thomas et al. 2010). The state will play an important role in supporting more democratic responses versus more violent ones, and the history of relations with the target also is important (Dugan & Chenoweth 2012; Moghaddam 2013; 2018).

In addition, people belong to multiple groups, and these intersectionalities matter (Louis & Montiel 2018; Louis et al. 2016a). Most of us feel a sense of psychological kinship, or oneness, with multiple social networks – from family to profession, from nation to faith. All groups are threatened at some point. Thus, Whitehouse's model overpredicts violent extremism and underpredicts other reactions.

A group-based model highlights that most groups actively teach members to see violence as immoral, costly, and nonbeneficial and develop norms of nonviolent conflict resolution (Christie & Louis 2012). As individuals internalize the norms against harm doing from different groups to which they belong, it becomes harder for any one group to develop pro-violence norms or for any group member to enact them (Amiot et al. 2017a; 2017b). Doing harm as a member of one group becomes incompatible with the members' other existing identities (Louis et al. 2015).

Yet, when individuals identify with any group with norms supporting violence, this rupture in their commitment to nonviolence can reduce the need for them to compartmentalize their harm doing in other contexts and, thereby, increase the likelihood that they respond to threats with violence (Amiot et al. 2017b; Louis et al. 2016a). Correspondingly, fused group members who have internalized norms supporting peace from alternative identities may form anchors of resistance within violent groups, risking their lives to save others or to speak out against atrocities.

In short, we argue that normative violence can be fueled or inhibited by fusion. The strategic direction of self-sacrifice or intergroup behavior depends critically on the content of the group norms. Studies on fusion have so far examined the real and demonstrated association between fusion and violent extremism without grappling with the low base rate of violent actors; the intersectionalities of class, religion, ethnicity, or gender that moderate the fusion–violence link; or the key role of normative systems. Whitehouse's model could better explain violent extremism by assigning a more foundational role to normative systems (Louis et al. 2016b; Moghaddam 2013; 2018; van Zomeren & Louis 2017). It is our hope that this commentary creates a new norm that stimulates innovation in this theoretically rich and socially important area.

"Self-sacrifice" as an accidental outcome of extreme within-group mutualism

Antoine Marie

Center for Research and Interdisciplinarity (CRI), Ecole Normale Supérieure, Paris, France.
antoine.marie.sci@gmail.com https://antoinemariesci.wixsite.com/antoinemarie

doi:10.1017/S0140525X1800167X, e210

Abstract

Whitehouse makes no room for evolutionary approaches to extreme behaviors based on partner choice and mutualism, which have been convincingly invoked to make sense of ordinary morality. Extended to intergroup warfare, these evolutionary mechanisms may play a pivotal role in explaining the existence of extreme – though not functionally sacrificial – behaviors, benefiting non-kin fellow fighters, together with the distinctive phenomenology those behaviors display.

Whitehouse's model accurately describes the phenomenon of identity fusion, but his evolutionary analysis (target article, sect. 4) of apparently sacrificial behaviors is underdeveloped. Here, I explore one important alternative to both kin altruism and group selection to explain extreme conduct that is not considered by the article: partner choice mutualism within coalitions. When operating in circumstances of recurrent intergroup conflict, these may have selected for high-risk parochially altruistic dispositions benefiting non-kin that should not, however, be categorized as functionally self-sacrificial.

From partner choice to a genuine sense of fairness

Drawing on pioneering work on reciprocity (Alexander 1987; Trivers 1971) and ethnographic evidence, partner choice models explain the biological evolution of intrinsic moral motivations to serve the interests of others while avoiding risks of exploitation through competition in a "market of cooperation" (Barclay & Willer 2007; Baumard et al. 2013). They describe the environment of ancestral hunter–gatherers as characterized by the constant search for mutually beneficial ventures in a context where non-kin live in relatively fluid groups. The availability of reputational information makes them, to a great extent, free to choose the most cooperative partners and to punish less generous ones by ostracizing them and gossiping on their misconduct.

The allocation of goods and services is not random when partner choice prevails. The need to attract the best partners, coupled with the existence of bargaining opportunities outside each actual interaction, incentivizes *all* individuals, including dominant ones, to raise their offers so as to satisfy others. The most adaptive strategy becomes to evolve a general propensity to treat others with impartiality, whatever the position one occupies, by sharing the benefits of cooperation in strict proportion to each person's contribution, and to adjust one's level of altruistic commitment to a given relationship to the benefits one can expect from it.

Although Machiavellian approaches may view mutual help as motivated by cold considerations of return on investment, the absence of an *intrinsic* concern for others' rights may motivate individuals to cheat when circumstances are judged favorable (e.g., perceived unlikelihood of detection). Yet, considering the challenge posed by the co-evolution of increasingly refined cognitive abilities to gauge others' level of commitment and the transmission speed of reputational information, public awareness of even a few actions failing to meet the demands of impartiality may be enough for the individual responsible to be abandoned.

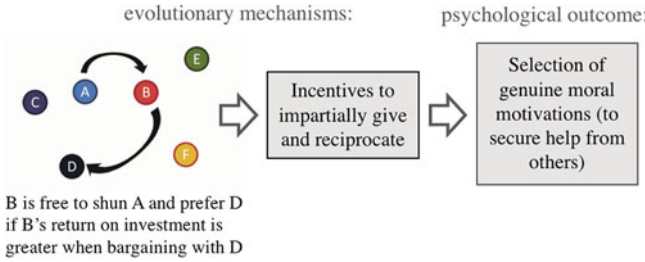

Figure 1. (Marie) Partner choice and mutualism: the general logic. Adapted, with permission, from Baumard and Boyer (2013).

In that respect, it is now widely accepted that a genuinely moral concern for others' welfare represents the most reliable way of securing the good reputation necessary for durably enjoying the benefits of cooperation with non-kin (Frank 1988; Sperber & Baumard 2012; Trivers 1971) (see Fig. 1). Behavioral experiments massively support the claim that humans spontaneously respect the interests of strangers, even in anonymous contexts (Baumard et al. 2013; Henrich et al. 2005), and that they care about restoring fairness in exchanges (Baumard 2011). In line with the hypothesis that truly moral motivations evolved as honest signals of partner quality, studies show that the most generous partners tend to be friends with one another (Pradel et al. 2008) and that individuals prefer people expressing deontological moral preferences when choosing with whom to cooperate (Everett et al. 2016).

From mutualism to extreme parochially altruistic, apparently "sacrificial" behavior

What is the connection between an indirect reciprocity-based analysis of our ordinary morality and the spectacular behaviors Whitehouse describes? My claim is that the social selection mechanisms that shaped the former may be extended to explain the evolution of extreme parochial altruism and identity fusion.

First, consider that the ancestral competition for resources and the advent of weapons operated at a distance (like spears) sustained intergroup warfare, which in turn would have selected for dispositions to form increasingly cohesive coalitions (which enhance total formidability while reducing individual risk [Tooby & Cosmides 2010]). Second, recall that coalitions are *n*-party exchanges: even when it involves a dozen fighters reciprocating help and protection, a coalitional alliance obeys the same partner choice mutualistic logic as other joint ventures. Third, the high lethality of ancestral raids suggested by paleoanthropology (LeBlanc & Register 2003) would have radically increased the degree to which individual fitness within coalitions was mediated by protection from partners (e.g., compensating for dead angles). Given these parameters, and provided that extreme interdependence was recurrent enough over evolutionary time, partner choice mechanisms within groups may have selected for dispositions for equally extreme individual heroism as the best way of securing vital protection from one's comrades, independently of genetic relatedness.

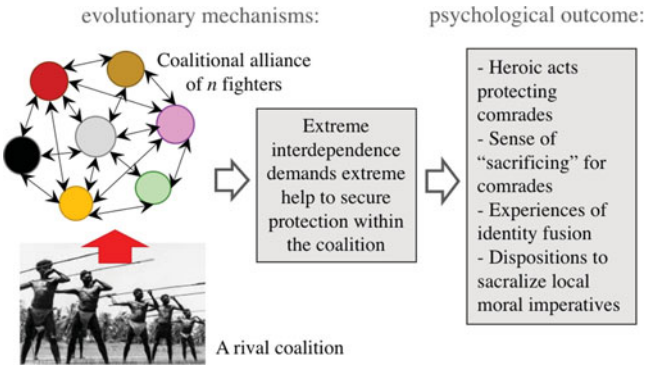

Figure 2. (Marie) Within-group mutualism in coalitional conflict.

Reports of military and insurgent behavior, past and present, indeed suggest that the more adversarial the conditions combatants are facing, the more individuals' survival prospects are interrelated, and the costlier are the signals of commitment and the actions undertaken (Atran 2010).

Let me insist that such extreme forms of conduct should not be categorized as functionally sacrificial, because the resulting fitness payoff would come from physical protection (and later access to mates and resources) provided by (allied) genetic strangers. Death would only be an accidental outcome, resulting from risk miscalculations by the inference systems involved.

Another crucial fact to highlight is that the subjective experience of a behavior can be completely decoupled from its biological function. Hence, natural selection may have designed the phenomenology of these extreme acts to include a set of complementary motivational processes, the function of which would be to facilitate costly individual contributions to the fighting power of one's coalition. Among the most familiar candidates, one may cite intuitions that one is selflessly giving one's life for a reified group (from coalition to nation [Haidt 2012; Tooby & Cosmides 2010]); processes of deindividuation via identity fusion calibrated for violent ordeals in close physical proximity (target article); and a propensity to sacralize local moral imperatives evolved to maximize one's chances of being recruited as a partner and to represent perilous ventures as imbued with transcendental significance (Atran 2010) (Fig. 2).

An advantage of this mutualistic approach is also its parsimony, as it subsumes the ordinary and the exceptional into the same evolutionary logic. It could complement the kin altruism framework in ways that should be further investigated both empirically and theoretically.

Acknowledgment. I thank Aurélien Allard, Nicolas Baumard, Léo Fitouchi, and Dan Sperber for valuable comments on earlier drafts, and Camille Williams for stylistic recommendations.

Segregation and belief polarization as boundary conditions for when fusion leads to self-sacrifice

Zachary J. Melton and Matt Motyl

Psychology Department, University of Illinois at Chicago, Chicago, IL 60607.
zmelto2@uic.edu, matt.motyl@gmail.com http://www.mattmotyl.com

doi:10.1017/S0140525X1800170X, e211

Abstract

Physical enclavement, away from out-group members, may determine when identify fusion leads to self-sacrifice. When people surround themselves with ideologically similar others, their attitudes may polarize and become moralized, leading to more violence and hostility toward people who do not share those attitudes. We discuss how this segregation may increase the amount of political violence in typically nonviolent systems.

The target article provides a framework for how identity fusion leads to terroristic self-sacrifice. The introduction cites football hooligans, insurgents, religious fundamentalists, and assorted tribes as brokers of violent action. However, the likelihood of committing self-sacrifice varies drastically between these groups. The difference, we argue, is that fundamentalists and people in tribes are more likely segregated into homogeneous enclaves where they can more readily develop radicalized and moralized beliefs that buffer them from worldview-threatening others and information. That is, fundamentalists actually segregate themselves from out-group members (as opposed to going to a football match where people exist on both sides), and this segregation leads worldviews to go unchecked and to be radicalized and leads to violence in defense of these beliefs (Motyl et al. 2009).

This distinction between groups with members that share highly moralized attitudes as a result of self-segregation and groups with members that share nonmoralized attitudes is an important boundary condition for when identity fusion leads to self-sacrifice. Groups that are exposed to out-group members in a humanizing context support more peaceful solutions to conflict than those who do not see these out-group members (Motyl et al. 2011). We believe this occurs, in part, because exposure to ideologically congenial information polarizes us on typically moralized issues (Mason 2015). We know that when a person hears in-group members express their attitudes on an issue multiple times, that person's attitude tends to be more extreme compared with someone not exposed to these attitudes as much (Brauer et al. 1995). If people continue to live in networks with in-group members that polarize the attitudes that demarcate one group from the other, the inevitable contact between the two groups could be seen as a threat to the values they cherish. We see that when these values are threatened, people are more likely to resort to hostility and violence (Motyl & Pyszczynski 2009). Therefore, worldview enclavement can create circumstances in which value conflicts become more and more likely to result in violence, maybe even self-sacrifice.

Although the target article claims "it would seem to be attachment to a collective, forged through shared rituals or other identity markers, and not beliefs per se that motivate pro-group action" (sect. 2, para. 5), evidence from the moral conviction literature further corroborates our claim that certain characteristics of beliefs – characteristics that are more likely to be present in worldview enclaves versus more heterogeneous networks – are important motivators of action. Individuals who moralize particular beliefs are more likely than people who do not moralize these beliefs to punish and engage in hostile collective action against people who violate their beliefs (Skitka & Houston 2001; Zaal

et al. 2011). There are meta-characteristics about our beliefs and attitudes that may affect our willingness to engage in pro-group action, meta-characteristics that may develop as a function of our decreased contact with dissenting worldviews. We see that people with moralized attitudes prefer greater social distance from attitudinally dissimilar others than people for whom these attitudes are not moralized (Skitka et al. 2005). This further exacerbates the cycle of enclavement, whereby people sort themselves into ideologically congenial enclaves and are then further polarized in these enclaves and are more likely to behave in a hostile manner toward out-group members. The scope of this problem is even greater than this article anticipates, as conservatives and liberals in America are geographically segregating themselves, potentially leading to a political climate in which peaceful solutions to ideological conflict become less possible (Motyl 2016; Motyl et al. 2014). Indeed, we are seeing the early warning signs of violent political conflict in the United States, where even presidential candidates endorse the infrahumanization of dissimilar others as "deplorables" and the use of violence at rallies against those with whom they disagree (Kirk & Martin 2017). Left unchecked, the creation of worldview enclaves that increase polarization of moralized attitudes poses a serious threat not only to typically war-torn countries, but to countries where political violence was not previously the norm.

The motivation to sacrifice for a cause reflects a basic cognitive bias

Christopher Y. Olivola

Tepper School of Business, Carnegie Mellon University, Pittsburgh, PA 15213.
olivola@cmu.edu https://sites.google.com/site/chrisolivola/

doi:10.1017/S0140525X18001747, e212

Abstract

Many extreme forms of self-sacrifice occur without identity fusion or out-group threats. For example, people willingly participate in extreme charity fundraisers – exerting effort, enduring pain, and risking bodily injury – to advance desired causes. Therefore, it seems plausible that the motivation to engage in extreme self-sacrifice reflects a basic cognitive bias, rather than an evolutionary-cultural adaption specifically designed for intergroup conflict.

Whitehouse argues that extreme forms of self-sacrifice require a radical form of identity fusion with one's group, typically resulting from shared aversive experiences, and are triggered by out-group threats. However, these arguments are predicated, at least implicitly, on a rather narrow conceptualization of extreme self-sacrifice that is limited to deliberate, fatal risk taking. Consequently, Whitehouse's "general theory of extreme self-sacrifice" both ignores and fails to explain a vast range of other (less) extreme forms of self-sacrifice in which many individuals engage, such as exerting intense effort (Inzlicht et al. 2018), enduring pain (Olivola 2011), and exposing themselves to bodily harm and non-negligible risks of death (Lee et al. 1999), to advance their desired causes. Yet there is no clear reason to assume these other forms of extreme self-sacrifice are fundamentally different from the particular ones on which Whitehouse focuses. Indeed, broadening the concept of extreme self-sacrifice reveals that these acts are surprisingly common, do not require identity fusion or out-group threats, and are more likely to reflect a basic cognitive bias than an elaborate evolutionary-cultural adaption to intergroup conflict.

Extreme self-sacrificial acts are surprisingly common

If we broaden the definition of extreme self-sacrificial acts to include great personal sacrifices of leisure, pleasure, or safety (as Whitehouse seems to do when he considers nonfatal acts, such as football hooliganism and blood donations), we find that these are surprisingly common. As a prime example, people engage in pretty extreme forms of self-sacrifice when they sign up to participate in painful, effortful charity fundraisers. These fundraisers require participants to sacrifice leisure for effort (e.g., running marathons [Olivola 2011]), pleasure for pain (e.g., walking barefoot on burning coals and/or broken glass, or diving into frozen lakes [Olivola 2011; Olivola & Shafir 2013]), and even safety for the risk of bodily injury and death (e.g., skydiving [Lee et al. 1999]). Therefore, individuals who participate in these extreme charity fundraisers are willingly making great personal sacrifices and sometimes risking their lives for a greater cause. Moreover, far from being repulsed – or at the very least puzzled – by these extremely painful, effortful pro-social acts, we admire and actively support them (Olivola 2011; Olivola & Shafir 2018). In many ways, then, participation in extreme charity fundraisers is not so fundamentally different from self-sacrificial acts in times of human conflict, which suggests they share a common underlying psychology.

Extreme self-sacrifice can occur without identity fusion or out-group threats

In contrast to wartime heroism and suicide terrorism, however, people are motivated to participate in (and sponsor) extreme charity fundraisers even without an elaborate process of identity fusion or threats from outside forces. Most charity fundraising efforts are aimed at combating things such as disease and malnutrition, not hostile out-groups. Indeed, research suggests that painful, effortful charity fundraisers are particularly popular and successful (compared with easy, enjoyable means of donating) when the goal is to alleviate human suffering (Olivola & Shafir 2013). In most cases, those participating in such events are brought together, not by shared aversive experiences, but by a common desire to help others overcome adversity. Also, the typical extreme charity fundraising event involves a large group of strangers (fundraising participants) coming together and self-sacrificing to raise money for another group of strangers (donation recipients), rather than tightknit individuals self-sacrificing for the benefit of their in-group.

Of course, many extreme charity fundraisers are also, at their core, social events that bring together participants motivated to advance a common cause, which might lead us to conclude that group dynamics must play a key role in people's decisions to self-sacrifice for a charitable cause. And yet, research shows that even in the absence of any group dynamics, the prospect of suffering for a charitable cause motivates people to donate more to the cause (Olivola 2011; Olivola & Shafir 2013). For example, one experiment found that participants' willingness to contribute to

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

a collective resource (shared earnings in an economic game) increased when they had to undergo a painful task (keeping both hands submerged in 10 °C water for 60 seconds) to contribute (Olivola & Shafir 2013). Critically, these participants were unacquainted with the other members of their group, and their contribution decisions were made in private, thereby eliminating any possible role of identity fusion or in-group signaling. Despite this, those given the option to sacrifice their well-being (by enduring the cold pressor task) for the group did so. In fact, they sacrificed more of their own earnings to benefit the group than individuals who could contribute without incurring pain.

In sum, neither out-group threats, nor identity fusion, nor group dynamics more generally is required to motivate extreme forms of self-sacrifice for a greater cause.

Extreme self-sacrifice reflects a basic cognitive bias

Rather than being a biological or cultural adaption specifically designed for inter-group conflict, the motivation to engage in many forms of extreme self-sacrifice likely reflects a basic cognitive bias. In particular, it may be a special case of a more general human tendency to derive value from (Inzlicht et al. 2018) and justify both our own (Arkes & Blumer 1985; Thaler 1980) and others' (Olivola 2018) costly investments. Evidence of its status as a suboptimal bias is well documented in the research literature (Arkes & Blumer 1985; Olivola 2018; Thaler 1980) and also comes from the fact that people are motivated to engage in extreme self-sacrifice to further charitable causes, when the very same goals can be achieved without such sacrifices (Olivola 2011), as well as the fact that this self-sacrifice for charity often yields inefficient outcomes, thereby annulling its (tangible) value (Olivola 2011).

The persistent appeal of inefficient – even counterproductive (e.g., Lee et al. 1999) – self-sacrificial acts is hard to reconcile with an adaptive evolutionary account. Why, for example, would evolutionary pressures favor individuals motivated to sacrifice valuable resources (money, time, and energy) *and* partake in extreme physical challenges (exerting immense effort, enduring pain, and risking their health) to send aid to complete strangers (e.g., recipients in other countries)?

Individuals, traditions, and the righteous

Craig T. Palmer[a] and Kyle J. Clark[b]

[a]Independent Scholar, Macon, GA 31211 and [b]Department of Anthropology, University of Missouri, Columbia, MO 65211.
palmerct@missouri.edu kjckbd@mail.missouri.edu

doi:10.1017/S0140525X18001577, e213

Abstract

Whitehouse's article posits several plausible hypotheses, but suffers from an unwarranted reliance on the importance of distinct social groups in the causation of self-sacrificing behavior. A focus on relationships between individual kin is better able to account for both the evolution of self-sacrifice and present forms of self-sacrifice. The practical importance of this point is discussed.

In the target article, Whitehouse posits several reasonable hypotheses. First, natural selection favored self-sacrifice, in the sense of risking one's life for the benefit of others, in certain circumstances. Second, those circumstances included coalitional lethal violence. Third, kin (i.e., individuals identified through birth links) were often the beneficiaries of such self-sacrifice. Fourth, the encouragement of such self-sacrifice took place partially during dramatic rituals, although listening to stories about the past sacrifices of ancestors was also probably a major factor (Palmer et al. 2013). Fifth, relatively recent social environments have led to the modification of rituals and stories to influence individuals to direct their self-sacrifice to benefit individuals who are not kin (i.e., not identified as being related through birth links). Finally, accurate knowledge of the cause of such self-sacrifice may help harness it to occur in certain desirable situations (sect. 7, para. 7), for example, where the willingness to sacrifice one's life leads to saving other lives instead of destroying them.

Unfortunately, Whitehouse's apparently unquestioned fundamental starting assumption, upon which his entire explanation of why self-sacrificing behavior was favored by natural selection is built, is worded in a way that is sufficiently inaccurate to prevent him from being able to explain some important forms of self-sacrifice. The only things described in his scenario that are empirically verifiable are individual humans influencing other individual humans to sacrifice their lives in a way that benefited individual humans. Although it is tempting to gloss over these complex interactions of individuals by use of the term "group" for the sake of convenient communication, it is neither necessary nor accurate to describe self-sacrifice as being performed for some group or caused by fusion with that group. The ethnographic record describes the gatherings of foragers as fluid, with individuals who are kin gathering, dispersing, and regathering in different combinations. Although the fluidity of groups is often claimed to be compatible with multilevel selection, surely there is some degree of fluidity beyond which claims of individuals being divided into groups becomes false. Even Durkheim (1961/1912) realized that the clans involved in dramatic rituals in aboriginal Australia did not form the local gatherings brought to mind by the statement "In much of human prehistory, fused groups probably comprised small warring bands bound together in adversity" (sect. 7, para. 2). The assertion that forager rituals fused "individuals into small relational groups" (sect. 5, para. 1) is simply not consistent with ethnographic evidence.

Focusing on relationships between individuals related through birth links and avoiding the assumption of distinct human groups enable a more accurate view of the relationship between kinship and self-sacrifice. Whitehouse proposes that self-sacrifice was originally for a group made up of literal kin, by which he appears to mean only those individuals so closely related that the sacrificing of their lives for each other may be explainable by kin selection (sect. 4, para. 1). According to Whitehouse (sect, 6, para. 5), the scope of self-sacrifice was expanded to a large group consisting primarily of non-kin by people falsely claiming that the non-kin members of the large group were actually kin (i.e., closely related brothers and sisters). Humans do use kin terms metaphorically, but Whitehouse's scenario leaves out a crucial intermediary step that constitutes one of the most important aspects of the ethnographic record. Humans identify individuals more distantly related than nuclear family members as actual kin (i.e., individuals related to each other through birth links), and the ubiquity of this ability suggests that doing so was favored by natural selection. This identification of distantly related kin (i.e., individuals

related through large numbers of birth links) was accomplished not through the false assignment of kin terms, but through traditional markers such as descent names and body decorations transmitted from parents to offspring, often for many generations (van den Berghe & Barash 1977). The willingness to sacrifice one's life for such distant kin did not require larger distinct groups. It resulted from traditional rituals and stories encouraging such altruism to be transmitted, along with the descent names and markings, from parents to offspring over many generations. Distinct groups were also not necessary for the more recent encouragement of self-sacrificing behaviors toward individuals who are seen as only metaphorically kin. This self-sacrifice only requires slight modifications of the same social learning from individuals that are involved in the transmission of traditions.

Whitehouse's explanation of self-sacrifice is a testable hypothesis with practical implications (sect. 7, para. 1). Indeed, if self-sacrificial altruism is only produced by fusion with a group, it will only be directed toward co-members of that group. If, however, self-sacrificial altruism can result from copying the behavior of a parent or parental-like individual, perhaps through the mechanism known as "moral elevation" (Haidt 2000), it can be directed toward individuals regardless of any group membership. Conveniently, there already exists a test of this hypothesis. The Israeli organization known as Yad Vashem awards the title of "Righteous Among the Nations" to only non-Jewish individuals who risked their lives to rescue one or more Jewish individuals during the Holocaust (Palmer, in press). Although common nationality is occasionally mentioned by these rescuers as a factor contributing to their self-sacrificial acts, a far more frequently mentioned cause of the rescue behavior is the influence of a tradition transmitted to the rescuer from a parent or parental-like individual encouraging altruism toward other individuals regardless of group membership. This finding is so common that one of the major interviewers of rescuers said, "I began after a while to wait for the recital of … an altruistic parent or beloved caretaker who served as a role model for altruistic behavior" (Fogelman 1994, p. 254; see also Land-Weber 2000; London 1970; Oliner & Oliner 1988). Further, this process often led to rescues that occurred despite being strongly disapproved of, and even severely punished, by the individuals most likely to be considered the members of the rescuer's own group.

The fire burns within: Individual motivations for self-sacrifice

Rima-Maria Rahal

Department of Psychology, Goethe University, Frankfurt, 60323, Germany; Gielen Leyendecker Research Group, Max Planck Institute for Research on Collective Goods, Bonn 53115, Germany.
rahal.rimamaria@gmail.com https://rimamrahal.wordpress.com

doi:10.1017/S0140525X18001851, e214

Abstract

Extreme self-sacrifice in intergroup conflict may be driven not only by situational factors generating "fusion," but also by interindividual differences. Social value orientation is discussed as a potential contributor to self-harming behavior outside of intergroup conflicts and to the general propensity to participate in intergroup conflict. Social value orientation may therefore also be a person-specific determinant of extreme self-sacrifice in intergroup conflict.

The fire burns within: Individual motivations for self-sacrifice

The question whether individual behavior is driven not only by situational circumstances, but also by person-specific differences, has long occupied psychology (Epstein & O'Brien 1985) and also applies to extreme self-sacrificial behavior in intergroup conflict. Whitehouse's theory largely considers situation-specific factors as drivers of self-sacrifice in intergroup contexts: "Fusion" with the in-group as an antecedent for individuals' willingness to self-sacrifice for the group is thought to stem from transformative experiences and perceived shared biological properties. Adding to the theory from a perspective of interindividual differences, I argue that actors' motivations and individual level characteristics could contribute to extreme self-sacrificial behavior. I approach the question of which individual-level differences could increase individuals' propensity to commit self-sacrificial acts in intergroup conflict from two lines of reasoning. First, I consider person-specific factors associated with individuals' probability to commit self-harming acts outside of intergroup conflicts, arguing that a general individual-level tendency toward such behavior may also manifest in an increased inclination to self-sacrifice in intergroup conflicts. Second, I consider person-specific factors associated with individuals' probability to enter intergroup conflicts, arguing that people who are more likely to join intergroup conflicts are also more likely to take extreme measures in these conflicts. In sum, I argue that understanding self-sacrifice requires a broad integration of situation- and person-specific factors.

First, predictors of individuals' propensity to commit self-sacrifice in general could also predict self-sacrifice in intergroup conflict. Interindividual differences have been considered to explain self-harm with respect to both clinically relevant behavior (Gratz 2003; Gratz et al. 2002), which has been related to individual emotions and relationship attachments, and nonclinical self-harm, which has been related to narcissism and risk attitudes (Bobadilla 2014; Vazire & Funder 2006), as well as self-deception (Fink & Trivers 2014; Trivers 2006). Moreover, martyrdom, defined as individuals' readiness to suffer and sacrifice their lives for a cause, has been related to the readiness to self-sacrifice in a video game and the endurance of pain (Bélanger et al. 2014).

Additionally, self-sacrifice can be explained from the perspective of decision theory as an individual's choice, affecting both one's own and others' outcomes. To reach a decision, individuals are argued to weigh outcomes for themselves and other parties affected and to have stable social preferences, that is, preferences for outcome distributions (Messick & McClintock 1968). Such social preferences can be construed as inequality concerns (Bolton & Ockenfels 2000; Fehr & Schmidt 1999) or individuals' social value orientation (SVO) (Messick & McClintock 1968). Self-sacrificial behavior can be understood in the scope of the continuous model of SVO (Griesinger & Livingston 1973) as assigning no or negative value to own outcomes and can be differentiated by its motivation to promote, disregard, or decrease

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

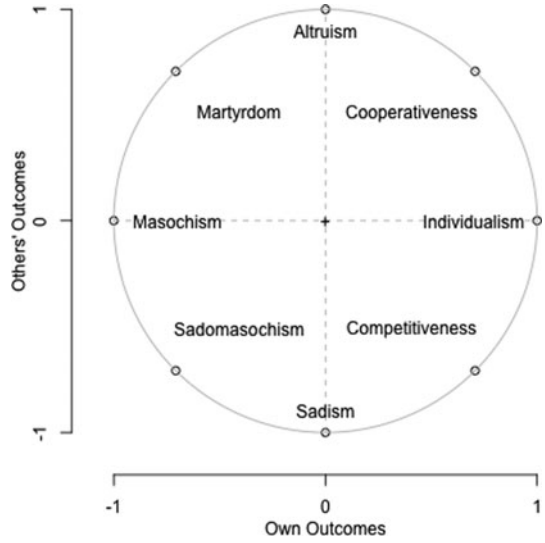

Figure 1. (Rahal) Graphical model of the dimensions of social value orientation.

others' outcomes (Fig. 1). For example, when the Vietnamese monk Quảng Đức decided to publicly burn himself to death in 1963 to protest the persecution of Buddhists, he incurred extremely negative outcomes for himself. However, this decision also imposed extreme costs on the oppressive Diệm government, which would eventually be overthrown, and extreme positive outcomes for Buddhists in the country. In other words, understanding self-sacrifice as driven by a preference to incur costs or to disregard own outcomes may be a promising approach to understanding individual-level motivations as drivers for this type of behavior within and beyond intergroup conflicts.

Second, individuals' propensity to join intergroup conflict could explain why some also choose self-sacrifice as a means to contribute to intergroup conflict. For example, some groupy decision makers consistently favor their in-group across different situations, whereas others are conditionally groupy or nongroupy (Kranton & Sanders 2017). At least in part, some theories of intergroup conflict recognize the contribution of interindividual differences to individual behavior in intergroup conflict (Duckitt et al. 2002), juxtaposing authoritarian attitudes and social dominance. For example, social dominance orientation (SDO) (Pratto et al. 1994; Sidanius et al. 1994), the individual preference for between-group hierarchy in society, has been associated with a competitive, cutthroat worldview (Perry et al. 2013), aggressive intergroup attitudes (Ho et al. 2012), and support of violence against out-groups, for example, against immigrants (Thomsen et al. 2008). Extreme preferences for socially dominating others may therefore also be connected to extreme out-group violence, even including self-sacrifice as a tool for domination.

Again taking a decision-making perspective incorporating social preferences, individual behavior in intergroup conflict could be construed as choices in a public goods game (Choi & Bowles 2007). Individuals decide how much effort or other resources to invest in intergroup conflict, and although the individually rational option is to contribute nothing, the group goal (survival, social dominance, etc.) requires the in-group to invest more than competing groups, leaving all in-group members better off in case of success. Investments in intergroup conflict for the benefit of the in-group or to hurt the out-group at one's own cost (e.g., parochial altruism [Bernhard et al. 2006]) may depend on SVO (Aaldering et al. 2013; but see Thielmann & Böhm 2016). Among individuals who chronically disregard or discount their own outcomes and assign positive value to in-group or negative value to out-group outcomes, self-sacrifice could be understood as a rational (yet extreme) tool for resolving intergroup conflict.

In sum, I propose enriching Whitehouse's framework by considering individual differences as additional drivers of extreme self-sacrifice. In particular, I suggest that SVO is a promising framework to understand the propensity both to self-sacrifice and to engage in intergroup conflict from the perspective of decision theory. Beyond SVO, other interindividual differences such as SDO, the tendency to deceive oneself, and narcissism and risk-seeking could be investigated to predict extreme self-sacrifice. Empirically assessing the predictive power of such person-specific factors in relation to and interacting with situational factors might enrich the theoretical model describing self-sacrifice.

Origins of social fusion

Philippe Rochat

Department of Psychology, Emory University, Atlanta, GA 30322.
psypr@emory.edu
http://www.psychology.emory.edu/cognition/rochat/lab/Rochat.html

doi:10.1017/S0140525X18001619, e215

Abstract

Do instances of extreme self-sacrifice represent a valid paradigm to capture what makes typical individuals fuse with others? Probably not, because they can be viewed as aberrant phenomena. To understand the origins and mechanisms of human social fusion, one should first look at the development of babies and young children. Typical development represents the best alternative to Whitehouse's extreme model of social fusion.

For most individuals who participate in group rituals and initiations, heroic self-sacrifice is not a common outcome. This is true even in extreme circumstances such as wars and economic or natural disasters. Not all Japanese flyers ended up kamikaze, and only a few soccer fans become hooligans. Group defections in war are probably as frequent, if not more so, compared with extreme self-sacrifice. Heroic acts and other altruistic self-sacrifices, such as extreme acts of self-preservation, are the exception, not the rule. What they share is extremism. As aberrant propensities, these extreme behaviors by a few individuals certainly illuminate the "dark" limits of human social psychology, but do they illuminate what might be arguably the main question of the social sciences: What makes typical individuals across societies bind with others? The extent to which such extreme behaviors represent a valid paradigm for the understanding of social fusion is questionable.

Acts such as suicide bombings by individuals or whole families (see the recent Surabaya Indonesia incident [Wikipedia 2018]), recurrent "lone wolf" mass shootings followed by individual suicide, and the intentional 2015 Germanwings plane crash that killed 144 innocent travelers need to be better understood for obvious preventive reasons, but they are anomalies. Looking at babies and young

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

children in their typical development is probably a better way of trying to capture the origins and mechanisms of human social fusion. Typical development is indeed replete with relevant, more generalizable, and primordial facts compared with those used by Whitehouse in his extreme account. Developmental research tends to show that the first signs of identity fusion and the explicit sense of oneness with the group begins to become evident during preschool years (3–5 years), with the emergence of gender and racial biases and minimal group affiliation, including the early detection of and preference for higher economic status, as well as first evidence of strong and strategic conformity, from both a first-person and a third-person perspective (Cordonier et al. 2017; Haun & Tomasello 2011; Nesdale 2008; Nesdale et al. 2005; Shutts 2015; Shutts et al. 2016). Resonating with Whitehouse's model of extreme self-sacrifice, children's early signs of identity fusion are compounded by an early propensity toward essentialism (Gelman 2003). Essentialism is indeed a trademark of human cognition, expressed very early on. From the second year, it accompanies the rapid development of symbolic and linguistic competence.

Bullying and ostracism are also typical by-products of the explicit identity fusion that begins to emerge in the preschool years (Aboud 2003). They play a central role in all children's socialization processes as the child enters school and their social experience expands beyond the family/close kin circle. Both illuminate what fundamentally drives human socialization and group fusion at a more proximal level: a basic affiliation need (BAN) (Rochat 2009; 2014/2015). Inseparable from BAN, like two sides of the same coin, there is the universal fear of being rejected and ostracized from the group – in other words, the fear of not being recognized by others. Being human means to care about reputation, constantly gauging self-worth through the evaluative eyes of others (Rochat 2018). This is a universal human propensity that children express from the second year. At a proximal level, identity fusion should be first understood in the light of such basic psychological mechanisms, including the tragic instances of extreme self-sacrifice (suicide missions) by child soldiers, who, by the thousands and from the tender age of 8, continue to participate in armed conflicts around the world (https://www.child-soldiers.org).

Such extreme instances might just represent epiphenomena of a much deeper and shared proximal mechanism driving children's socialization and cooperation across the contrasted cultural circumstances of their birth. Through this proximal developmental lens, dying for the group is nothing more than the extreme, uncanny expression of the developing human need to affiliate and the deep fear of being rejected by those who provide basic support. Both are universally exploited in the practice of group indoctrination, such as hazing, which provides measure to the merit of belonging to the group (i.e., not being rejected from it). It is also what underlies the generalized practice of social exclusion, brandished as threat (i.e., jails and solitary confinement within jails, capital punishment as absolute social severance). The human need to affiliate is insatiable and a source of blind comfort that can lead, in some instances, to extreme hooliganism and self-sacrifice. People do need people.

In children, peer pressure begins in the preschool years, with the emergence of strong and strategic conformity (Cordonier et al. 2017). If strong and strategic conformity consists of the sophisticated expressions of the need to fuse with the group (BAN), infancy research shows that its source is located way upstream, namely, in the innate propensity to imitate and newborns' inclination to be emotionally contaminated by others (Rochat 2001). It takes only 6 weeks postpartum for infants to be attuned to the affective mirroring of others, with the universal emergence of socially elicited smiling in face-to-face protoconversations. From this point on, infants become active agents of their own social affiliation. From 2 months of age, infants start manifesting social expectations and assess the relative value of their encounters with others. They become selective in their affiliation with strangers, preferring those interacting at a contingency ratio that maps onto their biological mother (Bigelow & Rochat 2006). By 5 months, infants attend preferentially to strangers talking to them with no foreign accent (Kinzler et al. 2007).

It is by researching the developmental roots of social affinity that we might capture what drives social fusion, including social outcomes, like dying for the group. From this proximal perspective, the remaining question is what led some individuals to be more susceptible than others to manifesting extreme self-sacrifice and falling prey to group pressures? What does it take for some individuals to question group authority? Why do some individuals resist the undeniable extreme "crowd" pleasures of getting lifted up by group fusion? Why can camaraderie elevate some, but not the vast majority, to die for the group? These are central questions that remain unanswered. As social scientists, if our ultimate goal is to understand the dynamic of how we bind, a developmental approach is indispensable.

Accumulative fusion and the issue of age: Reconciling the model with the data

Cheskie Rosenzweig,[a] Benjamin C. Ruisch,[b] and Chadly Stern[c]

[a]Department of Counseling and Clinical Psychology, Columbia University, New York, NY 10027; [b]Department of Psychology, Cornell University, Ithaca, NY 14853 and [c]Department of Psychology, University of Illinois, Urbana-Champaign, IL 61820.
cr2769@tc.columbia.edu bcr44@cornell.edu
chadly@illinois.edu www.psychology.illinois.edu/people/chadly

doi:10.1017/S0140525X18001735, e216

Abstract

We discuss a disconnect between the predictions of Whitehouse's model regarding the accumulative nature of fusion and real-world data regarding the age at which people generally engage in self-sacrifice. We argue that incorporating the link between age and identity development into Whitehouse's theoretical framework is central to understanding when and why people engage in self-sacrifice on behalf of the group.

We appreciate Whitehouse's efforts to construct a comprehensive theory of self-sacrifice. However, there currently appear to be inconsistencies between the predictions of the model regarding which people theoretically should be expected to engage in self-sacrifice and the well-documented patterns concerning which people actually do sacrifice themselves for their groups. One notable disconnect involves the relationship between age and self-sacrifice. Here, we outline this issue and make concrete suggestions for how age – and its psychological correlates – might be

effectively incorporated into the generative theoretical framework that Whitehouse has proposed.

A central assumption of Whitehouse's model is that fusion is accumulative in nature: The more shared experiences that a person has with fellow group members, the more intense and/or opaque these experiences are, the more a person reflects on these experiences, the tighter are the bonds of kinship, and so on. All of these factors are said to heighten fusion with the group. This accumulative account would suggest that fusion – and therefore the propensity to self-sacrifice – should be higher among individuals who have spent more time as members of their groups. Therefore, the model would seem to predict that self-sacrifice, on average, should be more common among older individuals. These predictions, however, are at odds with empirical data concerning real-world self-sacrifice: The majority of individuals who self-sacrifice for their group are young, and have therefore typically spent less time as members of their groups. For example, the average age of Palestinian suicide bombers was 21 years (Dickey 2009), the average age of the 9/11 hijackers was 24.2 years (Benmelech & Berrebi 2007), and the average age for all suicide attackers (with known ages) between 1982 and September 2015 was 23.2 years (Chicago Project on Security and Terrorism 2015). Similarly, other work has suggested that most suicide bombers spend little time as members of terrorist groups before engaging in their first (and usually only) attack (Lankford 2015; Pedahzur 2005).

Why is it the case that those who die for their groups tend to be young? One possibility is that this trend relates to the general tendency for younger people to commit more violent acts (Farrington 1986) and is unrelated to identity fusion. Indeed, research has identified a wide range of biological and social factors that contribute to the association between age and violence, including physical strength, impulsivity, cognitive competence, freedom from supervision, and greater access to resources (Casey et al. 2008; Fonagy 2003; Klausen et al. 2016; Ulmer & Steffensmeier 2014). However, we propose that age may in fact interact with identity fusion effects through its relationship with identity development. Late adolescence and early adulthood are periods in which individuals strive to understand their place in the world and develop a coherent sense of self (Arnett 2000; Kroger 2015). In doing so, they typically rely on social referents, such as friends, peers, and others in their social networks, to help navigate the development of a formative identity (McLean 2005). Often, young adults undergo intense and frequent changes in their personal and group identities until they find one that most readily "fits" within a given time and place (Grotevant 1992; Newman & Newman 2001; Tanti et al. 2011). During this process, the groups with which individuals identify are highly salient, and the roles related to their group memberships are extremely accessible (Ashmore et al. 2004; Ethier & Deaux 1994). It is plausible that this saliency of group membership among young adults is conducive to development of high levels of fusion and, therefore, leads to subsequent self-sacrifice for one's group.

Specifically, individuals who are undergoing or have recently undergone identity changes may be most likely to define themselves by their group membership, to fuse quickly and tightly with their group, and thus to be more likely to self-sacrifice, compared with others whose identities are less in flux. Supporting this possibility, some scholars have contended that a drive to find meaning and reduce uncertainty through identity and group membership can galvanize engagement in terrorist activity and violence on behalf of the group (Hogg & Adelman 2013; Kruglanski & Fishman 2009; Kruglanski et al. 2013). To the extent that young people are especially inclined to search for meaning and a sense of purpose through their identities (Arnett 2000; Kroger et al. 2010; Nelson & Barry 2005), identity salience could help explain why young individuals, in particular, would be inclined to resort to violence on behalf of the group.

To translate the above into concrete predictions for Whitehouse's model, we propose that there are two specific ways in which age and associated group identity salience could be incorporated. First, group identity salience could function as a moderator of the degree to which shared group experiences predict identity fusion, such that shared experiences lead to higher levels of fusion when group identity is salient. Second, group identity salience could moderate the relationship between identity fusion and self-sacrifice for the group, such that the salience of group identities among already fused individuals leads to increased willingness to die for the group. The latter explanation is in line with research by Swann et al. (2009), who provide evidence that "fused persons were more willing to fight or die for the group … when their personal or social identities had been activated" (p. 995).

Additional research will be needed to determine how age can be properly situated in Whitehouse's model. Nonetheless, we suggest that incorporating the link between age and identity salience into this model might help resolve the apparent inconsistencies discussed here, whereby younger people who have had less time to develop group fusion are more likely to engage in suicidal self-sacrifice for their groups. Although the parsimony of Whitehouse's model is appealing, it is likely that a theoretical model that can fully account for a behavior as complex as self-sacrifice will require additional refinement and nuance. We hope that the argument that we have presented here might help facilitate this process.

Individual difference in acts of self-sacrifice

Michael N. Stagnaro, Rebecca Littman and David G. Rand

Department of Psychology, Yale University, New Haven, CT 06511.
michael.stagnaro@yale.edu rebecca.littman@yale.edu drand@mit.edu
http://www.rebeccalittman.com/
https://scholar.google.com/citations?user=lx83B_YAAAAJ http://www.daverand.org/

doi:10.1017/S0140525X18001759, e217

Abstract

Whitehouse's model explains when people engage in self-sacrifice, but not who is most likely to do so. We propose incorporating individual differences, such as cognitive style (one's inclination toward intuition versus deliberation), and argue that individuals who rely on intuition may be more likely to (1) develop group identity fusion after an emotional experience and (2) engage in pro-social self-sacrifice.

The model proposed by Whitehouse comprises two stages: (1) phenotypic matching or experiencing of an opaque, emotionally salient event, resulting in an individual's becoming fused with a group, and (2) motivation of self-sacrificial behavior by this group identity fusion (GIF), particularly when the group is under threat, because the individual conceptualizes the group as

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

deserving of self-sacrifice. Relying on a large body of both theoretical and empirical literature, this model provides a reasonable framework for predicting when individuals come to engage in self-sacrifice. However, among those who are highly fused with their group, this model does less in addressing who is particularly likely to engage in self-sacrifice, which is a key question of theoretical and practical importance.

Although past work has noted there are no obvious or consistent demographic variables that reliably predict who is willing to engage in terrorism (Atran 2003; 2011; Weatherston & Moran 2003), save being male (Möller-Leimkühler 2018), there likely are psychological risk factors. Therefore, we argue that incorporating one or more individual difference frameworks from the psychological literature into Whitehouse's model will help predict who is most likely to self-sacrifice.

There are a number of relevant individual difference constructs, which may provide insight. For example, in empathy models, those who experience the suffering of victims to a greater degree may be more willing to sacrifice themselves to harm an oppressive group or body (Batson et al. 2007; Moskalenko & McCauley 2011). According to attachment theory, individuals who crave a sense of acceptance and community are motivated to engage in violent, costly acts to feel accepted and valued within their group (Cassidy & Shaver 2010). And in theories related to aggression and honor, individuals who are more concerned with their reputation and inclined toward violence are more sensitive to slights against their group's honor and more likely to respond with violence to signal group dedication (Möller-Leimkühler 2018).

Here, we focus on the central individual difference framework from the dual-process cognition literature, "cognitive style" – the extent to which individuals rely on reflective deliberation versus intuitive gut instincts in their decision making (Evans & Frankish 2009; Evans & Stanovich 2013; Frederick 2005; Kahneman 2011; Pennycook et al. 2015b; Rand et al. 2017; Sloman 1996). Mapping this individual difference onto Whitehouse's model, we argue that people with a more intuitive cognitive style will be (1) more affected by an initially salient, negative experience – although through a less deliberative pathway than the one emphasized by Whitehouse – and (2) more likely to choose a costly pro-social act of self-sacrifice once identity-fused to the group.

The first stage of Whitehouse's model is heavily reliant on conscious, deliberative processes (memory, reflecting on causation, etc.). Based on this perspective, deliberative people (those more inclined to reflect on experience) should show a stronger link from the salient negative experience to GIF. However, we propose that there are other, less deliberative pathways through which negative and highly emotional experiences can increase GIF. For example, uncertainty identity (Hogg 2007), misattribution of arousal (White et al. 1981), and cognitive dissonance theories (Festinger 1957), to name just a few, could all explain how undergoing a negative experience increases GIF through more intuitive, less deliberative processes. Further, work on the function of deliberation suggests that it is more likely to result in self-serving decision making relative to decisions guided by intuition (Bear & Rand 2016; Rand 2016), which seems likely to impede GIF. Finally, group leaders may sometimes intentionally highlight salient, emotional events in an effort to lead others to experience GIF (and, thus, be more likely to fight and die for the cause), and intuitive individuals are likely to be more susceptible to these messages as they are more credulous across a variety of domains (Pennycook & Rand 2018; Pennycook et al. 2015a; Swami et al. 2014). For these various reasons, individuals who rely on intuition may be more likely to become highly fused in response to a negative emotional event.

The second half of the model argues that when those with high GIF are confronted with a threat to their group, they are more likely to respond by engaging in violent self-sacrifice. Incorporating the cognitive style framework, we argue that among those with high GIF, more intuitive individuals are more likely to engage in costly self-sacrifice for at least two reasons.

The first involves ideological belief (most notably religious belief), which has been linked to intuitive processing (Pennycook et al. 2016; Shenhav et al. 2012; Yilmaz et al. 2016). Here, we would expect more intuitive people to more fully (wholeheartedly) embrace religious narratives, including those that endorse martyrdom, life after death, and other cultural belief narratives that mitigate the perceived costs of self-sacrificial acts. More deliberative people, in contrast, may be more skeptical of, and more likely to critique, these specific narratives of the faith.

Second, we would expect more intuitive people to engage in more heuristic-based reasoning, which (in the appropriate circumstances) has also been linked to costly acts of cooperative behavior (Everett et al. 2017; Rand 2016; Rand et al. 2012). Contingent on membership in a close-knit, cooperative community (as one with high GIF and psychological kinship is expected to be), more intuitive individuals would be more likely to engage in costly cooperative behavior, including self-sacrifice (Rand & Epstein 2014).

In sum, we argue that the addition of individual difference frameworks, such as cognitive style, would improve the predictive power of Whitehouse's model, as well as provide insight into the type of messaging that may help prevent acts of self-sacrifice.

Identity fusion "in the wild": Moving toward or away from a general theory of identity fusion?

William B. Swann Jr.[a] and Jolanda Jetten[b]

[a]Department of Psychology, University of Texas at Austin, Austin, TX 78712 and [b]School of Psychology, University of Queensland, St. Lucia, 4072 QLD, Australia.
Swann@utexas.edu https://labs.la.utexas.edu/swann/
j.jetten@psy.uq.edu.au

doi:10.1017/S0140525X18001589, e218

Abstract

Whitehouse's focus on two causes of identity fusion (evolution and shared experiences/biology) deepens understanding of these specific topics. While we applaud his analysis, in his efforts to elaborate these two causes, he has – perhaps unavoidably – produced a narrower conceptualization of identity fusion. This is unfortunate because it undermines his stated goal of developing a more general, encompassing theory.

Whitehouse dissects the antecedents of a form of strong alignment with a group dubbed "identity fusion." He offers many intriguing ideas regarding the causes of fusion in naturally occurring settings, including ones that bear upon topics ranging from how it evolved among our ancestors to the mechanisms through

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

which it leads to terrorism and extreme behaviors today. By offering an anthropological spin on what has heretofore been viewed primarily as a psychological process, Whitehouse offers an exciting new perspective on identity fusion.

As impressed as we were with Whitehouse's insightful analysis, we were ambivalent regarding his assertion that his formulation represents a more general or more encompassing theory than its predecessors (sect. 1, para. 2). Our reservation is that, in several important respects, his analysis is narrower than the original statement of identity fusion theory (Swann et al. 2012). For example, his article engages almost exclusively with one form of fusion (local fusion) and is relatively silent on another form of fusion (extended fusion). Similarly, he focuses on a single consequence of fusion – extreme violence – and the original theory considered additional consequences. True, he goes into greater detail regarding two causes of fusion (evolution and shared experiences/biology) and how these causes are linked to extreme violence. Yet, both of these causes and this outcome were discussed in the original article, and going into these processes in greater depth comes at the cost of diminishing the apparent scope and explanatory power of the theory. From this vantage point, Whitehouse goes deeper on specific aspects of the original formulation, but not broader.

With respect to causes of fusion, Whitehouse argues that the perceptions of shared essence that produce fusion are derived predominantly from either shared dysphoric experiences or similar genes. To his credit, Whitehouse does unpack these two causes in greater detail than previous analyses, thereby providing a deeper understanding of them. Nevertheless, evidence that shared values are independently linked to endorsement of extreme behavior among strongly fused persons (Swann et al. 2014a) is absent from his analysis. Instead, it appears that shared values are reduced to a psychological marker of similar genes. This surely occurs on occasion, but we doubt that people routinely infer shared genes wherever they share values with someone. We believe that the perception of shared values can promote fusion quite independently of the perception of shared genes. This is an important point, because omitting key antecedents of fusion from one's formulation produces an overly narrow analysis.

We also believe that Whitehouse is surely correct in noting that shared dysphoric experiences can trigger fusion. However, he implies that fusion is the inevitable consequence of such experiences, overlooking the fact that such experiences can also have the opposite effect. Whereas natural disasters such as the San Francisco earthquake of 1909 and Hurricane Katrina in 2005 were widely known for bringing people together and encouraging acts of altruism, they were also known to have triggered violence and acts of barbarism against innocents (Solnit 2010). To understand when sharing extreme experiences will trigger fusion, one must consider the broader social context as well as intragroup and intergroup dynamics. For example, out-groups may try to systematically short-circuit the tendency for shared trauma to produce fusion (Kellezi & Reicher 2012). Similarly, when societies have drifted into a state of normlessness or anomie, extreme events may amplify feelings of isolation rather than promote fusion (Teymoori et al. 2017). In short, although Whitehouse has reviewed persuasive evidence that shared trauma can foster fusion among group members, this is only one of several possible outcomes of shared trauma. A general theory should broaden the scope of his analysis to understand the causes and consequences of each of these outcomes.

With respect to the consequences of fusion, Whitehouse's rather narrow focus on violence, terrorism, and extreme behavior overlooks the fact that identity fusion may manifest itself in many other ways. For example, fusion has been linked to charitable giving to members of the in-group (Buhrmester et al. 2018b; Misch et al. 2018; Swann et al. 2010b), donations of time and money to the community following a catastrophic earthquake (Segal et al. 2018), adaptive coping in couples (Walsh & Neff 2018), endorsement of self-sacrifice in intergroup versions of the trolley dilemma (Gómez et al. 2011a; Swann et al. 2010a; 2014b), expected life satisfaction following an election defeat or victory (Buhrmester et al. 2012), plans to remain in the group (Gómez et al. 2011b), curtailing medical aid to an out-group (Fredman et al. 2017), endorsement of granting favors to one's twin (Vázquez et al. 2017), undergoing sex reassignment surgery (Swann et al. 2015), and endorsement of having the group fight for the self (Heger & Gaertner 2018b). One goal for a general theory of fusion would be to develop a common explanatory framework that could accommodate all of the diverse manifestations of identity fusion. More generally, a general theory should explain how these processes might galvanize pro-group behavior, not only among fighters in militias, but also among members of church groups, soccer clubs, and political parties (Swann & Talaifar 2018). Answers to these questions will provide a broader, more comprehensive picture of the role of identity fusion in sacrifice for the group.

These quibbles aside, let us emphasize again that Whitehouse has advanced fusion theory by extending it into the world of anthropology and evolutionary psychology. His insights, together with the empirical contributions he has made to this area, will help inspire future efforts to develop an even fuller understanding of identity fusion and the behaviors it motivates.

Communal sharing/identity fusion does not require reflection on episodic memory of shared experience or trauma – and usually generates kindness

Lotte Thomsen[a,b] and Alan P. Fiske[c]

[a]Department of Psychology, University of Oslo, Norway; [b]Department of Political Science, Aarhus University, Denmark and [c]Department of Anthropology, University of California, Los Angeles, CA 90095.
lotte.thomsen@psykologi.uio.no http://www.sv.uio.no/psi/personer/vit/lottetho/
afiske@ucla.edu https://www.anthro.ucla.edu/faculty/alan-page-fiske

doi:10.1017/S0140525X18001784, e219

Abstract

Identity fusion is remarkably similar to the extensively validated construct of communal sharing, proposed in 1991. Both posit that notions of oneness/unity/equivalence with others underpin altruism. However, we argue that oneness/equivalence instantiates an evolved, innate relational form, marked and constituted by cultural practices making participants' bodies substantially the same. It is intuitive from earliest development, often encompasses persons whom one has never met, and results mostly in caring.

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

Whitehouse proposes that altruistic self-sacrifice stems from identity fusion, "a visceral feeling of oneness with the group," which stems from shared, traumatic, or at least life-altering experience and "perceptions of shared essence" resulting in an all-or-nothing relationship, where you are either included or not.

Relational models theory (Fiske 1991; 1992) posits that communal sharing (CS) is a relationship of equivalence and unity, in which people feel they have a common essence. They communally coordinate resources, decisions, responsibilities, tasks, or whatever matters. Underpinning this relationship of altruistic solidarity – prototypically implemented among close kin – is the mathematical structure of an equivalence relation, homologous to a nominal scale of measurement that results in categorical in–out distinctions. The validity of the CS construct has been established in hundreds of studies by hundreds of authors using all kinds of methods (http://www.sscnet.ucla.edu/anthro/faculty/fiske/RM_PDFs/RM_bibliography.htm). Fiske and Rai (2014) have shown that CS and the other three relational models are moral frameworks that motivate most violence across cultures.

Although identity fusion (IF) is remarkably similar to the CS construct, we fundamentally differ from Whitehouse in our theory of the origins and functional scope of this sense of equivalence.

In Whitehouse's proposal, it is unclear why traumatic experience with present others should result specifically in "visceral oneness" with them, rather than any other relationship, such as relative ranking (e.g., Who is most brave, most loyal, or even dominant?). In contrast, relational models theory explains the range and specificity of experiences of consubstantial assimilation that bond persons in CS relationships by making their bodies equivalent or contiguous (Fiske 2004). CS results from giving birth, nursing, feeding, commensalism, sharing bodily substances (e.g., blood brotherhood rituals), caressing, cuddling and sleeping together, intimate sex, synchronous rhythmic movement, and marking or modifying the body (e.g., circumcision or clitoridectomy), thereby creating the impression of one merged, social body containing the same essence. These bonding experiences are rarely painful, fearful, or in any way traumatic: Shared traumatic experience is not necessary for even the most intense CS, nor is reflection on episodic memory. Furthermore, CS relationships are adaptively essential to, and universally used for, the coordination of labor, consumption, use of resources and land, and everything else social: The feeling of oneness is not an adaptive specialization primarily for killing or dying for the group.

In contrast to our view that CS relationships implement and instantiate an evolved, innate, intuitive relational form, Whitehouse posits that identity fusion results from individual cognitive deliberation. It arises from "internal processes of reflection and individual learning" (sect. 6, para. 7) about dysphoric experiences, where episodic memory of traumatic or life-altering events binds the self to the particular people who participated and to their common social identity. This view predicts that infants could not feel or understand the altruistic implications of social oneness/equivalence, insofar as they are not yet capable of extended cognitive reflection, they have not yet solidified a self-concept, and their explicit episodic memories are limited. But CS and its accompanying altruism are readily intuitive to infants. Indeed, we posit this must be so if they are to solve the fundamental learning problem of figuring out who relates to whom and how (Fiske 1991; Thomsen & Carey 2013).

For example, reflecting the role played by synchronous motion, spatial closeness, and looking and acting alike in constituting CS relations of equivalence, infants expect individuals who move in synchrony and close to each other to later act alike. They infer that imitation, as well as shared ritualistic actions, marks social affiliation motives and group membership (Liberman et al. 2018; Powell & Spelke 2013; 2018). They prefer those who help similar and hinder dissimilar others (Hamlin et al. 2013) and copy the food preferences of helpers over hinderers (Hamlin & Wynn 2012). They expect altruistic support to be selectively directed to in-group members who are marked to look alike (Jin & Baillargeon 2017), overriding fairness considerations (Bian et al. 2018). They also respond with increased helping to primes of closeness and affectionate touch between dolls (Over & Carpenter 2009).

Whitehouse cites experimental evidence that episodic recall of dysphoric experience correlates with altruistic self-sacrifice and that this is mediated by measures of fusion. From this, he infers that traumatic (or at least life-altering) experiences are somehow the essential root of feeling one. However, these effects need not imply that the basic representation of unity and the communal motivations and expectations it entails are created by shared dysphoric, life-altering experiences. Only a small proportion of the people who have had a shared dysphoric experience kill or die because of it. On the contrary, collective trauma typically leads to extraordinary kindness and compassion to everyone around (James 1906; Lessa 1964; Oliver-Smith 1986; Solnit 2009), and only a small proportion of those who kill or die for others have ever met most of the people they kill or die for.

Whitehouse proposes that fusion to imagined communities results from projecting local bonds from personally shared experiences to entire social categories such as nation and religion. However, rather than scaling up a local bond to the whole category, recent empirical evidence demonstrates that people may also fuse to ethnic out-groups across the globe with whom they share political ideology, but no dysphoric experience, let alone shared participation in a face-to-face event (Kunst et al. 2018). This suggests that what is "projected" cannot be concrete personal experience, but must be an innate, intuitive, social relationship of CS. Indeed, intense CS relationships are ubiquitous among people who have never had a traumatic experience or ever met, yet will kill or die for each other (Fiske 1991; Fiske & Rai 2014; Ginges et al. 2007).

Personally shared experiences of trauma are an important bonding mechanism, and people surely reflect on such experiences. However, few, if any survivors of school shootings, for example, are thereby motivated to kill and die for their schoolmates. Feeling and understanding communal sharing are fundamental to human living but do not require or typically stem from cognitive reflection on episodic memory of shared traumatic experiences.

Considering selection pressures for identity fusion and self-sacrifice in small-scale societies

Polly Wiessner

School of Human Evolution and Social Change, Arizona State University, Tempe, AZ 85281.
wiessner@soft-link.com https://shesc.asu.edu/people/pauline-wiessner

doi:10.1017/S0140525X18001681, e220

Abstract

Whitehouse's view that our ultrasocial species evolved in small, warring bands is questioned, and alternative social selection pressures for the evolution of identity fusion and self-sacrifice in small-scale societies are proposed. Short durations of states of fusion allow for re-evaluation of risks; the consolidation of episodic memories into collective oral traditions elicits cooperation. Dysmorphic memories may be more powerful in generating identity fusion when followed by euphoric ones, as in "rites of torture" in male initiations.

Whitehouse's article on identity fusion and extreme self-sacrifice addresses one of the more puzzling questions about human behavior. His central hypotheses, the result of many years of thought and research, are important both scientifically and practically in today's world. The question still remains, however, how identity fusion triggering extreme sacrifice, such as that seen in suicide bombers, could have been selected in our evolutionary past.

Here, I suggest that some of the social selection pressures that brought about the capacity for identity fusion may not have been the same as those that harness it in modern terrorism. Although Whitehouse has conducted extensive work on rituals and social cohesion for groups in a wide range of situations, from religious movements to sports competitions, his suggestions for the selection pressures that shaped identity fusion are extremely reductive: that humans evolved in small warring bands with constant threats of intergroup raiding, warfare, and predation. Could the roots of group identity and fusion really have been so grim for such an extremely ultrasocial species? Neither the archaeological nor ethnographic evidence lends support to this position.

Although there is certainly evidence that warfare was one arrow in the quiver of hunter–gatherer strategies, its frequency and time depth remain a matter of debate (Allen & Jones 2014a; Fry 2005; Keeley 1996). Small, xenophobic communities were unlikely to be the prevailing condition of hunter–gatherers throughout our evolution for a number of reasons. First, sex ratios in small groups are highly variable (Kramer et al. 2017), requiring cultural means to procure suitable mates, for example, arranged marriages over considerable distances (Apostolou 2007; Walker et al. 2011). Marriages created vast networks for mutual exchange, cooperation, and the transmission of cultural innovations to build large "imaginary" communities, in which members did not live contiguously in space (Mulvaney 1976; Wiessner 2014). There is sound evidence for such networks, beginning in the middle and late Stone Age (Gamble 1986; Marean 2015). Second, as life history theory has shown, humans have long childhoods and cooperative child rearing; both biological and affinal kin regularly make sacrifices to raise children in the community (Hrdy 2009). Third, hunter–gatherer territories are extensive, making physical territory maintenance costly. Many hunter–gatherers maintain boundaries peacefully by giving access to resources and alternate residences to those who maintain appropriate reciprocal cooperative ties (Cashdan 1983; Peterson 1976; Wiessner 1986). Fourth, mobility was essential to exploit large, foraging areas and gain access to the resources of those in other territories. Warfare severely limited mobility, leaving belligerent groups few options. Extensive food sharing, singing, night-long dancing and healing, and other forms of collective ritual rejuvenated commitment to all of these shared goals. They also incurred high energetic costs and generated strong bonds of group identity in ceremonies that fused participants (Durkheim 1897 [1951]; Hayden 1987; Kramer & Greaves 2016). Social selection pressures favoring those with the capacity to identify with larger groups and make sacrifices in many areas of life would have been significant. As coalitional violence increased with agriculture and social complexity, these capacities could have been increasingly co-opted for warfare.

Whitehouse's proposal that episodic memory is a mechanism for kin recognition receives much support in the ethnographic literature. History matters greatly for strengthening the ties that bind residential groups and for scaling up a sense of relatedness to much larger groups. Episodes from the past not only are held in individual memories, but are told and retold to produce a repertoire of shared oral traditions to become the collective property of groups (Vansina 1985; Wiessner & Tumu 1998). In oral traditions, some experiences are cleansed, reformulated, and glorified, whereas others are repressed. However, episodic memories are not all positive and also enter into individual evaluations for conditional cooperation, lowering the risk of making sacrifices with unintended outcomes.

Context also matters. Throughout more than 95% of human history, intergroup conflict took place in the context of daily lives, when food had to be procured and families fed. Warriors were grounded by the needs of hearth and home. It is probably for this reason that the emotional states of fusion in small-scale societies without institutionalized leadership are temporary. Participants move in and out of states of fusion, allowing time to reconsider the risks and benefits of self-sacrifice. For example, the Enga of Papua New Guinea experience intensive feelings of brotherhood during war rallies and initial bouts of battle. As wars progress, pragmatic concerns surface and rifts develop (Wiessner, in press). The deaths of "brothers" temporarily revitalize collective energy, but that too may quickly wane. The Yanomani of Venezuela (Chagnon 1992, pp. 197–98) perform fierce rituals before raiding to unite warriors. On the way to the raid, however, some warriors reconsider and drop out after giving a variety of excuses. Therefore, fusion sentiments do not appear to be durable unless continually invigorated by hierarchy of command, propaganda, ritual, and economic surplus.

Whitehouse proposes that shared dysphoric experiences predict strength of fusion and that "rites of terror" in male initiations serve to generate such experiences. Can dysphoric experiences alone suffice in the long run, if not eventually followed by the euphoria of success? Harsh male initiations are largely about older men controlling younger ones to prevent them from disrupting their political agendas, to keep them out of marriage until they are fully mature (freeing more women for their polygymous marriages), and building a cohesive cohort for many purposes. "Boys" who endure the torment are transformed into "young men" who are showered with admiration and praise during emergence celebrations. Dysphoric experiences end in euphoric ones. The cohort can then pursue a variety of cooperative goals defined by community, only one of which is warfare.

Paying attention to the contexts and social selection pressures in which the disposition for fusion and self-sacrifice evolved may help us understand how cultural institutions of today harness these capacities for global political goals.

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

What fuses sports fans?

Dimitris Xygalatas

Department of Anthropology, University of Connecticut, Storrs, CT 06269.
xygalatas@uconn.edu www.xygalatas.com

doi:10.1017/S0140525X18001814, e221

Abstract

Extreme self-sacrifice in the context of phenomena, such as sports hooliganism, combines aspects of local and extended fusion. How can we best account for such phenomena in the light of the theory presented here, and how can we make a tangible distinction between the two types? I propose ways to explore and operationalize this distinction and the concept of fusion more generally.

Whitehouse presents a theory of extreme self-sacrifice by integrating previous theoretical insights with new empirical evidence. At the core of this theory lies the concept of *identity fusion* (Swann et al. 2009), a psychological construct referring to the alignment between personal and social self, which has been found to predict endorsement of violence against out-groups when one's own group is threatened.

One outstanding question with respect to identity fusion is whether it describes a single phenomenon or, instead, is an umbrella term for a number of related phenomena, as this construct has been used to measure bonds that range from dyads (Vázquez et al. 2017) to countries (Swann et al. 2010b). Indeed, the proponents of the theory argue that there are two distinct types of fusion (Swann et al. 2012; Whitehouse 2013): "local fusion," characteristic of small groups, and "extended fusion," found among large "imagined communities." The latter type involves the projection of properties associated with local fusion onto a larger group of anonymous individuals.

There are, however, various settings that do not clearly fall into one category or the other, such as when large groups of people experience fusion as a result of shared arousal, including massive religious and secular rituals, athletic events, demonstrations, and riots. One example of particular relevance for the discussion of extreme self-sacrifice is sporting events, which in many contexts can result in acts of violence, committed by individuals who are willing to put themselves at great risk to antagonize their rivals.

Sports hooliganism is a widespread, ancient (Cameron 1976; Frosdick & Marsh 2013), and puzzling phenomenon. Unlike other forms of violence that might be attributed to particular worldviews, hooliganism typically lacks such an overarching ideological framework, other than the existence of the group itself. Fans do have collective narratives, symbols, and scripts, but those are trivial to the transmission and maintenance of the "faith," so to speak. Extreme levels of commitment to the team are forged not by explicit dogmas, but through the act of participation in collective events that have optimal structural arrangements for generating fusion.

During the game, dedicated fans move and chant in synchrony for hours. Laboratory and field studies show that shared psychophysiological arousal and behavioral coordination can generate identity fusion (Páez et al. 2015), trigger the release of endogenous opioids associated with group bonding (Dunbar 2010; Fischer et al. 2014), and promote pro-social attitudes and behaviors (Xygalatas et al. 2013), even among strangers (Lang et al. 2017; Páez et al. 2015). In the context of a game, these effects are amplified by the size of the collective, the affordances for emotional contagion (Lakin et al. 2003), and an abundance of symbolic group markers. What happens in the pitch, then, is, in this sense, secondary to the fusion process. The dynamics of the game provide emotionally salient external stimuli and goals to which the crowd is attuned, but die-hard fans are forged in the terraces, not on the couch. Fusion, in this context, is created through the "very act of congregating" (Durkheim 1915).

So, which type of fusion are we dealing with in this case? According to the target article, local fusion is associated with imagistic practices, characterized by high arousal, dysphoria, and low frequency and performed among relatively fixed, small-scale, face-to-face groups (Whitehouse 2004). Extended fusion, on the other hand, involves alignment with large, anonymous communities and relies on less direct means, such as shared schemas, scripts, and doctrines not anchored in personal experience but rather acquired through social learning detached from any episodic event. Fusion among football fans does not seem to fall clearly into either mode, involving highly arousing, frequently repeated, ritualized events performed among massive, transient communities.

The question is important for the theory outlined here, as it is suggested (albeit tentatively) that local fusion can motivate extreme self-sacrifice, while extended fusion cannot. To resolve this matter, we need theoretical refinement as well as empirical data. Future research on identity fusion should manipulate its constituent parts independently to study their effects in isolation. For example, will attending a game as part of a small, face-to-face group rather than a large, anonymous crowd result in stronger fusion with the group? I would not be surprised if we found the opposite. Does attending a game in the stadium produce more fusion than watching it on television? I expect it would. And is dysphoric arousal especially potent in producing fusion among fans? A first attempt to answer this question (Whitehouse et al. 2017) produced inconclusive evidence, as the study compared fans of different teams. Future designs should develop longitudinal measures focused on fans of the same team(s).

Importantly, is fusion a predictor of self-sacrificial behavior? So far, the extensive literature on fusion has relied almost entirely on self-reports on hypothetical scenarios, such as trolley dilemmas, that have little to do with the extreme behaviors the theory extrapolates. In fact, some of the findings may be more perplexing than enlightening. For example, college fraternity/sorority members who underwent initiation rituals later expressed a strong willingness to sacrifice themselves for the group (Whitehouse et al. 2017). Given that we never see sorority members engage in suicide missions, this finding highlights some of the problems with such self-reported measures.

Finally, is the hypothesized distinction between local and extended fusion tangible? If so, what might be some of the behavioral and/or physiological correlates of each type? Could we find a behavioral signature for each type, for example, at the level of interpersonal space, postural mimicry, verbal interaction, aggression toward outsiders, and so on? Prior research has found that social proximity predicts higher synchronicity of autonomic responses and brain activity (Parkinson et al. 2018; Xygalatas 2015). Might we observe similar differences between types of fusion?

Whitehouse is clearly aware of these outstanding issues, as well as the importance of framing the theory in terms of falsifiable

predictions. It is now up to the research community to put those predictions to the test.

Author's Response

Four things we need to know about extreme self-sacrifice

Harvey Whitehouse

School of Anthropology and Museum Ethnography, University of Oxford, Oxford OX2 6PE, United Kingdom.
harvey.whitehouse@anthro.ox.ac.uk http://www.harveywhitehouse.com
https://www.icea.ox.ac.uk/people/professor-harvey-whitehouse

doi:10.1017/S0140525X1800208X, e222

Abstract

A comprehensive explanation of extreme self-sacrifice would ideally clarify not only the proximate mechanisms leading to this behaviour, but also its developmental origins, its functions (if any), and its history. The theoretical framework set out in my target article has something to say about all of these dimensions, and many of the criticisms raised in the commentaries can therefore be addressed under those four main headings. In my response, I also discuss a set of proposals for further extending the framework. Finally, I conclude by distilling from the discussion a host of novel questions requiring further investigation.

R1. Introduction

According to the Nobel Prize-winning ethologist Nico Tinbergen, a comprehensive evolutionary account of any phenomenon must address four fundamental questions (Tinbergen 1963): (1) What are immediate proximate causes of the phenomenon? (2) How is it assembled over the course of development? (3) What is its evolved function, if any? (4) What is its evolutionary history? These questions can be asked not only of biologically evolved characteristics (e.g., organs and instincts), but also of culturally evolved features (e.g., institutions and artefacts). All four questions have helped to shape the theory of extreme self-sacrifice set out in my target article. Accordingly, many of the critical commentaries respond to, and can be grouped around, each of Tinbergen's four questions in turn (see Table R1). Towards the end of this response, I discuss separately commentaries seeking to extend, rather than to critique, the pathways-to-fusion framework (see Table R2, sect. R6). I conclude with a short summary of the implications of this wide-ranging discussion for future research on the causes of extreme self-sacrifice.

R2. On mechanism

R2.1. Shared values and beliefs can motivate extreme self-sacrifice

Numerous commentators observed that shared values and beliefs might play an important role in motivating extreme self-sacrifice, either independently of fusion or in tandem with it. **Boudry**, for example, points out that the mass suicides associated with the Heaven's Gate cult or the People's Temple in Jonestown make little sense except in the light of a belief in a better afterlife. But before we can conclude that extreme behaviors in cults are generally a consequence of extreme beliefs, we should also consider coercive leadership, extreme peer pressure, and potentially many other factors. Would any one of the cult followers in the aforementioned groups have gone ahead with their personal suicide mission if all other cultists had decided against it? One of the most robust discoveries of experimental psychology, taken in the round, is that belief alone is a poor predictor of behavior and often constitutes little more than post hoc rationalization. Accordingly, the teachings of cult leaders may be powerless to motivate behavior unless somehow tapping into deeper motivational systems, for example, rooted in kin psychology or us–them coalitional thinking. In short, although there could be multiple factors driving extreme behavior, of which fusion-plus-threat may only be one, we cannot simply assume that extreme beliefs exert a privileged influence independently of other factors. We need evidence to support this.

To this end, **Atran & Gómez** made the case that certain kinds of values (specifically those that have become somehow sacralized) can lead to extreme self-sacrifice and, more to the point in the present context, can do so independently of the effects of fusion. They may well be right about this, but there are reasons to be cautious about the sacred values explanation for self-sacrifice, at least for now. First, the theory of sacred values is currently underspecified, in that we do not know how values become sacralized in the first place, such that people might be willing to fight and die for them. By contrast, we have an elaborated conceptual framework specifying the causal pathways to fusion (summarized in Fig. 1 of the target article) and a growing body of empirical data to support the causal arrows in that model. Second, despite some preliminary data suggesting that fusion and sacred values have distinct psychological effects and behavioral outcomes, evidence that sacred values motivate extreme self-sacrifice in the absence of fusion is lacking or inconclusive. This is not to say that there will never be a theory of what makes certain values sacred and how they can motivate self-sacrifice independently of group alignments. We should continue to explore these issues through rigorous empirical research, building on existing foundations (Atran et al. 2014; Gómez et al. 2017).

The role of values is also emphasized by **Swann & Jetten**. But rather than arguing that values operate independently of fusion, they suggest that shared values can lead to fusion in much the same way as shared experiences and shared biology do. In the context of the general conceptual framework I am advancing, however, sharing cultural beliefs and practices, as well as the group's values, should lead to identification, rather than fusion, as part of what I have called the "doctrinal mode of religiosity" (Whitehouse 2004). Unlike transformative experiences in the imagistic mode, which are both intensely personal and shared with others, doctrinal beliefs and practices are acquired through social learning and, therefore, are defining for the group but not for the essential autobiographical self. Nevertheless, one could imagine how a group's beliefs, practices, and values could become personalized, for example, through participation in commemorative rituals that evoke memories of a shared event (such as a personally experienced civil war) or nationalistic rallies that evoke notions of shared ancestry (such as a common motherland). Therefore, although the distinction between imagistic and

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

Table R1 Tinbergen's questions applied to extreme self-sacrifice

Tinbergen's question on:	Criticism	Commentator
Mechanism	Shared values and beliefs can motivate extreme self-sacrifice	Atran & Gómez; Boudry; Ginges & Shackleford; Kiper & Sosis; Lane, Shults, & Wildman; Swann & Jetten
	Communal sharing rather than fusion explains self-sacrifice	Thomsen & Fiske
	Segregation not fusion increases the effects of out-group threat on extreme self-sacrifice	Kiper and Sosis; Melton and Motyl
	Self-sacrifice is not always about in-groups	Crimston & Hornsey; Elnakouri, McGregor, & Grossman
	Fusion does not always lead to violent extremism	Kiper & Sosis; Xygalatas; Hansen
	Shared trauma can trigger group bonding instantaneously	Lankford; Swann & Jetten; Xygalatas
	Self-sacrifice by fused individuals is motivated by egoism not altruism	Gaertner et al
Development	Fusion has its roots in early childhood	Rochat; Thomsen & Fiske
	Groups come before fusion	Khalil
	If fusion is a slow process, self-sacrifice should increase later in life (but doesn't)	Rosenweig, Ruisch, & Stern
Function	Social signalling explains extreme self-sacrifice	Dessalles
	Extreme self-sacrifice is not an evolutionary puzzle	Colman & Pulford
	Mutualism not kin selection explains extreme self-sacrifice	Marie; Cronk & Aktipis
	Fusion is not an adaptation for intergroup conflict	Wiessner
History	Historical traumas and not just personally experienced ones can motivate fusion	Babińska & Bilewicz
	Relational ties precede groups in the prehistory of self-sacrifice	Palmer & Clark
	To explain the cultural evolution of extreme self-sacrifice historically we must overcome selection bias	Whitehouse

doctrinal modes suggests that fusion and identification are rooted in quite different social and psychological processes, including distinct systems of cultural transmission and memory (Whitehouse 1992; 2004; Whitehouse & Lanman 2014), the overall framework I am proposing also opens up a range of other possible ways in which values and beliefs can become entangled in both forms of group alignment.

The idea that a group's beliefs can become linked with group identity, including group-defining properties and events, is also captured by the notion of "conceptual ties," suggested by **Lane, Shults, & Wildman** (**Lane et al.**). They argue, that although fusion with a local clique based on relational ties may explain some instances of radicalization, often individuals acquire extreme beliefs via the Internet. Lane et al. suggest that the latter may involve a fusion between the personal self and a set of concepts, as espoused online by terrorist organizations. If so, that might reveal yet another distinct pathway to fusion and self-sacrifice. Nevertheless, as the authors of this commentary acknowledge, a lot more empirical work would be needed before such a conclusion could be drawn.

R2.2. Communal sharing rather than fusion explains self-sacrifice

According to **Thomsen & Fiske**, there is a longer-established explanation for self-sacrifice, known as "communal sharing," that obviates the need for fusion theory. Communal sharing proposes a pathway to shared essence based on physical intimacy, cohabitation, commensality, and shared experience. Although Thomsen & Fiske say that communal sharing rarely involves pain, fear, or other dysphoric experiences, they mention, as examples of communal experiences that give rise to shared essence, such practices as "blood brotherhood rituals," circumcision, clitoridectomy, and giving birth. We have collected data indicating that at least some of these kinds of life experiences do indeed have dysphoric elements that can contribute to processes of fusion with others who have also undergone them (Kavanagh et al. 2018; Whitehouse & Lanman 2014; Whitehouse et al. 2017). Those forms of communal sharing mentioned by Thomsen and Fiske that do not fit with our imagistic-pathway-to-fusion model would nevertheless seem to fit well with our shared biology pathway, insofar as they emphasize bonds of kinship via nursing, feeding, commensalism, and so on (Vázquez et al. 2017). The main exception to this is social synchrony, which the pathways-to-fusion framework also encompasses (Jackson et al. 2018; Reddish et al. 2016), but in a model leading to state fusion rather than trait fusion (Swann et al. 2012). State fusion results from a temporarily elevated experience of shared essence, which, in the case of social synchrony, appears to be prompted by the illusion that one's agency and that of the group are combined (Reddish et al., in preparation). When the experience of social synchrony ends, however, the effect goes away. Trait fusion, by contrast, is an enduring form of group alignment rooted in long-lasting episodic memories, protracted reflection, and phenotypic matching

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

(Jong et al. 2015; Whitehouse & Lanman 2014). The theory of communal sharing lumps all of these distinct elements together and, arguably, underspecifies the mechanisms by which they lead to self-sacrifice. Nevertheless, if theories of communal sharing and of multiple pathways to fusion were to make contrasting predictions, then it would be good to devise ways of adjudicating between them experimentally.

R2.3. Segregation not fusion increases the effects of out-group threat on extreme self-sacrifice

Two of the commentaries suggest that segregation could moderate the relationship between out-group threat and extreme self-sacrifice. **Kiper & Sosis** cite research showing that reduced contact with an out-group is associated with increased risk of violent expressions of hostility. The idea is developed more fully by **Melton and Motyl**, who argue that when groups form enclaves, they adopt increasingly hostile attitudes toward out-groups, whereas, by contrast, when groups regularly encounter rival groups in peaceful settings they are less likely to develop extremist and violent attitudes toward out-groups. As argued above, however, it is important to distinguish hostile beliefs, norms, and attitudes toward out-groups from actual willingness to fight and die for one's in-group. Melton and Motyl appear to regard these as more or less synonymous, but perhaps a more plausible hypothesis would be that the isolation of in-groups is more likely to lead to violent self-sacrifice when in-group members are highly fused and also threatened by an out-group. In other words, our respective frameworks may work better in combination, rather than as rival explanations. Future research should explore the possibility that enclave formation moderates the relationship between fusion and out-group threat, on the one hand, and extreme self-sacrifice as outcome variable, on the other. Again, however, the question will be how much greater predictive power can be gained by adding additional moderators to the conceptual framework.

R2.4. Self-sacrifice is not always about in-groups

Several commentators observed that people sometimes make sacrifices for the sake of others who are not members of their in-groups. **Crimston & Hornsey**, for example, summarize research showing that people who score high on a "moral expansiveness scale" (measuring the range of entities one considers worthy of moral concern and care) were also more likely to express a willingness to donate organs or even give up their lives for members of out-groups and other animal species and even to save trees (Crimston et al. 2016). Arguably, a limitation of the moral expansiveness research is that it only measures norms concerning the moral worth of various entities relative to self rather than group, and these norms may not predict behavior (i.e., people may not practice what they preach).

Even setting aside those concerns, it is not entirely clear how **Crimston & Hornsey**'s observations relate to the arguments advanced in the target article. Previous research has shown that fusion can be extended not only to very large in-groups (such as nation, ethnic group, and world religion), but also to other species (Buhrmester et al. 2018a) and even to supernatural beings (Buhrmester & Lanman, in preparation). Nevertheless, in all of these cases, the fusion target may be describable as an in-group from the fuser's perspective. For example, although social synchrony has been shown to generate fusion with out-groups (Reddish et al. 2016), at the moment when "state fusion" is measured, the out-group seems to be functioning as an extended in-group (e.g., humanity at large), albeit temporarily. As such, fusion could conceivably motivate self-sacrifice toward groups usually regarded as rivals or enemies.

Relatedly, **Elnakouri, McGregor, & Grossman** (**Elnakouri et al.**) observe that some people fight for the rights of out-groups (e.g., white Americans who campaigned for the abolition of slavery), even if this means risking life and limb. But again, it seems plausible that those who join the fight against social injustices are in fact strongly aligned with the downtrodden and oppressed, far from regarding them as an out-group. To the extent that white people in the past were willing to put their lives on the line to abolish slavery in America or apartheid in South Africa, they may indeed have been fused with oppressed groups despite differences in culture and ethnicity. Although we cannot directly measure fusion in historical populations no longer living, we do have evidence that fusion can cut across cultural and even species boundaries (Buhrmester et al. 2018a).

R2.5. Fusion does not always lead to violent extremism

A few commentators mistook me to be arguing that fusion is invariably associated with violent extremism. Indeed, **Kiper and Sosis** went so far as to suggest that fusion and extreme self-sacrifice are essentially the same thing and, therefore, judged the argument to be circular. The reality, however, is that fusion is a psychological construct, and extreme self-sacrifice is a behavior. One could logically occur in the absence of the other, and my argument was, in fact, that they do. For example, it was emphasized that fused individuals do not engage in extreme self-sacrifice unless a plausible threat is present and also that there are other potential causes of self-sacrifice besides fusion. The same might be said in response to **Xygalatas**' observation that fused members of university sororities and fraternities generally do not carry out suicide attacks. The argument is not that fusion always leads to suicide bombings, still less that fusion and self-sacrifice are the same thing. On the contrary, fused groups do not care very much about out-groups unless they present a danger. We know little about how members of fraternities or sororities would respond if they were persecuted or threatened with violence.

A related criticism, however, is that even if fusion does motivate violence or extreme self-sacrifice, it might not motivate both. **Hansen** argues that fighting and dying are conceptually distinct and perhaps even negatively related. It is indeed true that one can be willing to fight but not die or to die but not fight. But the reason the two are conjoined in our conceptual framework is because a host of previous research studies have shown that fusion predicts willingness to fight and die (i.e., both together), as measured using a single well-validated "fight and die" scale (Swann et al. 2014a). Hansen's hunch that fusion may better predict "die than fight" is intriguing, but we lack direct evidence of this using fusion measures, so this is something to explore in future research.

Several commentators pointed out that fusion can motivate peaceful as well as violent forms of pro-sociality. **Swann and Jetten** argue that much more could be said on that topic, as I too have argued elsewhere (Whitehouse 2013). Nevertheless, the target article was primarily attempting to explain why some people will fight and die for their groups rather than to catalog all of the "nice" outcomes of loving one's group. The same may be said in response to **Olivola**'s observation that people make many kinds of sacrifices, not just violent ones, as well as **Thomsen & Fiske**'s point that the sharing of traumatic experiences can lead to caring

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

and compassion rather than to violence. Again, I agree, and this is precisely why I argued that when fusion is directed toward anti-social outcomes, as in the case of football hooliganism, it might be possible to channel it in more positive directions, for example, in support of charitable causes. Olivola insists that self-sacrifice for charities is not motivated by fusion, but surely that is an open question empirically? Several studies have indeed shown that fusion can be a potent motivator of charitable giving, including donations of blood and money (Buhrmester et al. 2013), not only to assist strangers but even to help protect other species (Buhrmester et al. 2018a). So, the point is well taken that a broader discussion of the role of fusion in motivating costly pro-social action should encompass research into these forms of peaceful self-sacrifice.

R2.6. Shared trauma can trigger group bonding instantaneously

According to the conceptual framework I have presented, shared experiences (perhaps shared suffering in particular) lead to fusion gradually over time, via processes of remembering and reflecting on the experience for a long period afterwards, with the result that the event and its significance form an indelible part of one's personal identity as well as one's group identity. Several commentators argued, by contrast, that the link between trauma and social cohesion may be much more immediate. Consider, for instance, the idea that when the group comes under attack, its members will spontaneously band together, realizing that their chances of survival will increase if they stick together. **Lankford** argues that this, rather than identity fusion, explains social bonding in response to shared dysphoric experiences. Lankford's argument fits quite well with the idea, discussed in the target article, that identification motivates ingroup bias and out-group derogation, albeit, not at the cost of individual survival. From a "strength in numbers" perspective, one should cling to the group as long as it remains strong, but defect if it weakens. Therefore, when two individuals are isolated from the herd, it makes evolutionary sense for the stronger individual to hamper the weaker one if that will improve its own chances of escape. Efforts to disguise these inconvenient truths might well lead, as Lankford suggests, to overinflated claims of loyalty and willingness to self-sacrifice. But even if such claims sometimes amount to empty hyperbole and bravado that does not mean that they are never sincere.

The target article summarized numerous studies showing that fused individuals really are willing to lay down their lives for their groups. This willingness, however, is not triggered instantly in response to the appearance of a threat, as predicted by the strength in numbers hypothesis. Fusion comes about gradually, as a consequence of reflection on transformative experiences shared with other group members (Buhrmester et al. 2018a; Jong et al. 2015). As a result of these processes, fused individuals show a strong tendency to jeopardize not only their own welfare, but also that of other group members, to act in the interests of the group as a whole. A good example of this would be whistleblowers (Buhrmester 2013), who, if acting purely in the interests of self-preservation, would be far better off looking the other way, just like many others around them. The strength in numbers argument cannot account for this.

Although **Swann and Jetten** agree that sharing dysphoric experiences can lead to fusion, like **Lankford**, they suggest that it does so instantaneously as a kind of triggering effect. And from that perspective, they observe that dysphoric experiences might just as easily lead to antisocial behavior, such as random violence and looting. True, there may be many ways in which people respond to disasters in the heat of the moment, but the shared experience pathway to fusion is about the long-term effects of such events on the formation of the personal self and on group identity. As already noted, recent longitudinal studies provide compelling evidence that the process of fusing with a group in this way is gradual rather than instantaneous, and this is key to explaining the enduring nature of trait fusion. Far from being a knee-jerk reaction to one's immediate environment, trait fusion is a result of fundamental and durable changes to one's identity that take significant time to assemble (see above).

Although the main focus of the target article was on trait fusion, there is also burgeoning literature on so-called state fusion, a temporary sense of oneness with others following a priming event that fades soon after the event has passed. Such events are typically positive and even euphoric, rather than traumatic. **Xygalatas** focuses on examples of such events in the context of spectator sports, in which huge crowds engage in singing, chanting, and other collective rituals. Xygalatas argues that the state fusion generated by such events may be neither local nor extended. This is an interesting point. A recent study of the effects of social synchrony (which, of course, abounds in football crowds) found that moving in time with others increases state fusion, not only toward co-participants but also toward anonymous members of an extended in-group (Reddish et al. 2016). More strikingly, those assigned to the synchronous condition in this study experienced elevated state fusion even toward members of an out-group. This suggests that certain kinds of collective experiences can increase fusion with others in general. It is possible that military rituals elevating state fusion prior to combat have long helped motivate warriors to fight and die on the battlefield, not because they foment hatred of the enemy but because they create a sense of expanded agency, invulnerability, and, therefore, courage in battle.

R2.7. Self-sacrifice by fused individuals is motivated by egoism not altruism

The identity synergy theory of fusion (Swann et al. 2012) proposes that activation of personal identity in a fused individual also activates group identity and vice versa. This would explain why fused individuals take any attack on the group personally and therefore sacrifice self for group, as many past studies suggest. But it also raises the question of whether it cuts both ways, such that fused individuals would show greater willingness to sacrifice group for self. **Gaertner, Heger, & Sedikides** (**Gaertner et al.**) summarize the results of recent studies, suggesting this is indeed the case and supporting their view that the reason fusion increases willingness to fight and die for a group is not because of elevated altruistic feelings and diminished concern for self-preservation but because egoistic motivations are put into the service of group goals. This point is well taken, and future studies should seek to establish whether egoism, rather than altruism, motivates actual (as opposed to hypothetical), willingness of fused individuals to put their lives on the line to save the group, for example, in front-line armed combat or suicide missions. That said, even if the psychological motivation to sacrifice self for the group is egoistic rather than altruistic in fused individuals, the behavior would nevertheless still be describable as altruistic (i.e., benefitting others at cost to self).

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

R3. On development

R3.1. Fusion has its roots in early childhood

According to **Rochat** and also **Thomsen & Fiske**, the building blocks of identity fusion develop very early. Rochat traces fusion to conformism bias and sensitivity to ostracism in early childhood, as well as attentiveness to cues signaling socially salient group differences such as those based on gender, race, and economic status. Thomsen & Fisk trace the roots of altruism even further back, to infancy. There is indeed good evidence that from an early age, children show a strong desire to affiliate with groups and avoid exclusion. In a series of collaborations with developmental psychologists, we have found evidence that group identity markers, such as cultural rituals and conventions, motivate conformism and reduce independent innovation in preschool children (Legare et al. 2015), while also leading them to cleave to local customs even more closely when primed with ostracism threats (Watson-Jones et al. 2014; 2016). But this is not the same as fusing with a group.

Nor can I agree with **Rochat's** claim that "dying for the group is nothing more than the extreme uncanny expression of the developing human need to affiliate and the deep fear of being rejected by those who provide basic support" (para. 4). Most children wish to join groups and avoid rejection by them but would not be willing to lay down their lives to protect the group against its enemies. Efforts to uncover the developmental pathways to fusion are only preliminary (Gaviria et al. 2015), but early evidence suggests that the ability to fuse with a group, in the way that adults do, actually emerges relatively late in development, during adolescence (Tasuji et al., in preparation).

R3.2. Groups come before fusion

The idea that people can fuse with a group raises the question of what comes first, a group identity or fusion with others, although it is also possible that these processes unfold together, interactively, or in some kind of feedback loop. **Khalil** argues that group identity must be established first, before a process of fusion can occur. It is not clear whether he means by this that group identity is logically prior to fusion with a group or if this is a developmental claim, in the sense that the capacity to identify with a group emerges earlier in life than the ability to fuse. Arguably, both claims have some prima facie plausibility. Much depends, however, on what one means by a "group." In the target article, a key distinction was made between (1) local groups based on relational ties (ranging from dyadic ties between siblings, as in the case of our twins studies, through to larger networks of family-like bonds in a military unit or football team), and (2) extended groups based on categorical ties (ranging from a territorially bounded country to a globally distributed religious tradition, or ethnicity). As noted above, although children are sensitive to the presence of both local and extended groups from an early age, on the basis of current evidence, the ability to fuse with groups comes later. So, in that sense, Khalil may be right that groups come before fusion.

On the other hand, not all groups we fuse with are ones that we have grown up with. People commonly form or join groups in adolescence or adulthood, and although this could occur prior to fusing, that is not necessarily the case. For example, adult victims of a terrorist attack might have memories of shared suffering with others that subsequently lead to the formation of a highly fused group of survivors. Rather than insisting that groups always come before fusion or that fusion always comes before groups, it seems more realistic to entertain both possibilities, as well as scenarios in which both develop in tandem.

R3.3. If fusion is a slow process, self-sacrifice should increase later in life (but doesn't)

As noted earlier, in response to commentaries suggesting that fusion is triggered instantaneously by negative events, the imagistic pathway to fusion model actually proposes a more gradual process of remembering, reflection, and identity transformation that slowly and incrementally fuses personal and group selves. As **Rosenzweig, Ruisch, & Stern** (**Rosenzweig et al.**) observe, however, if that account is correct, then surely fusion should increase in a linear fashion over the life cycle, with highest levels of fusion being apparent among the elderly who have had longer to accumulate shared experiences and to reflect on them. Such an inference was not intended, however. In fact, initial efforts to test the "imagistic pathway" model longitudinally suggest that the process takes months or at most a few years (but not decades) to complete (Buhrmester et al. 2018a). This suggests that "trait fusion," a stable and potentially lifelong feeling of oneness with the group, may be assembled quite early in life. Interestingly, this is the opposite of what dissonance theory would predict, namely, that the longer people invest time and resources in a group, the more loyal its members will be. Both hypotheses were recently put head to head in a study of lifelong loyalty among football fans, supporting the hypothesis that fusion results from shared life-shaping experiences but that dissonance does not contribute to this causal chain (Newson et al. 2016).

In short, fusion would not be expected to increase steadily over a person's life span, and is more likely to emerge over a shorter time frame and then stabilize. Still, **Rosenzweig et al.** observe that extreme self-sacrifice is more likely to occur in adolescence or early adulthood, and the framework proposed in my target article does not adequately explain why. They propose an intriguing answer to this question. Late adolescence is a period in which identity salience is especially high, potentially moderating the extent to which shared experiences produce fusion and to which already fused individuals are willing to die for the group. These proposals are consistent with existing evidence and well motivated theoretically and, as such, should be the subject of future investigations.

R4. On function

R4.1. Social signalling explains extreme self-sacrifice

Efforts to demonstrate a biologically evolved function of extreme self-sacrifice often appeal to kin selection by arguing that even though heroes may take themselves out of the gene pool, relatives of heroes consistently accrue enough of a reproductive advantage for this to become an adaptive strategy over many generations. **Dessalles** argues that the demise of heroes benefits their kin by raising their social status. Heroes signal that they are good friends, especially in times of war. Being friends with a hero, presumably, makes people more likely to come under their protection. So, this type of "primary order social signalling" would explain why people want to befriend a hero. But how and why should their families benefit from this? Here, the argument becomes a little more complicated. If one cannot befriend a hero directly, then one should at least try to ingratiate oneself with her or his family

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

and social network. This would explain why a hero's kith and kin are granted higher status. Maybe, but why then should this status persist after the hero dies? Again, Dessalles has an answer: This is due to "secondary order social signalling," whereby those honouring both heroes and their families derive status themselves by demonstrating that they are good patriots.

Each step of the social signalling argument raises thorny questions, however. Does it really make good evolutionary sense to seek the friendship of heroes? The implication is that friends of heroes benefit preferentially from their protection, but one might equally argue that the point of heroism is that it isn't directed only to one's friends. In addition, hanging out with heroes might actually be quite dangerous, carrying an obligation to act bravely as well. Moreover, once the social signalling argument appeals to secondary-order functions, it becomes even more tortuous. Given that the cost of honoring heroes may be low and the risk of insincerity high, in what sense is this a valid social signal at all? It is hard to see how this effort to explain the evolution of self-sacrifice improves upon the explanations already proposed in the target article. Whereas the latter have produced hypotheses capable of being tested via both mathematical models and empirical research (Whitehouse & Lanman 2014; Whitehouse et al. 2017), the predictions of social signalling theory, in this context, are somewhat obscure.

R4.2. Extreme self-sacrifice is not an evolutionary puzzle

In contrast with **Dessalles,** who tries to solve the puzzle of how extreme self-sacrifice could have evolved, **Colman & Pulford** argue that there is nothing puzzling to explain. According to the latter, self-sacrifice is only puzzling if one proceeds from the assumption that humans are basically selfish – or to use their term, "psychological egoists." But this assumption, they argue, is either tautological (because humans are selfish, every apparently altruistic act is really selfish ultimately) or false (contrary to empirical evidence that humans are naturally altruistic, or at least some are, under certain conditions). Colman & Pulford proceed to list various types of evidence that humans act altruistically and argue that we should not find this surprising. What remains unclear, however, is whether they actually intend to challenge the selfish gene hypothesis, according to which self-sacrifice in the absence of selfish genetic benefits cannot become an evolutionary stable strategy. None of the arguments or evidence presented actually constitutes a viable challenge to this hypothesis. Humans, like all other species, are indeed motivated to maximise access to resources that will quench their selfish appetites. But to the extent that cooperation can improve access to such resources, and solve the free-rider problem, cooperative behaviour can evolve. This still does not explain extreme self-sacrifice, however. For such behaviour to become biologically adaptive, it must result in the individuals who perform the behaviour leaving more copies of their genes than those who do not. This is indeed a puzzle on the face of it, because dying is not an obviously good way of passing on one's genes. That is why people like Dessalles invoke kin selection as an explanation.

R4.3. Mutualism not kin selection explains extreme self-sacrifice

Strong forms of mutualism provide an elegant and compelling explanation for heroic behaviour on the battlefield, based on the logic I'll die for you, if you'll die for me, if (as a consequence) we both stand less chance of dying. **Marie** argues that costly signals of commitment in war could simply be scaled-up versions of the more general human propensity to secure assistance from others by signalling pro-sociality. The main difference is that on the battlefield, individual survival prospects depend more urgently on the protectiveness of one's fellows despite high personal risk than in peaceful conditions. If the evolved function of heroism is to increase one's chances of survival, then the death of a valiant fighter is always unintended. In principle, this account may be consistent with the conceptual framework presented in my target article, not only the imagistic-pathway-to-fusion account (whereby the horrors of combat, for example, lead to heightened commitment to one's in-group), but also the ultimate explanations proposed, because strong mutualism does not rule out other explanations (e.g., kin selection). Another version of this argument, which explicitly connects with kin psychology, is provided by **Cronk & Aktipis**' description of fitness interdependence, that is, the extent to which one individual influences the survival and reproduction of another. Extreme self-sacrifice is most commonly observed in biological systems exhibiting high levels of fitness interdependence. Moreover, certain situations entail higher levels of fitness interdependence than others, for instance, cooperatively fending off a predator. In human societies, warfare would increase fitness interdependence, motivating higher levels of self-sacrifice, perhaps recruiting kin psychology in the process. These are all interesting proposals that need to be tested.

R4.4. Fusion is not an adaptation for intergroup conflict

The idea that fusion evolved under conditions of widespread and chronic warfare is questioned by **Wiessner** based on the following considerations: First, the need to procure suitable mates would have necessitated intergroup marriage and, therefore, peaceful, rather than warlike, intergroup relations. I am not so sure. Methods of procuring mates in the ancestral past need not have been exclusively peaceful, and the practice of bride capture is quite compatible with intergroup raiding and warfare. Second, lengthy childhood dependency encourages cooperative rearing practices, requiring in-group cohesion. Although apparently intended as an argument against the prevalence of intergroup conflict in ancestral societies, it is not clear why. Third, hunter–gatherers require large territories and a cooperative approach to facilitating access to each other. In support of this, Wiessner alludes to contemporary foraging societies famous for their peaceful egalitarianism but does not mention more warlike hunter–gatherers that until recently harboured imagistic warrior cults and high levels of intergroup conflict (Allen & Jones 2014b; Pinker 2011). Fourth, warfare limits mobility, "leaving belligerent groups few options" (para. 3). The logic here seems to be that warlike foraging bands would have had more limited opportunities to access the resources of their more peaceful neighbours. But surely the opposite is likely to have been true: More assertive groups willing to resort to violence would have had better access to resources than those inclined to appease or flee.

R5. On history

R5.1. Historical traumas and not just personally experienced ones can motivate fusion

Babińska and Bilewicz makes the important point that if shared suffering can be experienced vicariously, and not just directly, this

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

means that historical traumas and other group-defining events in the past could drive fusion in subsequent generations. Babińska and Bilewicz argue that this process operates at the level of extended rather than local groups, but that local fusion based on directly shared experiences in the present can in turn strengthen reciprocally the connection to ancestral struggles. Although we might disagree about the details of how this could work (e.g., Babińska and Bilewicz equate extended fusion with strong identification, whereas I regard these as quite distinct constructs), it is surely an interesting question about the way in which fusion is generated and passed on within groups.

Arguably, the distinction between vicariously and directly shared experiences need not correspond in any simple way to the distinction between extended and local fusion. Indeed, one could share experiences vicariously via relational ties in a local group, such as family (e.g., children adopting the group alignments of their parents based on empathetically reliving the latter's experiences), and not just in an extended group (e.g., the descendants of an oppressed religious sect re-experiencing the persecutions of their forebears). At any rate, the broader point is that history may heavily influence group alignments in the present and give rise not only to fusion – whether extended or local – but also to perceptions of out-group threat, potentially fueling extreme self-sacrifice among generations to come. If that is the case, this is an issue of high importance not only scientifically but potentially also from a policy perspective.

R5.2. Relational ties precede groups in the prehistory of self-sacrifice

Palmer and Clark argue that groups cannot be regarded as relevant entities in explaining self-sacrificial behavior:

> It is neither necessary nor accurate to describe self-sacrifice as being performed for some "group," nor caused by fusion with that "group." The ethnographic record describes the gatherings of foragers as fluid, with individuals who are kin gathering, dispersing, and regathering in different combinations. Although the fluidity of "groups" is often claimed to be compatible with multilevel selection, surely there is some degree of fluidity past which claims of individuals being divided into "groups" becomes false. (para 2)

This passage seems to suggest that Palmer and Clark do not believe humans align with and act as groups, or at least that foraging societies do not. Setting aside the risks of generalizing from contemporary acephalous hunter–gatherers to prehistoric societies, the argument that people do not fuse with (or presumably identify with or even recognize the existence of) groups is somewhat baffling, given the weight of empirical evidence to the contrary. If what Palmer and Clark mean is simply that the groups people believe they are dying for when they go into battle are actually mental constructs rather than objective features of the world, that may be true in some (obscure) sense but is it relevant? Arguably, what matters for our purposes is that people do indeed align with entities they construe to be groups, as well as with relational ties, and sometimes these alignments are so strong they are willing to fight and die to protect those in-groups against out-groups. Reconstructing the history of these behaviors is no easy task, requiring triangulation across multiple sources of theory and evidence – not only ethnography (to which Palmer and Clark appeal), but also such disciplines as archaeology, history, evolutionary anthropology, and primatology. One of the most serious challenges facing this endeavour, however, is the temptation to cherry pick cultural traits or features of social morphology and assemble them into just-so stories about the evolution of human civilizations. To avoid this problem, we need to use evidence about the past in new ways, as argued in the ensuing subsection.

R5.3. To explain the cultural evolution of extreme self-sacrifice historically we must overcome selection bias

Although Tinbergen's fourth question, pertaining to the shaping and constraining effects of history in the evolution of traits, is just as important as the other three, it attracted the least sustained attention in the commentaries. Nevertheless, my target article advanced a series of specific claims about the way local fusion and its capacity to motivate extreme self-sacrifice have been shaped historically, with the evolution of social complexity. For example, I argued that although highly fused "bands of brothers" have always been a recurrent feature of small-scale societies engaged in high-risk pursuits such as raiding, warfare, and large game hunting, the rise of states and empires tended to outlaw and marginalize such groups as a threat to centralized authority, or else harnessed the power of local fusion in highly restricted and carefully controlled environments such as the military and elite institutions. This is a testable claim but also one that has yet to be investigated systematically. Efforts to explore the evidence from history and archaeology focusing on case studies (Martin & Whitehouse 2005; Whitehouse & Martin 2004) have always been vulnerable to the charge of cherry picking examples that fit the theory. The challenge is to devise a method of testing theories of the evolution of self-sacrifice more objectively, especially in ways that overcome the problem of selection bias. I therefore direct this criticism to myself and attempt to address it.

One solution to the problem of selection bias is to quantify patterns in human history, while controlling for non-independence, so that we can test competing hypotheses systematically. The target article introduced one such ambitious effort known as *Seshat*: Global History Databank (Turchin et al. 2015; 2018; Whitehouse 2016b). A promising feature of this approach is that it will enable researchers to test not only the aforementioned predictions about the fate of imagistic groups, but also a range of alternative theories, including those that make even more precise or nuanced predictions about the role of group psychology in extreme self-sacrifice. For example, the "local fusion plus threat" model of self-sacrifice proposed here might be better able to explain the ebb and flow of specific practices such as suicide terrorism by adding just one or a few additional variables into the mix (e.g., histories of appeasement on the part of ruling groups).

R6. Extending the framework

As well as critiquing the conceptual framework advanced in the target article, some of the commentaries propose ways of extending it in novel directions. The boundary between critiquing and extending can be blurry, of course. For example, some of the criticisms fielded above also suggest the possibility of extending the framework by taking additional variables into account. Nevertheless, in this section of the response, I consider commentaries that are primarily seeking to add to, rather than to contest, the conceptual framework, as presented. In terms of Tinbergen's four questions, all commentaries treated in this final part of the response are concerned primarily with problems of proximate causation.

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

Table R2 Proposed extensions to the conceptual framework

Extension proposal	Commentator
Entitativity explains why terrorists target the innocent and inherit grievances	Choi, Jackson, & Gelfand
Violence-condoning norms contribute to violent extremism	Ginges & Shackleford; Elnakouri, McGregor, & Grossman; Louis, McGarty, Thomas, Amiot, & Moghaddam
Individual differences predict propensity to fuse and sacrifice self	Stagnaro, Littman, & Rand; Rahal

R6.1. Entitativity explains why terrorists target the innocent and inherit grievances

Even if the fusion plus threat formula explains willingness to lay down one's life to defend the group, it would not explain why so many terrorist attacks target the innocent. **Choi, Jackson, & Gelfand** (**Choi et al.**) argue that this is due to the attribution of entitativity to out-groups, such that all of their members are seen as equally culpable for past offenses and, therefore, equally suitable as targets for revenge. Moreover, they suggest that this same logic of entitativity would explain why grievances often get passed down through the generations and why armed groups may claim to be defending an ancestral group as if its members were still alive today. Considering first the question why terrorists target the innocent, a plausible alternative explanation is that they do so for tactical reasons, for example, to frighten the population at large and thereby pressurize governments to accede to their demands (Pape 2005). If killing and maiming the innocent are primarily a tactic, then entitativity may contribute mainly to the construction of post hoc rationales rather than a desire to harm bystanders. This could explain why some members of terrorist organizations, such as former Jemaah Islamiya member Nasir Abbas, have disputed the rightness of targeting civilians while still defending the right to kill out-group members bearing arms.

The inheritance of grievances over the generations also raises interesting questions. Although entitativity may well play a role, another factor worth considering may be vicarious episodic memory. It is possible that some people identify so closely with the narratives of parents, grandparents, or even more ancient ancestors that their sufferings come to be functionally equivalent to personal experiences in autobiographical memory. If so, vicarious shared experiences could form a basis for fusion with a historical group, just as with a contemporary one. This possibility, as well as the entitativity proposal, suggests exciting new directions for research on extreme self-sacrifice.

R6.2. Violence-condoning norms contribute to violent extremism

Louis, McGarty, Thomas, Amiot, & Moghaddam (**Louis et al.**); **Elnakouri et al.**; and **Ginges and Shackelford** point out that not all fused groups that come under attack respond with violence, and those that do typically subscribe to violence-condoning norms (Newson et al. 2018). Elnakouri et al. add a further interesting layer to this line of argument by suggesting that violence-condoning norms arise, and are more enthusiastically endorsed, in response to environmental threat. In addition to looking more closely at the role of norms, Louis et al. identify other variables that may contribute to fused groups turning to violence in the face of out-group threats, such as the absence of peaceful means of defending the group's interests. To this, we might add that access to weaponry, such as guns and explosives, could increase the risk of fused groups' turning to violence in the face of threat, although we also have many examples of suicide terrorists using everyday objects (e.g., ranging from knives to vehicles), rather than military-grade weapons, to carry out attacks. As the conceptual framework evolves, it will probably be necessary to add new mediations and moderated mediations but the costs in complexity will need to be weighed against empirical gains, as determined by future research.

R6.3. Individual differences predict propensity to fuse and sacrifice self

Stagnaro, Littman, & Rand (**Stagnaro et al.**) and **Rahal** point out that not only situational factors but also individual differences could help explain extreme self-sacrifice. Stagnaro et al. argue that individuals who have a more intuitive rather than deliberative cognitive style may be more likely to fuse with a group and to act impulsively on the urge to protect it against out-group attacks, an observation that finds some support in empirical research (Fredman et al. 2017). Further, they suggest that other individual differences, for example, with respect to attachment, aggression, and empathy, could also increase willingness to sacrifice self for group. These suggestions seem worth investigating further but, as Stagnaro et al. also recognize, the process of fusing is often highly deliberative rather than intuitive (Jong et al. 2015). In a somewhat similar vein, Rahal argues that individual-level tendencies toward self-harming behavior, as well as willingness to join in intergroup conflicts, might increase the probability that somebody would be willing to fight and die for a group. These suggestions are all well taken. Nevertheless, it should be noted that early efforts to investigate whether identity fusion taps individual differences – including empathy, aggressiveness, self-efficacy, self-concept clarification, and essentialism – found no evidence for this (Gómez et al. 2011a). Moreover, although one can see why differences in aggressiveness might be thought to affect levels of out-group hostility, it is not clear how they relate to willingness to sacrifice self for group, one of the key issues under consideration here.

R7. Conclusions and future directions

Taking the commentaries as a whole, it is possible to distinguish six clusters of questions that warrant further investigation. One cluster concerns the role of belief. For example, do beliefs motivate extreme self-sacrifice independently of identity fusion? Or alternatively, does sharing a set of core values constitute an additional pathway to fusion (alongside shared experience and shared biology)? Is threatening a group's beliefs equivalent psychologically to threatening its individual members?

A second cluster concerns the psychology of fusion itself. When highly fused individuals act to defend their groups, are

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

they motivated by egoism (e.g., self-preservation) or altruism (e.g., concern for the welfare of others)? What can studies of social synchrony tell us about the mechanisms underlying identity fusion? How long does it take for a shared experience to increase trait fusion and what exactly is the process?

A third cluster concerns changes in fusion over the life cycle. For example, do different pathways to fusion emerge during different periods of development (or, does the shared biology pathway become established earlier than the shared experience one)? Does group psychology emerge prior to the capacity to fuse or the other way around? Or neither? Why are fused adolescents, and especially male adolescents, more likely to fight and die for a group?

A fourth cluster focuses on the nature and diversity of fusion targets. For example, how does fusion with a relational group differ from fusion with a group category? How far can fusion be extended? Can one fuse with anyone or anything? To what extent does moral expansiveness affect the degree to which fusion can be extended to encompass species and even objects and concepts unrelated to any in-group?

A fifth cluster of questions concerns the nature of the link between fusion and self-sacrifice. In addition to out-group threat, several potential moderators of the relationship between fusion and violent self-sacrifice were suggested, including violence-condoning norms, access to deadly weapons, absence of peaceful mechanisms for conflict resolution, entitativity, segregation of in-groups and out-groups, and fitness interdependence among in-group members. To what extent do individual differences (e.g., with respect to impulsivity and aggression) affect the likelihood of fusion to motivate violent self-sacrifice? And does fusion predict fighting or dying equally, or one more than the other?

Finally, a sixth cluster concerns the extent to which group experiences can be transmitted across generations. Can the effects of shared experiences and out-group threat on warfare intensity be detected in the human past? If so, can historical patterns of group bonding and warfare be used to predict the outcomes of present and future conflicts?

I thank all of the commentators for generating this formidable list of questions and apologize if any have been inadvertently neglected. Taking these questions seriously and building new research designs to investigate them will not only enable us to understand better why people can be so passionately committed to their groups but may also help us to develop interventions to make the human world more peaceful.

References

[The letters "a" and "r" before author's initials stand for target article and response references, respectively]

[In reference, author name initials 'MB' are same for both [Maria Babinska] and [Maarten Boudry]. The initials have been changed to MBa for Maria Babinska and MBo for Maarten Boudry in reference list just to differentiate the author names.]

Aaldering H., Greer L. L., Van Kleef G. A. & De Dreu C. K. W. (2013) Interest (mis)alignments in representative negotiations: Do pro-social agents fuel or reduce inter-group conflict? *Organizational Behavior and Human Decision Processes* **120**(2):240–50. doi: 10.1016/j.obhdp.2012.06.001. [R-MR]

Abou-Abdallah M., Kashima Y. & Harb C. (2016) "Brothers" in arms: Does metaphorizing kinship increase approval of parochial altruism? *Journal of Cognition and Culture* **16**(1–2):37–49. [LC]

Aboud F. E. (2003) The formation of in-group favoritism and out-group prejudice in young children: Are they distinct attitudes? *Developmental Psychology* **39**(1):48–60. [PR]

Aktipis A., Cronk L., Alcock J., Ayers J. D., Baciu C., Balliet D., Boddy A. M., Curry O. S., Krems J. A., Munoz A., Sullivan D., Sznycer D., Wilkinson G. S. & Winfrey P. (2018) Fitness interdependence: A unifying concept for the study of human social behaviour and cooperation. *Nature Human Behaviour* **2**:429–31. [LC]

Aktipis A., de Aguiar R., Flaherty A., Iyer P., Sonkoi D. & Cronk L. (2016) Cooperation in an uncertain world: For the Maasai of East Africa, need-based transfers outperform account keeping in volatile environments. *Human Ecology* **44**:353–64. [LC]

Aktipis C. A., Boddy A. M., Jansen G., Hibner U., Hochberg M. E., Maley C. C. & Wilkinson G. S. (2015) Cancer across the tree of life: Cooperation and cheating in multicellularity. *Philosophical Transactions of the Royal Society of London Series B* **370**(1673):20140219. [LC]

Alexander R. (1987) *The biology of moral systems (foundations of human behavior)*. Aldine de Gruyter. [AM]

Allen M. & Jones T. (2014a) *Violence and warfare among hunter–gatherers*. Routledge. [PW]

Allen M. R. (1967) *Male cults and secret initiations in Melanesia*. Melbourne University Press. [aHW]

Allen M. W. & Jones T. L. eds. (2014b) *Violence and warfare among hunter–gatherers*. Left Coast Press. [rHW]

Al Ramiah A. & Hewstone M. (2013) Intergroup contact as a tool for reducing, resolving, and preventing intergroup conflict: Evidence, limitations, and potential. *American Psychologist* **68**(7):527r42. doi: 10.1037/a0032603. [JK]

Ambrose S. E. (1992) *Band of brothers: E company, 506th Regiment, 101st Airborne from Normandy to Hitler's Eagle's nest*. Simon & Schuster. [LC]

Amiot C. E., Doucerain M. & Louis W. R. (2017a) The pathway to accepting derogatory ingroup norms: The roles of compartmentalization and legitimacy. *Psychology of Sport & Exercise* **32**:58–66. doi: 10.1016/j.psychsport.2017.06.002. [WRL]

Amiot C. E., Louis W. R., Bourdeau S. & Maalouf O. (2017b) Can harmful intergroup behaviors truly represent the self? The impact of harmful and prosocial normative behaviors on intra-individual conflict and compartmentalization. *Self and Identity* **16**(3):703–31. doi: 10.1080/15298868.2017.1305442. [WRL]

Anderson B. (1983) *Imagined communities: Reflections on the origin and spread of nationalism*. Verso. [aHW]

Apostolou M. (2007) Sexual selection under parental choice: The role of parents in the evolution of human mating. *Evolution of Human Behavior* **28**(6):403–409. [PW]

Appleby S. R. (1999) *The ambivalence of the sacred: Religion, violence, and reconciliation*. Rowman & Littlefield. [AE]

Apps M. A. J., McKay R., Azevedo R. T., Whitehouse H. & Tsakiris M. (2018) Not on my team: Medial prefrontal cortex contributions to ingroup fusion and unfair monetary divisions. *Brain and Behavior* **8**(8):e01030. Available at: https://doi.org/10.1002/brb3.1030. [aHW]

Arkes H. R. & Blumer C. (1985) The psychology of sunk cost. *Organizational Behavior and Human Decision Processes* **35**(1):124–40. [CYO]

Arnett J. J. (2000) Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist* **55**(5):469–80. [CR]

Aron A., Aron E. N., Tudor M. & Nelson G. (1991) Close relationships as including other in the self. *Journal of Personality and Social Psychology* **60**(2):241–53. [JEL]

Aronson E. & Mills J. (1959) The effect of severity of initiation on liking for a group. *Journal of Abnormal and Social Psychology* **59**(2):177–81. [aHW]

Ashmore R. D., Deaux K. & McLaughlin-Volpe T. (2004) An organizing framework for collective identity: Articulation and significance of multidimensionality. *Psychological Bulletin* **130**(1):80. [CR]

Atkinson Q. D. & Whitehouse H. (2011) The cultural morphospace of ritual form; Examining modes of religiosity cross-culturally. *Evolution and Human Behavior* **32**(1):50–62. [aHW]

Atran S. (2003) Genesis of suicide terrorism. *Science* **299**(5612):1534–39. doi: 10.1126/science.1078854. [aHW, MNS]

Atran S. (2006) The moral logic and growth of suicide terrorism. *The Washington Quarterly* **29**:127–47. [aHW]

Atran S. (2010) *Talking to the enemy: Violent extremism, sacred values, and what it means to be human*. Penguin. [aHW, AM, SA]

Atran S. (2011) Who becomes a terrorist today? In: *The ethics and efficacy of the global war on terrorism*, ed. C. Webel & J. A. Arnaldi, pp. 45–58. Palgrave Macmillan. [MNS]

Atran S. (2014) Martyrdom's would-be myth buster. *Behavioral and Brain Sciences* **37**:362–63. doi: 10.1017/S0140525X13003555. [aHW]

Atran S., Axelrod R. & Davis R. (2007) Sacred barriers to conflict resolution. *Science* **317**(5841):1039–40. doi: 10.1126/science.1144241. [JEL]

Atran S. & Ginges J. (2012) Religious and sacred imperatives in human conflict. *Science* **336**(6083):855–57. [JG, SA]

Atran S., Medin D., Ross N., Lynch E., Vapnarsky V., Ucan Ek' E., Coley J., Timura C. & Baran M. (2002) Folkecology, cultural epidemiology, and the spirit of the commons: A garden experiment in the Maya Lowlands, 1991–2001. *Current Anthropology* **43**:421–50. [SA]

Atran S. & Norenzayan A. (2004) Religion's evolutionary landscape: Counterintuition, commitment, compassion, communion. *Behavioral and Brain Sciences* **27**:713–70. [IGH]

Atran S., Sheikh H. & Gómez Á. (2014) Devoted actors fight for close comrades and sacred cause. *Proceedings of the National Academy of Sciences USA* **111**:17702–703. [SA, rHW]

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

Atran S., Waziri H., Gómez Á., Sheikh H., López-Rodríguez L., Rogan C. & Davis R. (2018) The Islamic State's lingering legacy among young men from the Mosul area. *CTC Sentinel* **11**:15–22. [SA]

Bacharach M. (1999) Interactive team reasoning: A contribution to the theory of co-operation. *Research in Economics* **53**:117–47. doi: 10.1006/reec.1999.0188. [AMC]

Baker A. & Santora M. (2015, December 16) San Bernardino attackers discussed jihad in private messages, F.B.I. says. *The New York Times*, pp. 2–4. Available at: https://www.nytimes.com/2015/12/17/us/san-bernardino-attackers-discussed-jihad-in-private-messages-fbi-says.html. [JEL]

Balliet D., Parks C. & Joireman J. (2009) Social value orientation and cooperation in social dilemmas: A meta-analysis. *Group Processes & Intergroup Relations* **12**:533–47. doi: 10.1177/1368430209105040. [AMC]

Barclay P. & Willer R. (2007) Partner choice creates competitive altruism in humans. *Proceedings of the Royal Society of London B: Biological Sciences* **274**(1610): 749–53. [AM]

Bardsley N., Mehta J., Starmer C. & Sugden R. (2010) Explaining focal points: Cognitive hierarchy theory versus team reasoning. *Economic Journal* **120**:40–79. doi: 10.1111/j.1468-0297.2009.02304.x. [AMC]

Bardsley N. & Ule A. (2017) Focal points revisited: Team reasoning, the principle of insufficient reason and cognitive hierarchy theory. *Journal of Economic Behavior & Organization* **133**:74–76. doi: 10.1016/j.jebo.2016.10.004. [AMC]

Barlow H. D. (2015) *Dead for good: Martyrdom and the rise of the suicide bomber*. Taylor & Francis. [MBo]

Baron J. & Spranca M. (1997) Protected values. *Organizational Behavior and Decision Processes* **70**:1–16. [SA]

Barth F. (1975) *Ritual and knowledge among the Baktaman of New Guinea*. Yale University Press. [aHW]

Barth F. (1987) *Cosmologies in the making: A generative approach to cultural variation in inner New Guinea*. Cambridge University Press. [aHW]

Batson C. D. (2011) *Altruism in humans*. Oxford University Press. [AMC, LG]

Batson C. D., Dyck J. L., Brandt J. R., Batson J. G. & Powell A. L. (1988) Five studies testing two new egoistic alternatives to the empathy–altruism hypothesis. *Journal of Personality and Social Psychology* **55**:52–77. doi: 10.1037/0022-3514.55.1.52. [AMC]

Batson C. D., Kennedy C. L., Nord L. A., Stocks E. L., Fleming D. Y. A., Marzette C. M., Lisher D. A., Hayes R. E., Kolchinsky L. M. & Zerger T. (2007) Anger at unfairness: Is it moral outrage? *European Journal of Social Psychology* **37**(6):1272–85. [MNS]

Batson C. D. & Shaw L. L. (1991) Evidence for altruism: Toward a pluralism of prosocial motives. *Psychological Inquiry* **2**:107–22. doi: 10.1207/s15327965 pli0202_1. [AMC]

Baumard N. (2011) Punishment is not a group adaptation: Humans punish to restore fairness rather than to support group cooperation. *Mind and Society* **10**(1):1–26. [AM]

Baumard N., André J.-B & Sperber D. (2013) A mutualistic theory of morality: The evolution of fairness by partner choice. *Behavioral and Brain Sciences* **36**:59–122. [AM]

Baumard N. & Boyer P. (2013) Explaining moral religions. *Trends in Cognitive Sciences* **17**(6):272–80. [AM]

Bear A. & Rand D. G. (2016) Intuition, deliberation, and the evolution of cooperation. *Proceedings of the National Academy of Sciences USA* **113**(4):936–41. [MNS]

Beit-Hallahmi B. (2014) The over-determination of selflessness in villains and heroes. *Behavioral and Brain Sciences* **37**:364. doi: 10.1017/S0140525X1300335X. [aHW]

Bélanger J. J., Caouette J., Sharvit K. & Dugas M. (2014) The psychology of martyrdom: Making the ultimate sacrifice in the name of a cause. *Journal of Personality and Social Psychology* **107**(3):494–515. doi: 10.1037/a0036855. [JG, R-MR]

Benmelech E. & Berrebi C. (2007) Human capital and the productivity of suicide bombers. *Journal of Economic Perspectives* **21**(3):223–38. [CR]

Bernhard H., Fischbacher U. & Fehr E. (2006) Parochial altruism in humans. *Nature* **442** (7105):912–15. doi: 10.1038/nature04981. [aHW, R-MR]

Bian L., Sloane S. & Baillargeon R. (2018) Infants expect ingroup support to override fairness when resources are limited. *Proceedings of the National Academy of Sciences USA* **115** (11):2705–10. Available at: www.pnas.org/cgi/doi/10.1073/pnas.1719445115. [LT]

Bigelow A. & Rochat P. (2006) Two-month-old infants' sensitivity to social contingency in mother–infant and stranger–infant interaction. *Infancy* **9**(3):313–25. [PR]

Biggs M. (2005) Dying without killing: Self-immolations, 1963–2002. In: *Making sense of suicide missions*, ed. D. Gambetta, pp. 173–208. Oxford University Press. [AE]

Bilewicz M. (2016) The dark side of emotion regulation: Historical defensiveness as an obstacle in reconciliation. *Psychological Inquiry* **27**(2):89–95. [MBa]

Bilewicz M. & Babinska M. (2018) Bystander, czyli kto? Potoczne wyobrażenia Polaków na temat stosunku do Żydów w czasie okupacji hitlerowskiej. [Bystander means whom? Lay representations about Polish–Jewish relations during the Nazi occupation of Poland]. *Teksty Drugie* **3**. [MBa]

Bilewicz M., Winiewski M., Kofta M. & Wójcik A. (2013) Harmful ideas, the structure and consequences of anti-Semitic beliefs in Poland. *Political Psychology* **34** (6):821–39. [MBa]

Bilewicz M., Witkowska M., Stefaniak A. & Imhoff R. (2017) The lay historian explains intergroup behavior: Examining the role of identification and cognitive structuring in ethnocentric historical attributions. *Memory Studies* **10**(3):310–22. [MBa]

Bilewicz M. & Wójcik A. (2010) Does identification predict community involvement? Exploring consequences of social identification among the Jewish minority in Poland. *Journal of Community & Applied Social Psychology* **20**(1):72–79. [MBa]

Blackwell A. D. (2008) Middle-class martyrs: Modeling the inclusive fitness outcomes of Palestinian suicide attack. Anthropology Department, University of Oregon. doi: 10.13140/RG.2.2.24639.41124. [aHW]

Blackwood L. & Louis W. R. (2017) Choosing between conciliatory and oppositional leaders: The role of out-group signals and in-group leader candidates' collective action tactics. *European Journal of Social Psycholog* **47**(3):320–36. doi: 0.1002/ejsp.2249. [WRL]

Bliege Bird R. & Smith E. A. (2005) Signaling theory, strategic interaction, and symbolic capital. *Current Anthropology* **46**(2):221–48. [J-LD]

Bloom P. (2012) Religion, morality, evolution. *Annual Review of Psychology* **63**:179–99. [aHW]

Bobadilla L. (2014) Martyrdom redefined: Self-destructive killers and vulnerable narcissism. *The Behavioral and Brain Sciences* **37**(4):364–65. doi: 10.1017/S0140525X13003361. [R-MR]

Boesch C. (1991) The effects of leopard predation on grouping patterns in forest chimpanzees. *Behaviour* **117**:220–42. [AL]

Bogaert S., Boone C. & Declerck C. (2008) Social value orientation and cooperation in social dilemmas: A review and conceptual model. *British Journal of Social Psychology* **47**:453–80. doi: 10.1348/014466607X244970. [AMC]

Bolton G. E. & Ockenfels A. (2000) ERC: A theory of equity, reciprocity, and competition. *The American Economic Review* **90**(1):166–93. doi: 10.1257/aer.90.1.166. [R-MR]

Boudry M. & Coyne J. (2016a) Disbelief in belief: On the cognitive status of supernatural beliefs. *Philosophical Psychology* **29**(4):601–15. doi: 10.1080/09515089.2015.1110852. [MBo]

Boudry M. & Coyne J. (2016b) Fakers, fanatics, and false dilemmas: Reply to Van Leeuwen. *Philosophical Psychology* **29**(4):622–27. doi: 10.1080/09515089.2016.1146244. [MBo]

Boyd R. & Richerson P. J. (1987) The evolution of ethnic markers. *Cultural Anthropology* **2**:65–79. doi: 10.1525/can.1987.2.1.02a00070. [aHW]

Brown R. & Kulik J. (1977) Flashbulb memories. *Cognition* **5**(1):73–99. [MBa]

Brauer M., Judd C. M. & Gliner M. D. (1995) The effects of repeated expressions on attitude polarization during group discussions. *Journal of Personality and Social Psychology* **68**(6):1014–29. [ZJM]

Brown S. L. (1999) *Evolutionary origins of investment: Testing a theory of close relationships*. Unpublished doctoral dissertation, Arizona State University. [LC]

Brown S. L. & Brown R. M. (2006) Selective investment theory: Recasting the functional significance of close relationships. *Psychological Inquiry* **17**:1–29. [LC]

Buhrmester M. D. (2013) Understanding the cognitive and affective underpinnings of whistleblowing. *University of Texas ScholarWorks*. Available at: http://hdl.handle.net/2152/21278. [rHW]

Buhrmester M. D., Brannon S. M., Fraser W. T., Fredman L. A., Gómez A., Talaifar S. & Swann W. B. Jr., (2015) Identity fusion, extreme pro-group behavior, and the path to defusion. *Social and Personality Psychology Compass* **9**(9): 468–80, doi: 10.1111/spc3.12193. [rHW]

Buhrmester M. D., Burnham D., Johnson D., Curry O. S., Macdonald D. & Whitehouse H. (2018a) How moments become movements: Shared outrage, group cohesion, and the lion that went viral. *Frontiers in Ecology and Evolution* **6**. Available at: https://www.frontiersin.org/articles/10.3389/fevo.2018.00054. [rHW]

Buhrmester M. D., Fraser W. T., Lanman J. A., Whitehouse H. & Swann W. B. Jr., (2015) When terror hits home: Identity fused Americans who saw Boston bombing victims as "family" provided aid. *Self and Identity* **14**(3):253–70. doi: 10.1080/15298868.2014.992465. [aHW, WRL]

Buhrmester M. D., Gómez Á., Brooks M. L., Morales J. F., Fernandez S. & Swann W. B. Jr., (2012) My group's fate is my fate: Identity fused Americans and Spaniards link personal life quality to outcome of '08 elections. *Basic and Applied Social Psychology* **34**:527–33. [WBS]

Buhrmester M.D., Gómez Á., Vázquez A., Mercedes M., Lanman J.A., Swann W.B. Jr., & Whitehouse H. (in preparation) Profound social suffering increases identity fusion and pro-group behavior. [aHW]

Buhrmester M. D. & Lanman J. (in preparation) For cause or kin? Identity fusion predicts self-sacrifice for one's religion. [rHW]

Buhrmester M. D., Newson M., Vázquez A., Hattori W. T. & Whitehouse H. (2018b) Winning at any cost: Identity fusion, group essence, and maximizing ingroup advantage. *Self and Identity* **17**(5):500–16. [WBS]

Bulbulia J., Geertz A. W., Atkinson Q. D., Cohen E., Evans N., Francois P., Gintis H., Gray R. D., Henrich J., Jordon F. M., Norenzayan A., Richerson P. J., Slingerland E., Turchin P., Whitehouse H., Widlok T. & Wilson D. S. (2013) The cultural evolution of religion. In: *Cultural evolution: Society, technology, language, and religion (Strungmann Forum Reports)*, ed. P. J. Richerson & M. H. Christiansen, pp. 381–404. MIT Press. [aHW]

Bushman B. J., Ridge R. D., Das E., Key C. W. & Busath G. L. (2007) When God sanctions killing: Effect of scriptural violence on aggression. *Psychological Science* **18**(3):204–207. [AE]

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

Butler D. J. (2012) A choice for "me" or for "us"? Using we-reasoning to predict cooperation and coordination in games. *Theory and Decision* **73**:53–76. doi: 10.1007/s11238-011-9270-7. [AMC]

Cameron A. (1976) *Circus factions*. Oxford University Press. [DX]

Cameron J. E. (2004) A three-factor model of social identity. *Self and identity* **3** (3):239–62. [MBa]

Campbell D. T. (1958) Common fate, similarity, and other indices of the status of aggregates of persons as social entities. *Systems Research and Behavioral Science* **3** (1):14–25. [VKC]

Casey B. J., Jones R. M. & Hare T. A. (2008) The adolescent brain. *Annals of the New York Academy of Sciences* **1124**(1):111–26. [CR]

Cashdan E. (1983) Territoriality among human foragers: Ecological models and an application to four bushman groups. *Current Anthropology* **24**(1):47–66. [PW]

Cassidy J. & Shaver P. R. (2010) *Handbook of attachment: Theory, research, and clinical applications*, 2nd edition. Guilford Press. [MNS]

Chagnon N. (1992) *Yanomamo*, 4th edition. Harcourt Brace. [PW]

Chappell B. (2013, April 28) Tamerlan Tsarnaev spoke of jihad with mother, reports say. *National Public Radio*. Available at: https://www.npr.org/sections/thetwo-way/2013/04/28/179611079/tamerlan-tsarnaev-spoke-of-jihad-with-mother-reports-say. [JEL]

Chicago Project on Security and Terrorism (CPOST) (2015) *Suicide attack database*. Available at: http://cpostdata.uchicago.edu/. [CR]

Chinnery E. W. P. & Haddon A. C. (1917) Five new religious cults in British New Guinea. *Hibbert Journal* **15**:448–63. [aHW]

Choi J.-K. & Bowles S. (2007) The coevolution of parochial altruism and war. *Science* **318** (5850):636–40. doi: 10.1126/science.1144237. [R-MR]

Christie D. J. & Louis W. R. (2012) Peace interventions tailored to phases within a cycle of intergroup violence. In: *The Oxford handbook of intergroup conflict*, ed. L. Tropp, pp. 252–72. Oxford University Press. [WRL]

Chwe M. S.-Y. (2003) *Rational ritual: Culture, coordination, and common knowledge*. Princeton University Press. [LC]

Cialdini R. B., Reno R. R. & Kallgren C. A. (1990) A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology* **58**(6):1015–26. doi: 10.1037/0022-3514.58.6.1015. [WRL]

Cichocka A. (2016) Understanding defensive and secure in-group positivity: The role of collective narcissism. *European Review of Social Psychology* **27**(1):283–317. [MBa]

Çili S. & Stopa L. (2014) The retrieval of self-defining memories is associated with the activation of specific working selves. *Memory* **23**(2):233–53. doi: 10.1080/09658211.2014.882955. [aHW]

Cimino A. (2011) The evolution of hazing: Motivational mechanisms and the abuse of newcomers. *Journal of Cognition and Culture* **11**:241–67. [aHW]

Cinnirella M., Lewis C., Ansari H., Loewenthal K., Brooke-Rogers M. & Amlot R. (2010) *Social identity and beliefs about martyrdom and terrorism amongst British Muslims*. The Edwin Mellen Press. [AE]

Colman A. M. & Gold N. (2017) Team reasoning: Solving the puzzle of coordination. *Psychonomic Bulletin & Review*. Advance online publication. Available at: https://doi.org/10.3758/s13423-017-1399-0. [AMC]

Colman A. M., Pulford B. D. & Lawrence C. L. (2014) Explaining strategic coordination: Cognitive hierarchy theory, strong Stackelberg reasoning, and team reasoning. *Decision* **1**:35–58. doi: 10.1037/dec0000001. [AMC]

Colman A. M., Pulford B. D. & Rose J. (2008) Collective rationality in interactive decisions: Evidence for team reasoning. *Acta Psychologica* **128**:387–97. doi: 10.1016/j.actpsy.2007.08.003. [AMC]

Conway M. A. (1995) *Flashbulb memories: Essays in cognitive psychology*. Lawrence Erlbaum Associates. [aHW]

Cook D. (2005) *Understanding jihad*. University of California Press. [MBo]

Cordonier L., Nettles T. & Rochat P. (2017) Strong and strategic conformity by 3- and 5 year-old children. *British Journal of Developmental Psychology* **36**(3):438–51. [PR]

Crimston D., Bain P. G., Hornsey M. J. & Bastian B. (2016) Moral expansiveness: Examining variability in the extension of the moral world. *Journal of Personality and Social Psychology* **111**(4):636–53. doi:10.1037/pspp0000086. [DC, rHW]

Crimston D., Hornsey M. J., Bain P. G. & Bastian B. (2018) Toward a psychology of moral expansiveness. *Current Directions In Psychological Science* **27**(1):14–19. doi: 10.1177/0963721417730888. [DC]

Cronk L., Berbesque C., Conte T., Gervais M., Iyer P., McCarthy B., Sonkoi D., Townsend C. & Aktipis A. (2018) Managing risk through cooperation: Need-based transfers and risk pooling among the societies of the Human Generosity Project. In: *Global perspectives on long-term community resource management*, ed. L. R. Lozny & T. H. McGovern. Springer. [LC]

Cronk L. & Leech B. L. (2013) *Meeting at Grand Central: Understanding the social and evolutionary roots of cooperation*. Princeton University Press. [LC]

Curci A. & Luminet O. (2006) Follow-up of a cross-national comparison on flashbulb and event memory for the September 11th attacks. *Memory* **14**(3):329–44. [MBa]

Currie T. E., Bogaard A., Cesaretti R., Edwards N. R., François P., Holden P. B., Hoyer D., Korotayev A., Manning J., Garcia J. C. M., Oyebamiji O. K., Petrie C., Turchin P., Whitehouse H. & Williams A. (2015) Agricultural productivity in past societies: Toward an empirically informed model for testing cultural evolutionary hypotheses. *Cliodynamics: The Journal of Quantitative History and Cultural Evolution* **6**(1):24–56. [aHW]

Darwin C. (1871) *The descent of man and selection in relation to sex*. John Murray. [SA]

Da Silva C. (2018, April 3) Israel green-lighted 'unlawful' killing of unarmed Gaza protesters, says Human Rights Watch. *Newsweek*. Available at: http://www.newsweek.com/israel-green-lighted-unlawful-killing-unarmed-gaza-protesters-says-human-869588. [IGH]

Dawkins R. (1976) *The selfish gene*. Oxford University Press. [AL]

Dawson L. L. (2018) Challenging the curious erasure of religion from the study of religious terrorism. *Numen* **65**(2–3):141–64. [AE]

Dawson L. L. & Amarasingam A. (2017) Talking to foreign fighters: Insights into the motivations for Hijrah to Syria and Iraq. *Studies in Conflict & Terrorism* **40** (3):191–210. [AE]

deCatanzaro D. (1980) Human suicide: A biological perspective. *Behavioral and Brain Sciences* **3**:265–90. doi: org/10.1017/S0140525X00004908. [aHW]

De Guissmé L. & Licata L. (2017) Competition over collective victimhood recognition: When perceived lack of recognition for past victimization is associated with negative attitudes towards another victimized group. *European Journal of Social Psychology* **47** (2):148–66. [MBa]

Dehghani M., Atran S., Iliev R., Sachdeva S., Medin D. & Ginges J. (2010) Sacred values and conflict over Iran's nuclear program. *Judgment and Decision Making* **5**:540–46. [SA]

Denson T. F., Lickel B., Curtis M., Stenstrom D. M. & Ames D. R. (2006) The roles of entitativity and essentiality in judgments of collective responsibility. *Group Processes & Intergroup Relations* **9**(1):43–61. [VKC]

Dessalles J.-L. (2014) Optimal investment in social signals. *Evolution* **68**(6):1640–50. Available at: http://www.dessalles.fr/papers/Dessalles_13011901.pdf. [J-LD]

Dickey C. (2009, September 28) Most suicide bombers have three things in common. *Newsweek*. Available at: http://www.newsweek.com/most-suicide-bombers-have-three-things-common-christopher-dickey-79525. [CR]

Diener E., Lusk R., DeFour D. & Flax R. (1980. Deindividuation: Effects of group size, density, number of observers, and group member similarity on self-consciousness and disinhibited behavior. *Journal of Personality and Social Psychology* **39**:449–59. [aHW]

Diesendruck G., and Gelman S. A. (1999) Domain differences in absolute judgments of category membership: Evidence for an essentialist account of categorization. *Psychonomic Bulletin & Review* **6**(2):338–46. [aHW]

Domínguez J. F., van Nunspeet F., Gupta A., Eres R., Louis W. R., Decety J. & Molenberghs P. (2017) Lateral orbitofrontal cortex activity is modulated by group membership in situations of justified and unjustified violence. *Social Neuroscience*. Published online 26 October 2017. doi: 10.1080/17470919.2017.1392342. [WRL]

Doughty K. & Ntambara D. M. (2005) Resistance and protection: Muslim community actions during the Rwandan genocide. *CDA Collaborative Learning Projects* Available at: www.cdainc.com/cdawww/pdf/casestudy/steps_rwanda_case_study_Pdf.pdf. [IGH]

Dow J. (1984) The genetic basis for affinal cooperation. *American Ethnologist* **11**:380–83. [LC]

Droogendyk L., Wright S. C., Lubensky M. & Louis W. R. (2016) Acting in solidarity: Cross-group contact between disadvantaged group members and advantaged group allies. *Journal of Social Issues* **72**(2):315–34. doi: 10.1111/josi.12168. [DC]

Duckitt J., Wagner C., du Plessis I. & Birum I. (2002) The psychological bases of ideology and prejudice: Testing a dual process model. *Journal of Personality and Social Psychology* **83**(1):75–93. doi: 10.1037/0022-3514.83.1.75. [R-MR]

Dugan L. & Chenoweth E. (2012) Moving beyond deterrence: The effectiveness of raising the expected utility of abstaining from terrorism in Israel. *American Sociological Review* **77**(4):597–624. [WRL]

Dumbach A. & Newborn J. (2017) *Sophie Scholl and the white rose*. Oneworld. [JG]

Dunbar R. I. M. (2010) The social role of touch in humans and primates: Behavioural function and neurobiological mechanisms. *Neuroscience & Biobehavioral Reviews* **34**(2):260–68. [DX]

Durkheim E. (1897/1951) *Suicide: A study in sociology*. Free Press. (Original work published in 1897.) [aHW, WRL, PW]

Durkheim E. (1912) *Les formes élémentaires de la vie religieuse [The elementary forms of religious life]*. Félix Alcan. [aHW, SA, PW]

Durkheim É. (1915) *The elementary forms of the religious life*. George Allen & Unwin. [DX]

Durkheim E. (1961/1912) *The elementary forms of the religious life*. Collier. [CTP]

Easwaran E. (1999) *Nonviolent soldier of Islam: Badshah Khan, a man to match his mountains*. Blue Mountain Center of Meditation. [IGH]

Egan V. (2014) Can self-destructive killers be classified so easily? *Behavioral and Brain Sciences* **37**:365–66. doi: 10.1017/S0140525X13003373. [aHW]

Enemark C. (2017, October 5) Drones, risk, and moral injury. *Critical Military Studies*. doi: 10.1080/23337486.2017.1384979. [IGH]

Epstein S. & O'Brien E. J. (1985) The person–situation debate in historical and current perspective. *Psychological Bulletin* **98**(3):513–37. doi: 10.1037/0033-2909.98.3.513. [R-MR]

Ethier K. A. & Deaux K. (1994) Negotiating social identity when contexts change: Maintaining identification and responding to threat. *Journal of Personality and Social Psychology* **67**(2):243–51. [CR]

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

Evans J. S. B. & Frankish K. E. (2009) *In two minds: Dual processes and beyond*. Oxford University Press. [MNS]
Evans J. S. B. & Stanovich K. E. (2013) Dual-process theories of higher cognition: Advancing the debate. *Perspectives on Psychological Science* **8**(3):223–41. [MNS]
Everett J., Ingbretsen Z., Cushman F. A. & Cikara M. (2017) Deliberation erodes cooperative behaviour – Even towards competitive outgroups, even when using a control condition, and even when controlling for sample bias. *Journal of Experimental Social Psychology* **73**:76–81. [MNS]
Everett J. A., Pizarro D. A. & Crockett M. J. (2016) Inference of trustworthiness from intuitive moral judgments. *Journal of Experimental Psychology: General* **145**(6):772–87. [AM]
Farrell B. (2011, January 19) Tunisia emerges unarmed and victorious. *Waging nonviolence*. Available at: https://wagingnonviolence.org/feature/tunisia-emerges-victorious-and-unarmed/. [IGH]
Farrington D. P. (1986) Age and crime. *Crime and Justice* **7**:189–250. [CR]
Fehr E. & Schmidt K. M. (1999) A theory of fairness, competition, and cooperation. *The Quarterly Journal of Economics* **114**(3):817–68. doi: 10.1162/003355399556151. [R-MR]
Ferguson R. B. (2013) Pinker's List: Exaggerating prehistorica war mortality. In: *War, peace, and human nature: The convergence of evolutionary and cultural views*, ed. D. P. Fry, pp. 112–31. Oxford University Press. [aHW]
Ferreira C., Gaviria E., Martínez M. and Whitehouse H. (2015) Identity and the developmental origins of fusion: An exploratory approach/La identidad y los orígenes de la fusion en el desarrollo: Un enfoque exploratorio. *Revista de Psicología Social/International Journal of Social Psychology* **30**(3):531–62. doi: 10.1080/02134748.2015.1065088. [rHW]
Festinger L. (1957) *A theory of cognitive dissonance*. Stanford University Press. [aHW, MNS]
Fink B. & Trivers R. (2014) Cognitive simplicity and self-deception are crucial in martyrdom and suicide terrorism. *The Behavioral and Brain Sciences* **37**(4):366–67. doi: https://doi.org/10.1017/S0140525X13003385. [R-MR]
Fischer R., Xygalatas D., Mitkidis P., Reddish P., Tok P., Konvalinka I. & Bulbulia J. (2014) The fire-walker's high: Affect and physiological responses in an extreme collective ritual. *PLOS ONE* **9**(2):e88355. doi: 10.1371/journal.pone.0088355. [DX]
Fiske A. P. (1991) *Structures of social life: The four elementary forms of social relations*. Free Press. [LT]
Fiske A. P. (1992) The four elementary forms of sociality: Framework for a unified theory of social relations. *Psychological Review* **99**:689–723. [LT]
Fiske A. P. (2004) Four modes of constituting relationships: Consubstantial assimilation; space, magnitude, time, and force; concrete procedures, & abstract symbolism. In: *Relational models theory: A contemporary overview*, ed. N. Haslam, pp. 52–142. Taylor & Francis. [LT]
Fiske A. P. & Rai T. S (2014) *Virtuous violence: Hurting and killing to create, sustain, and end honor social relationships*. Cambridge University Press. [LT]
Fogelman E. (1994) *Conscience and courage: Rescuers of Jews during the Holocaust*. Anchor Books/Doubleday. [CTP]
Fonagy P. (2003) Towards a developmental understanding of violence. *British Journal of Psychiatry* **183**:190–92. [CR]
Frank R. (1988) *Passions within reason: The strategic role of the emotions*, vol. 1. Norton. [AM]
Frederick S. (2005) Cognitive reflection and decision making. *Journal of Economic Perspectives* **19**(4):25–42. [MNS]
Fredman L. A, Bastian B. & Swann W. B. Jr., (2017) God or country? Fusion with Judaism predicts desire for retaliation following Palestinian stabbing Intifada. *Social Psychological and Personality Science* **8**(8):882–87. [WBS, rHW]
Fritsche I., Jonas E., Ablasser C., Beyer M., Kuban J., Manger A.-M. & Schultz M. (2013) The power of we: Evidence for group-based control. *Journal of Experimental Social Psychology* **49**(1):19–32. [AE]
Fritsche I., Jonas E. & Fankhänel T. (2008) The role of control motivation in mortality salience effects on ingroup support and defense. *Journal of Personality and Social Psychology* **95**:524–41. [aHW]
Frosdick S. & Marsh P. (2013) *Football hooliganism*. Routledge. [DX]
Fry D. (2005) *The human potential for peace: An anthropological challenge to assumptions about war and violence*. Oxford University Press. [PW]
Funder D. C. (2014) Weighing dispositional and situational factors in accounting for suicide terrorism. *Behavioral and Brain Sciences* **37**:367–68 doi: 10.1017/S0140525X13003397. [aHW]
Furedi F. (2015, 28 July) Islamic State: Built on the West's cult of victimhood. *Spiked Magazine*. Available at: http://www.spiked-online.com/newsite/article/islamic-state-built-on-the-wests-cult-of-victimhood/17234#.WZjWra17HUo. [aHW]
Gaertner L. & Insko C. A. (2000) Intergroup discrimination in the minimal group paradigm: Categorization, reciprocation, or fear? *Journal of Personality and Social Psychology* **79**:77–94. [LG]
Gaertner L., Sedikides C. & Graetz K. (1999) In search of self-definition: Motivational primacy of the individual self, motivational primacy of the collective self, or contextual primacy? *Journal of Personality and Social Psychology* **76**:5–18. [LG]
Gaertner L., Sedikides C., Luke M., O'Mara E. M., Iuzzini J., Jackson L. E., Cai H. & Wu Q. (2012) A motivational hierarchy within: Primacy of the individual self, relational self, or collective self? *Journal of Experimental Social Psychology* **48**:997–1013. [LG]
Gaertner L., Sedikides C., Vevea J. & Iuzzini J. (2002) The "I," the "we," and the "when": A meta-analysis of motivational primacy in self-definition. *Journal of Personality and Social Psychology* **83**:574–91. [LG]
Gambetta D. (2005) Can we make sense of suicide missions? In: *Making sense of suicide missions*, ed. D. Gambetta, pp. 259–300. Oxford University Press. [aHW]
Gamble C. (1986) *The paleolithic settlement of Europe*. Cambridge University Press. [PW]
Gantley M., Bogaard A. & Whitehouse H. (2018) Material correlates analysis (MCA): An innovative way of examining questions in archaeology using ethnographic data. *Advances in Archaeological Practice* **6**(4). [aHW]
Gantley M., Whitehouse H. & Bogaard A (in press) Ritual, group cohesion and the agricultural transition. In: *The long revolution: Becoming neolithic in Southwest Asia*, ed. T. Watkins, C. Beuger & L. Clare. Cambridge University Press. [aHW]
Gelfand M. J., Harrington J. R. & Jackson J. C. (2017) The strength of social norms across human groups. *Perspectives on Psychological Science* **12**(5):800–809. [AE]
Gelman S. (2003) *The essential child: Origins of essentialism in everyday thought*. Oxford University Press. [PR]
Gil-White F. (2001) Are ethnic groups biological 'species' to the human brain? Essentialism in our cognition of some social categories. *Current Anthropology* **42**(4):515–54. [aHW]
Ginges J. (1997) Deterring the terrorist: A psychological evaluation of different strategies for deterring terrorism. *Terrorism and Political Violence* **9**(1):170–85. [JG]
Ginges J. & Atran S. (2009) What motivates participation in violent political action. *Annals of the New York Academy of Sciences* **1167**(1):115–23. Available at: https://halshs.archives-ouvertes.fr/docs/00/50/51/90/PDF/Ginges_Atran2009b.pdf. [J-LD]
Ginges J. & Atran S. (2011) War as a moral imperative (not just practical politics by other means). *Proceedings of the Royal Society B Biological Sciences* **278**(1720):2930–38. [JG]
Ginges J., Atran S., Medin D. & Shikaki K. (2007) Sacred bounds on rational resolution of violent political conflict. *Proceedings of the National Academy of Sciences USA* **104**(18):7357–60. [SA, JG, LT]
Ginges J., Atran S., Sachdeva S. & Medin D. (2011) Psychology out of the laboratory: The challenge of violent extremism. *The American Psychologist* **66**(6):5019. [SA, JG]
Ginges J., Hansen I. G. & Norenzayan A. (2009) Religion and support for suicide attacks. *Psychological Science* **20**(2):224–30. [aHW, AE, IGH]
Gintis H., Smith E. A. & Bowles S. (2001) Costly signaling and cooperation. *Journal of Theoretical Biology* **213**:103–19. Available at: http://faculty.washington.edu/easmith/JTB2001.pdf. [J-LD]
Golec de Zavala A. & Cichocka A. (2012) Collective narcissism and anti-Semitism in Poland. *Group Processes & Intergroup Relations* **15**(2):213–29. [MBa]
Gómez A., Brooks M. L., Buhrmester M. D., Vázquez A., Jetten J. & Swann W. B. Jr., (2011a) On the nature of identity fusion: Insights into the construct and a new measure. *Journal of Personality and Social Psychology* **100**:918–33. [SA, LG, WBS, rHW]
Gómez A., López-Rodríguez L., Sheikh H., Ginges J., Wilson L., Waziri H., Vázquez A., Davis R. & Atran S. (2017) The devoted actor's will to fight and the spiritual dimension of human conflict. *Nature Human Behaviour* **1**(9):673–79. doi: 10.1038/s41562-017-0193-3. [arHW, SA, AE, JG]
Gómez A., López-Rodríguez L., Vázquez A., Paredes B. & Martínez M. (2016a) Morir y matar por un grupo o un valor. Estrategias para evitar, reducir y/o erradicar el comportamiento grupal extremista. *Anuario de Psicología Jurídica* **6**:122–29. [SA, rHW]
Gómez Á., Morales J. F., Hart S., Vázquez A. & Swann W. B. Jr., (2011b) Rejected and excluded forevermore, but even more devoted: Irrevocable ostracism intensifies loyalty to the group among identity fused persons. *Personality and Social Psychology Bulletin* **37**:1574–86. [aHW, WBS]
Gómez J. M., Verdú M., González-Megías A. & Méndez M. (2016b) The phylogenetic roots of human lethal violence. *Nature* **538**:233–37. doi: 10.1038/nature19758. [aHW]
Grafen A. (1990) Biological signals as handicaps. *Journal of Theoretical Biology* **144**:517–46. Available at: http://users.ox.ac.uk/~grafen/cv/hcapsig.pdf. [J-LD]
Graham J. & Haidt J. (2013) Sacred values and evil adversaries. In: *The social psychology of morality*, ed. P. Shaver & M. Mikulincer. APA Books. [SA]
Gramzow R. H. & Gaertner L. (2005) Self-esteem and favoritism toward novel in-groups: The self as an evaluative base. *Journal of Personality and Social Psychology* **88**:801–15. [LG]
Gratz K. L. (2003) Risk factors for and functions of deliberate self-harm: An empirical and conceptual review. *Clinical Psychology: Science and Practice* **10**(2):192–205. doi: 10.1093/clipsy.bpg022. [R-MR]
Gratz K. L., Conrad S. D. & Roemer L. (2002) Risk factors for deliberate self-harm among college students. *The American Journal of Orthopsychiatry* **72**(1):128–40. doi: 10.1037/0002-9432.72.1.128. [R-MR]

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

Gray J. M. & Dickins T. E. (2014) Suicide terrorism and post-mortem benefits. *Behavioral and Brain Sciences* **37**:369–70. doi: 10.1017/S0140525X13003403. [aHW]
Greenberg K. J. (2005) *Al Qaeda now: Understanding today's terrorists*: Cambridge University Press. [MBo]
Griesinger D. W. & Livingston J. W. (1973) Toward a model of interpersonal motivation in experimental games. *Behavioral Science* **18**(3):173–88. doi: 10.1002/bs.3830180305. [R-MR]
Grotevant H. D. (1992) Assigned and chosen identity components: A process perspective on their integration. In: *Advances in adolescent development: Vol. 4. Adolescent identity formation*, ed. G. R. Adams, T. P. Gullotta & R. Montemayor, pp. 73–90. Sage. [CR]
Hafez M. M. (2007) Martyrdom mythology in Iraq: How jihadists frame suicide terrorism in videos and biographies. *Terrorism and Political Violence* **19**(1):95–115. [MBo]
Haidt J. (2000) The positive emotion of elevation. *Prevention and Treatment* **3**(1):3c. [CTP]
Haidt J. (2012) *The righteous mind: Why good people are divided by politics and religion*. New York: Random House. [AM]
Hamilton W. D. (1964a) The genetical evolution of social behavior, I. *Journal of Theoretical Biology* **7**(1):1–16. [LC]
Hamilton W. D. (1964b) The genetical evolution of social behavior, II. *Journal of Theoretical Biology* **7**(1):17–52. [LC]
Hamlin J. K., Mahajan N., Liberman Z. & Wynn K. (2013) Not like me=bad: Infants prefer those who harm dissimilar others. *Psychological Science* **24**(4):589–94. [LT]
Hamlin J. K. & Wynn K. (2012) Infants fail to match the food preferences of antisocial others. *Cognitive Development* **27**:227–39. [LT]
Hansen I. G. (in preparation) Religion and resistance. [IGH]
Hansen I. G., Jackson V. W. Y. & Ryder A. (2018) Religion and oppression: Cross-national and experimental investigations. *Religion, Brain and Behavior* **18**(4):369–93. doi: https://doi.org/10.1080/2153599X.2017.1358208. [IGH]
Hansen I. G. & Ryder A. (2016) In search of "religion proper": Intrinsic religiosity and coalitional rigidity make opposing predictions of intergroup hostility across religious groups. *Journal of Cross-Cultural Psychology* **47**:835–57. doi: https://doi.org/10.1177/0022022116644983. [IGH]
Harris S. (2004) *The end of faith: Religion, terror, and the future of reason*. W. W. Norton. [aHW]
Haun D. & Tomasello M. (2011) Conformity to peer pressure in preschool children. *Child Development* **82**(6):1759–67. [PR]
Hayden B. (1987) Alliances and ritual ecstasy: Human responses to resource stress. *Journal of the Scientific Study of Religion* **26**:81–91. [PW]
Heger A. & Gaertner L. (2018a) *The motivational primacy of the personal-self holds true for the identity-fused*. Poster presented to the annual meeting of the Society of Personality and Social Psychology, Atlanta, GA. [LG]
Heger A. & Gaertner L. (2018b) Testing the identity synergy principle: Identity fusion promotes self and group sacrifice. *Self and Identity* **17**:487–99. [LG, WBS]
Henrich J. (2009) The evolution of costly displays, cooperation, and religion: Credibility enhancing displays and their implications for cultural evolution. *Evolution & Human Behavior* **30**:244–60. [aHW]
Henrich J., Boyd R., Bowles S., Camerer C., Fehr E., Gintis H., McElreath R., Alvard M., Barr A., Ensminger J., Hill K., Gil-White F., Gurven M., Marlowe F., Patton J. Q., Smith N. & Tracer D. (2005) "Economic man" in cross-cultural perspective: Behavioral experiments in 15 small-scale societies. *Behavioral and Brain Sciences* **28**(6):795–815. [AM]
Hinton A. L. (2004) *Why did they kill?: Cambodia in the shadow of genocide*. University of California Press. [JK]
Ho A. K., Sidanius J., Pratto F., Levin S., Thomsen L., Kteily N. & Sheehy-Skeffington J. (2012) Social dominance orientation: Revisiting the structure and function of a variable predicting social and political attitudes. *Personality and Social Psychology Bulletin* **38**(5):583–606. doi: 10.1177/0146167211432765. [R-MR]
Hodges S. D, Sharp C. A., Gibson N. J. S. & Tipsord J. M. (2013) Nearer my God to thee: Self–God overlap and believers' relationships with God. *Self and Identity* **12**(3):337–56. doi: 10.1080/15298868.2012.674212. [JEL]
Hogg M. A. (2007) Uncertainty–identity theory. *Advances in Experimental Social Psychology* **39**:69–126. [MNS]
Hogg M. A. & Adelman J. (2013) Uncertainty–identity theory: Extreme groups, radical behavior, and authoritarian leadership. *Journal of Social Issues* **69**(3):436–54. [CR]
Hogg M. A., Sherman D. K., Dierselhuis J., Maitner A. T. & Moffitt G. (2007) Uncertainty, entitativity, and group identification. *Journal of Experimental Social Psychology* **43**(1):135–42. [AE]
Hrdy S. (2009) *Mothers and others: The evolutionary origins of mutual understanding*. Belknap Press. [PW]
Hughes A. L. (1988) *Evolution and human kinship*. Oxford University Press. [LC]
Humphrey C. & Laidlaw J. (1994) *The archetypal actions of ritual: A theory of ritual illustrated by the Jain rite of worship*. Clarendon Press. [aHW]
Inzlicht M., Shenhav A. & Olivola C. Y. (2018) The effort paradox: Effort is both costly and valued. *Trends in Cognitive Sciences* **22**(4):337–49. [CYO]
Irons W. (2001) Religion as a hard-to-fake sign of commitment. In: *Evolution and the capacity for commitment*, ed. R. Nesse, pp. 292–309. Russell Sage Foundation. [aHW]
Jackson J. C., Choi V. K. & Gelfand M. J. (in press) Revenge: A multilevel review and synthesis. *Annual Review of Psychology*. [VKC].
Jackson J. C., Jong J., Bilkey D., Whitehouse H., Zollmann S., McNaughton C, & Halberstadt J. (2018) Synchrony and physiological arousal increase cohesion and cooperation in large naturalistic groups. *Nature: Scientific Reports* **127**. doi: 10.1038/s41598-017-18023-4. [rHW]
James W. (1906) On some mental effects of the earthquake. The Library of America Story of the Week. Reprinted from *William James: Writings 1902–1910* (The Library of America, 1987), pp. 1215–22. First published in the June 7, 1906, edition of *Youth's Companion*. Accessed August 9, 2018. Available at: http://storyoftheweek.loa.org/2010/08/on-some-mental-effects-of-earthquake.html. [LT]
Jensen M. A., Atwell Seate A. & James P. A. (2018) Radicalization to violence: A pathway approach to studying extremism. *Terrorism and Political Violence*. Published online April 9, 2018. doi: 10.1080/09546553.2018.1442330. [JEL]
Jetten J. & Wohl M. J. (2012) The past as a determinant of the present: Historical continuity, collective angst, and opposition to immigration. *European Journal of Social Psychology* **42**(4):442–50. [VKC]
Jiménez-Moya G., Spears R., Rodríguez-Bailón R. & Lemus S. (2015) By any means necessary? When and why low group identification paradoxically predicts radical collective action. *Journal of Social Issues* **71**(3):517–35. [WRL]
Jin K. & Baillargeon R. (2017) Infants possess an abstract notion of ingroup support. *Proceedings of the National Academy of Sciences USA* **114**:8199–204. [LT]
Joiner T. E., Hom M. A., Hagan C. R. & Silva C. (2015) Suicide as a derangement of the self-sacrificial aspect of eusociality. *Psychological Review* **123**(3):235–54. Available at: http://dx.doi.org/10.1037/rev0000020. [aHW]
Jonas E., McGregor I., Klackl J., Agroskin D., Fritsche I., Holbrook C. & Quirin M. (2014) Threat and defense: From anxiety to approach. In: *Advances in Experimental Social Psychology*, ed. J. M. Olson & M. P. Zanna, vol. 49, pp. 219–86. Academic Press. [AE]
Jong J., Kavanagh C., Lane J. & Whitehouse H. (2015) Shared negative experiences lead to identity fusion via personal reflection. *PLoS ONE* **10**(12):e0145611. doi: 10.1371/journal.pone.0145611. [arHW]
Juergensmeyer M. (2005) *Terror in the mind of God: The global rise of religious violence*: Taylor & Francis. [MBo]
Kahn D. T., Klar Y. & Roccas S. (2017) For the sake of the eternal group: Perceiving the group as trans-generational and endurance of in-group suffering. *Personality and Social Psychology Bulletin* **43**(2):272–83. [VKC]
Kahneman D. (2011) *Thinking, fast and slow*. Farrar, Straus and Giroux. [MNS]
Kavanagh C. M., Buhrmester M., Yustisia W. Rufaidah A., Wibisono S., Sofianna V., & Whitehouse H. (in preparation) Familial ties with Muslims worldwide fuel Islamist fundamentalism. [aHW]
Kavanagh C. M., Jong J., McKay R. & Whitehouse H. (2018) Positive experiences of high arousal martial arts rituals are linked to identity fusion and costly progroup actions. *European Journal of Social Psychology*. Published online May 29, 2018. doi:10.1002/ejsp.2514. Available at: psyarxiv.com/cjvs. [arHW]
Keeley L. H. (1996) *War before civilization: The myth of the peaceful savage*. Oxford University Press. [aHW, PW]
Kelley H. H. & Thibaut J. W. (1978) *Interpersonal relations: A theory of interdependence*. Wiley. [LC]
Kellizi B. & Reicher S. D. (2012) Social cure or social curse? The psychological impact of extreme events during the Kosovo conflict. In: *The social cure: Identity, health and well-being*, ed. J. Jetten, C. Haslam, & S. A. Haslam, pp. 217–33. Psychology Press. [WBS]
Khalil E. L. (2018) A tale of two loves: Love of country contra love of humankind. Unpublished working paper. [ELK]
Kinzler K. D., Dupoux E. & Spelke E. S. (2007) The native language of social cognition. *Proceedings of the National Academy of Sciences USA* **104**(30):12577–80. [PR]
Kiper J. (2018) Propaganda and mass violence in the Yugoslav Wars: A post-conflict ethnography Doctoral dissertations, 1735. OpenCommons@UConn. University of Connecticut. [JK]
Kiper J. & Sosis R. (2016a) Shaking the tyrant's bloody robe: An evolutionary perspective on ethnoreligious violence. *Politics and the Life Sciences* **35**:27–47. [JK]
Kiper J. & Sosis R. (2016b) The roots of intergroup conflict and the co-optation of the religious system: An evolutionary perspective on religious terrorism. In: *Oxford handbook of evolutionary perspectives on religion*, ed. J. Liddle & T. Shackelford. Oxford University Press. [JK]
Kirk R. & Martin S. A. (2017) The dark power of words: Stratagems of hate in the 2016 presidential campaign. In: *The 2016 US Presidential Campaign*, pp. 205–29. Palgrave Macmillan, Cham. [ZJM]
Klar Y. & Bilewicz M. (2017) From socially motivated lay historians to lay censors: Epistemic conformity and defensive group identification. *Memory Studies* **10**(3):334–46. [MBa]
Klar Y. & Schori-Eyal N. (2013) The "Never Again" state of Israel: The emergence of the Holocaust as a core feature of Israeli identity and its four incongruent voices. *Journal of Social Issues* **69**(1):125–43. [MBa]

Klausen J., Morrill T. & Libretti R. (2016) The terrorist age-crime curve: An analysis of American Islamist terrorist offenders and age-specific propensity for participation in violent and nonviolent incidents. *Social Science Quarterly* **97**(1):19–32. doi: 10.1111/ssqu.12249. [CR]

Klein O., Licata L. & Pierucci S. (2011) Does group identification facilitate or prevent collective guilt about past misdeeds? Resolving the paradox. *British Journal of Social Psychology* **50**(3):563–72. [MBa]

Kramer K. & Greaves R. (2016) Diversity or replace. What happens to wild foods when cultigens are introduced into hunter–gatherer diets. In: *Why forage? Hunters and gatherers living in the 21st century*, ed. B. Codding & K. L. Kramer, pp. 15–42. School of Advanced Research, Santa Fe. [PW]

Kramer K., Schacht R. & Bell A. (2017) Adult sex ratios & partner scarcity among hunter–gatherers: Implications for dispersal patterns and the evolution of human sociality. *Philosophical Transactions of the Royal Society B* **372**:20160316. [PW]

Kranton R. E. & Sanders S. G. (2017) Groupy versus non-groupy social references: Personality, region, and political party. *American Economic Review* **107**(5):65–69. doi: 10.1257/aer.p20171096. [R-MR]

Kroger J. (2015) Identity development through adulthood: The move toward "wholeness." In: *The Oxford handbook of identity development*, ed. K. McLean & M. Syed, pp. 65–80. Oxford University Press. [CR]

Kroger J., Martinussen M. & Marcia J. E. (2010) Identity status change during adolescence and young adulthood: A meta-analysis. *Journal of Adolescence* **33**(5):683–98. [CR]

Kruglanski A. W., Bélanger J. J., Gelfand M., Gunaratna R., Hettiarachchi M., Reinares F., Orehek E., Sasota J. & Sharvit K. (2013) Terrorism – A (self) love story: Redirecting the significance quest can end violence. *American Psychologist* **68**(7):559–75. [JG, CR]

Kruglanski A. W., Chen X., Dechesne M., Fishman S. & Orehek E. (2009) Fully committed: Suicide bombers' motivation and the quest for personal significance. *Political Psychology* **30**(3):331–57. [MBo]

Kruglanski A. W. & Fishman S. (2009) Psychological factors in terrorism and counterterrorism: Individual, group, and organizational levels of analysis. *Social Issues and Policy Review* **3**(1):1–44. [CR]

Kruglanski A., Jasko K., Webber D., Chernikova M. & Molinario E. (2018) The making of violent extremists. *Review of General Psychology* **22**(1):107–20. [AE]

Kumar U. (2017) *Handbook of suicidal behaviour*: Springer Singapore. [MBo]

Kunst J. R., Boos B., Kimel S., Obaidi M., Shani M. & Thomsen L. (2018) Engaging in extreme activism in support of others' political struggles: The role of politically motivated fusion with out-groups. *PLoS ONE* **13**(1):e0190639. doi: 10.1371/journal.pone.0190639. [LT]

Lakin J., Jefferis V., Cheng C. & Chartrand T. (2003) The chameleon effect as social glue: Evidence for the evolutionary significance of nonconscious mimicry. *Journal of Nonverbal Behavior* **27**(3):145–62. [DX]

Land-Weber E. (2000) *To save a life: Stories of Holocaust rescue*. University of Illinois Press. [CTP]

Lang M., Bahna V., Shaver J. H., Reddish P. & Xygalatas D. (2017) Sync to link: Endorphin-mediated synchrony effects on cooperation. *Biological Psychology* **127**:191–97. doi: 10.1016/j.biopsycho.2017.06.001. [DX]

Lankford A. (2013) *The myth of martyrdom: What really drives suicide bombers, rampage shooters, and other self-destructive killers*. Palgrave Macmillan. [AL]

Lankford A. (2014a) Evidence that suicide terrorists are suicidal: Challenges and empirical predictions. *Behavioral and Brain Sciences* **37**:380–93. [AL]

Lankford A. (2014b) Précis of the myth of martyrdom: What really drives suicide bombers, rampage shooters, and other self-destructive killers. *Behavioral and Brain Sciences* **37**:351–93. doi: 10.1017/S0140525X13001581. [aHW]

Lankford A. (2015) Is suicide terrorism really the product of an evolved sacrificial tendency? A review of mammalian research and application of evolutionary theory. *Comprehensive Psychology* **4**:1–8. [AL, CR]

Leader Maynard J. & Benesch S. (2016) Dangerous speech and dangerous ideology: An integrated model for monitoring and prevention. *Genocide Studies and Prevention* **9** (3):70. doi: 10.5038/1911-9933.9.3.1317. [JK]

LeBlanc S. A. & Register K. (2003) *Constant battles: The myth of the peaceful, noble savage*. St. Martin's Press. [AM]

Lee C. T., Williams P. & Hadden W. A. (1999) Parachuting for charity: Is it worth the money? A 5-year audit of parachute injuries in Tayside and the cost to the NHS. *Injury* **30**(4):283–87. [CYO]

Lee T. L., Gelfand M. J. & Kashima Y. (2014) The serial reproduction of conflict: Third parties escalate conflict through communication biases. *Journal of Experimental Social Psychology* **54**:68–72. [VKC]

Lee T. L., Gelfand M. J. & Shteynberg G. (2013) Culture and the contagion of conflict. In: *Culture and intergroup relations*, ed. M. Yuki & M. Brewer, pp. 241–60. Oxford University Press. [VKC]

Legare C. H., Herrmann P. A., Wen N. J. & Whitehouse H. (2015) Imitative flexibility and the development of cultural learning. *Cognition* **142**:351–61. doi: 10.1016/j.cognition.2015.05.020. [rHW]

Lessa W. A. (1964) The social effects of typhoon Ophelia (1960) on Ulithi. *Micronesica* **1** (1/2):1–47. [LT]

Lewis B. (2004) *The crisis of Islam: Holy war and unholy terror*. Random House. [MBo]

Liberman Z., Kinzler K. & Woodward A. (2018) The early social significance of shared ritual actions. *Cognition* **17**:42–51. [LT]

Lickel B., Hamilton D. L., Wieczorkowska G., Lewis A., Sherman S. J. & Uhles A. N. (2000) Varieties of groups and the perception of group entitativity. *Journal of Personality and Social Psychology* **78**(2):223. [VKC]

Lickel B., Schmader T. & Hamilton D. L. (2003) A case of collective responsibility: Who else was to blame for the Columbine High School shootings? *Personality and Social Psychology Bulletin* **29**(2):194–204. [VKC]

Lieberman D., Tooby J. & Cosmides L. (2007) The architecture of human kin detection. *Nature* **445**:727–31. [aHW]

Liphshiz C. (2018, January 19) What made Muslim Albanians risk their lives to save Jews from the Holocaust? *The Times of Israel*. Available at: https://www.timesofisrael.com/what-made-muslim-albanians-risk-their-lives-to-save-jews-from-the-holocaust/. [IGH]

London P. (1970) The rescuers. In: *Altruism and helping behavior*, ed. J. M. Macauley & L. Barkowitz, pp. 241–50. Academic Press. [CTP]

Louis W. R. (2014) Peace and conflict as group norms. *Peace & Conflict: The Journal of Peace Psychology* **20**(2):180–86. doi: 10.1037/pac0000018. [WRL]

Louis W. R., Amiot C. E. & Thomas E. F. (2015) Collective harmdoing: Developing the perspective of the perpetrator. *Peace and Conflict: The Journal of Peace Psychology* **21**(3):306–12. [WRL]

Louis W. R., Amiot C. E., Thomas E. F. & Blackwood L. M. (2016a) The 'activist identity' and activism across domains: A multiple identities analysis. *Journal of Social Issues* **72**(2):242–63. doi: 10.1111/josi.12165. [WRL]

Louis W. R., La Macchia S. T., Amiot C. E., Thomas E. F., Blackwood L. M., Mavor K. I. & Saeri A. (2016b) Causality in the study of collective action and political behavior. In: *Causes and consequences: A multidisciplinary exploration*, ed. F. M. Moghaddam & R. Harré, pp. 277–302. Praeger. [WRL]

Louis W. R. & Montiel C. J. (2018) Social movements and social transformation: Steps towards understanding the challenges and breakthroughs of social change. *Peace and Conflict: The Journal of Peace Psychology* **24**(1):3–9. [WRL]

Lusher A. (2017, December 23) At least 10,000 people died in Tiananmen Square Massacre, secret British cable from the time alleged. *The Independent*. Available at: https://www.independent.co.uk/news/world/asia/tiananmen-square-massacre-death-toll-secret-cable-british-ambassador-1989-alan-donald-a8126461.html. [IGH]

Mamdani M. (2001) *When victims become killers*. Princeton University Press. Available at: https://press.princeton.edu/titles/7027.html. [JK]

Mandel D. R. & Litt A. (2013) The ultimate sacrifice: Perceived peer honor predicts troops' willingness to risk their lives. *Group Processes and Intergroup Relations* **16**:375–88. [aHW]

Marean C. W. (2015) An evolutionary anthropological perspective on modern human origins. *Annual Review of Anthropology* **44**:533–56. [JG, PW]

Martin L. H. & Pachis P. (2009) *Imagistic traditions in the Graeco-Roman world: A cognitive modeling of history of religious research*. Ekdoseis Vanias. [aHW]

Mashek D. J., Aron A. & Boncimino M. (2003) Confusions of self with close others. *Personality and Social Psychology Bulletin* **29**(3):382–92 doi: 10.1177/0146167202250220. [JEL]

Mason L. (2015) I disrespectfully agree: The differential effects of partisan sorting on social and issue polarization. *American Journal of Political Science* **59**(1):128–45. [ZJM]

May J. (2011) Egoism, empathy, and self-other merging. *Southern Journal of Philosophy* **49**:25–39. doi: 10.1111/j.2041-6962.2011.00055.x. [AMC]

McCauley C. (2014) How many suicide terrorists are suicidal? *Behavioral and Brain Sciences* **37**:373–74. doi: 10.1017/S0140525X13003452. [aHW]

McCauley C. & Moskalenko S. (2017) Understanding political radicalization: The two-pyramids model. *American Psychologist* **72**(3):205. [WRL]

McClintock C. G. (1972) Social motivation: A set of propositions. *Behavioral Science* **17**:438–54. doi: 10.1002/bs.3830170505. [AMC]

McGregor I. (2003) Defensive zeal: Compensatory conviction about attitudes, values, goals, groups, and self-definitions in the face of personal uncertainty. In: *Motivated social perception: The Ontario symposium*, ed. S. J. Spencer, S. Fein, M. P. Zanna & J. M. Olson, vol. 9, pp. 73–92. Erlbaum. [AE]

McGregor I., Hayes J. & Prentice M. (2015) Motivation for aggressive religious radicalization: Goal regulation theory and a personality×threat×affordance hypothesis. *Frontiers in Psychology* **6**(1325):1–18. [AE]

McGregor I., Nash K. & Prentice M. (2010) Reactive approach motivation (RAM) for religion. *Journal of Personality and Social Psychology* **99**(1):148–61. [AE]

McLean K. C. (2005) Late adolescent identity development: Narrative meaning making and memory telling. *Developmental Psychology* **41**(4):683. [CR]

McNamara R. A. & Henrich J. (2017) Kin and kinship psychology both influence cooperative coordination in Yasawa, Fiji. *Evolution and Human Behavior* **38** (2):197–207. [aHW]

Medin D. L. & Ortony A. (1989) Psychological essentialism. In: *Similarity and analogical reasoning*, ed. S. Vosniadou & A. Ortony, pp. 179–95. Cambridge University Press. [aHW]

Merari A. (1993) Terrorism as a strategy in insurgency. *Terrorism and Political Violence* **5**:213–51. [aHW]

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

Merari A. (2010) *Driven to death: Psychological and social aspects of suicide terrorism*. Oxford University Press. [AL, aHW]

Messick D. M. & McClintock C. G. (1968) Motivational bases of choice in experimental games. *Journal of Experimental Social Psychology* **4**(1):1–25. doi: 10.1016/0022-1031(68)90046-2. [AMC, R-MR]

Miron A. M., Branscombe N. R. & Biernat M. (2010) Motivated shifting of justice standards. *Personality and Social Psychology Bulletin* **36**(6):768–79. [MBa]

Misch A., Fergusson G. & Dunham Y. (2018) Temporal dynamics of partisan identity fusion and prosociality during the 2016 U.S. presidential election. *Self & Identity* **17**(5):531–48. [WBS]

Moghaddam F. M. (2013) *The psychology of dictatorship*. American Psychological Association. [WRL]

Moghaddam F. M. (2018) *Mutual radicalization: How groups and nations drive each other to extremes*. American Psychological Association. [WRL]

Möller-Leimkühler A. (2018) Why is terrorism a man's business? *CNS Spectrums* **23** (2):119–28. doi: 10.1017/S1092852917000438. [MNS]

Moskalenko S. & McCauley C. (2011) The psychology of lone-wolf terrorism. *Counselling Psychology Quarterly* **24**(2):115–26. [MNS]

Motyl M. (2016) Liberals and conservatives are geographically dividing. In: *Social psychology of political polarization*, ed. P. Valdesolo & J. Graham, pp. 7–37. Routledge. [ZJM]

Motyl M., Hart J., Pyszczynski T., Weise D., Maxfield M. & Siedel A. (2011) Subtle priming of shared human experiences eliminates threat-induced negativity toward Arabs, immigrants, and peace-making. *Journal of Experimental Social Psychology* **47** (6):1179–84. [ZJM]

Motyl M., Iyer R., Oishi S., Trawalter S. & Nosek B. A. (2014) How ideological migration geographically segregates groups. *Journal of Experimental Social Psychology* **51**:1–14. [ZJM]

Motyl M. & Pyszczynski T. (2009) The existential underpinnings of the cycle of terrorist and counterterrorist violence and pathways to peaceful resolutions. *Revue Internationale de Psychologie Sociale* **22**(3):267–91. [ZJM]

Motyl M., Rothschild Z. & Pyszczynski T. (2009) The cycle of violence and pathways to peace. *Journal of Organisational Transformation & Social Change* **6**(2):153–70. [ZJM]

Mullen E. & Skitka L. J. (2006) Exploring the psychological underpinnings of the moral mandate effect: Motivated reasoning, group differentiation, or anger? *Journal of Personality and Social Psychology* **90**(4):629–43. doi: 10.1037/0022-3514.90.4.629. [DC]

Mulvaney D. (1976) The chain of connection: The material evidence. *Tribes and boundaries in Australia*. ed. N. Peterson, pp. 72–94. Australian Institute of Aboriginal and Torres Strait Island. [PW]

Murphy R. O. & Ackermann K. A. (2014) Social value orientation: Theoretical and measurement issues in the study of social preferences. *Personality and Social Psychology Review* **18**:13–41. doi: 10.1177/1088868313501745. [AMC]

National Consortium for the Study of Terrorism and Responses to Terrorism (2018) Explore the data. Available at: http://www.start.umd.edu/profiles-individual-radicalization-united-states-pirus-keshif. [JEL]

Nehrlich A. D., Gebauer J. E., Sedikides C. & Abele A. E. (2018) Individual self>relational self>collective self – But why? Processes driving the self-hierarchy in self- and person perception. *Journal of Personality*. Published online March 2018. doi: 10.1111/jopy.12384. [LG]

Nelson L. J. & Barry C. M. (2005) Distinguishing features of emerging adulthood: The role of self-classification as an adult. *Journal of Adolescent Research* **20**(2):242–62. [CR]

Nesdale D. (2008) Peer group rejection and children's intergroup prejudice. In: *Inter-group attitudes and relations in childhood through adulthood*, ed. S. R. Levy & M. Killen, pp. 32–46. Oxford University Press. [PR]

Nesdale D., Durkin K., Maass A. & Griffiths J. (2005) Threat, group identification, and children's ethnic prejudice. *Social Development* **14**:189–205. [PR]

Newman B. M. & Newman P. R. (2001) Group identity and alienation: Giving the we its due. *Journal of Youth and Adolescence* **30**(5):515–38. [CR]

Newson M., Bortolini T., Buhrmester M., da Silva S., Acquino J. & Whitehouse H. (2018) Brazil's football warriors: Social bonding and inter-group violence. *Evolution and Human Behavior*. Available online June 21, 2018. doi: 0.1016/j.evolhumbehav.2018.06.010. [arHW]

Newson M., Buhrmester M., Jong J., Hattori W., Shiramizu V. K. M., Yamamoto M. E. & Whitehouse H. (under review) Group identity, arousal, and the 2014 World Cup. [aHW]

Newson M., Buhrmester M. D. & Whitehouse H. (2016) Explaining lifelong loyalty: The role of identity fusion and self-shaping group events. *PLoS ONE* **11**(8):e0160427. doi: 10.1371/journal.pone.0160427. [arHW]

Noor M., Brown R., Gonzalez R., Manzi J. & Lewis C. A. (2008) On positive psychological outcomes: What helps groups with a history of conflict to forgive and reconcile with each other? *Personality and Social Psychology Bulletin* **34**(6):819–32. [MBa]

Norenzayan A. (2016) Theodiversity. *Annual Review of Psychology* **67**:465–88. [AE]

Norenzayan A., Shariff A. F., Gervais W. M., Willard A. K., McNamara R. A., Slingerland E. & Henrich J. (2016) The cultural evolution of prosocial religions. *Behavioral and Brain Sciences* **39**:e1. [AE]

Obst P. L. & White K. M. (2005) An exploration of the interplay between psychological sense of community, social identification and salience. *Journal of Community & Applied Social Psychology* **15**(2):127–35. [MBa]

Ohnuki-Tierney E. (2007) *Kamikaze diaries: Reflections of Japanese student soldiers*. University of Chicago Press. [AL]

Oliner S. P. & Oliner P. M. (1988) *The altruistic personality: Rescuers of Jews in Nazi Europe*. The Free Press. [CTP]

Oliver A. M. & Steinberg P. F. (2006) *The Road to martyrs' square: A journey into the world of the suicide bomber*. Oxford University Press. [MBo]

Oliver-Smith A. (1986) *The martyred city: Death and rebirth in the Andes*. University of New Mexico Press. [LT]

Olivola C. Y. (2011) When noble means hinder noble ends: The benefits and costs of a human preference for martyrdom in altruism. In: *The science of giving: Experimental approaches to the study of charity*, ed. Oppenheimer D. M. & Olivola, pp. 49–64. Taylor and Francis. [CYO]

Olivola C. Y. (2018) The interpersonal sunk-cost effect. *Psychological Science* **29**(7):1072–83. [CYO]

Olivola C. Y. & Shafir E. (2013) The martyrdom effect: When pain and effort increase prosocial contributions. *Journal of Behavioral Decision Making* **26**(1):91–105. doi: 10.1002/bdm.767. [aHW, CYO]

Olivola C. Y. & Shafir E. (2018) Blood, sweat, and cheers: The martyrdom effect increases willingness to sponsor others' painful and effortful prosocial acts. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3101447. [CYO]

O'Mara E. M., Jackson L. E., Batson C. D. & Gaertner L. (2011) Will moral outrage stand up? Distinguishing among emotional reactions to a moral violation. *European Journal of Social Psychology* **4**:173–79. [LG]

Orbell J. & Moriwaka T. (2011) An evolutionary account of suicide attacks: The kamikaze xase. *Political Psychology* **32**(2):297–322. doi: 10.1111/j.1467-9221.2010.00808.x. [aHW]

Ouellet J. X. (2013) Women and religion in Liberia's peace and reconciliation. *Critical Intersections in Education* **1**:12–20. Available at: http://jps.library.utoronto.ca/index.php/cie/article/download/17063/16059. [IGH]

Over H. & Carpenter M. (2009) Eighteen-month-old children show increased helping following priming with affiliation. *Psychological Science* **20**(10):1189–93. [LT]

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**(5):711–29. doi: 10.1037/pspi0000014. [DX]

Palmer C. T. (in press) Can evolutionary theory explain portrayals of the righteous among the nations? *Journal of Anthropological Research*. [CTP]

Palmer C. T., Begley R. O., Coe K. & Steadman L. B. (2013) Moral elevation and traditions: Ancestral encouragement of altruism through ritual and myth. *Journal of Ritual Studies* **27**(2):83–96. [CTP]

Pape R. (2005) *Dying to win: The strategic logic of suicide terrorism*. Random House. [arHW]

Park J. H. & Schaller M. (2005) Does attitude similarity serve as a heuristic cue for kinship? Evidence of an implicit cognitive association. *Evolution and Human Behavior* **26**:158–70. [aHW]

Parkinson C., Kleinbaum A. M. & Wheatley T. (2018) Similar neural responses predict friendship. *Nature Communications* **9**:332. doi: 10.1038/s41467-017-02722-7. [DX]

Patton J. Q. (1996) Thoughtful warriors: Status, warriorship, and alliance in the Ecuadorian Amazon. Doctoral dissertation, University of California, Santa Barbara. [J-LD]

Pedahzur A. (2005) *Suicide terrorism*. Polity Press. [CR]

Pennycook G., Cheyne J. A., Barr N., Koehler D. J. & Fugelsang J. A. (2015a) On the reception and detection of pseudo-profound bullshit. *Judgment and Decision Making* **10**(6):549–63. [MNS]

Pennycook G., Fugelsang J. A. & Koehler D. J. (2015b) Everyday consequences of analytic thinking. *Current Directions in Psychological Science* **24**(6):425–32. [MNS]

Pennycook G. & Rand D. G. (2018) Lazy, not biased: Susceptibility to partisan fake news is better explained by lack of reasoning than by motivated reasoning. *Cognition*. Available online June 20, 2018. doi: 10.1016/j.cognition.2018.06.011. [MNS]

Pennycook G., Ross R. M., Koehler D. J. & Fugelsang J. A. (2016) Atheists and agnostics are more reflective than religious believers: Four empirical studies and a meta-analysis. *PLOS ONE* **11**(4):e0153039. [MNS]

Perry R., Sibley C. G. & Duckitt J. (2013) Dangerous and competitive worldviews: A meta-analysis of their associations with social dominance orientation and right-wing authoritarianism. *Journal of Research in Personality* **47**(1):116–27. doi: 10.1016/j.jrp.2012.10.004. [R-MR]

Peterson N., ed. (1976) *Tribes and boundaries in Australia* (No. 10). Australian Institute of Aboriginal and Torres Strait Island. [PW]

Pillemer D. B., Koff E., Rhinehart E. D. & Rierdan J. (1987) Flashbulb memories of menarche and adult menstrual distress. *Journal of Adolescence* **10**(2):187–99. Available at: https://doi.org/10.1016/S0140-1971(87)80087-8. [aHW]

Pinker S. (2011) *The better angels of our nature: Why violence has declined*. Viking. [DC, rHW]

Pinker S. (2012, June 18) The false allure of group selection. *Edge*. Available at: http://edge.org/conversation/the-false-allure-of-group-selection. [AL]

Post J. M., Ali F., Henderson S. W., Shanfield S., Victoroff J. & Weine S. (2009) The psychology of suicide terrorism. *Psychiatry: Interpersonal and Biological Processes* **72**(1):13–31. doi: 10.1521/psyc.2009.72.1.13. [aHW, R-MR]

Powell L. J. & Spelke E. S. (2013) Preverbal infants expect members of social groups to act alike. *Proceedings of the National Academy of Sciences USA* **110**:E3965–72. [LT]
Powell L. J. & Spelke E. S. (2018) Human infants' understanding of social imitation: Inferences of affiliation from third-party observations. *Cognition* **170**:31–48. [LT]
Pradel J., Euler H. A. & Fetchenhauer D. (2008) Spotting altruistic dictator game players and mingling with them: The elective assortation of classmates. *Evolution and Human Behavior* **30**(2):103–13. [AM]
Pratto F., Sidanius J., Stallworth L. M. & Malle B. F. (1994) Social dominance orientation: A personality variable predicting social and political attitudes. *Journal of Personality and Social Psychology* **67**:741–63. doi: 10.1037/0022-3514.67.4.741. [R-MR]
Putnam R. D. & Campbell D. E. (2012) *American grace: How religion divides and unites us*. Simon and Schuster. [AE]
Pyszczynski T., Abdollahi A., Solomon S., Greenberg J., Cohen F. & Weise D. (2006) Mortality salience, martyrdom, and military might: The great Satan versus the axis of evil. *Personality and Social Psychology Bulletin* **32**(4):525–37. [AE]
Qirko H. (2014) Organizational structures and practices are better predictors of suicide terror threats than individual psychological dispositions. *Behavioral and Brain Sciences* **37**:374–75. doi: 10.1017/S0140525X13003464. [aHW]
Qirko H. N. (2004) Altruistic celibacy, kin-cue manipulation, and the development of religious institutions. *Zygon: Journal of Religion and Science* **39**:681–706. [LC]
Qirko H. N. (2009) Altruism in suicide terror organizations. *Zygon: Journal of Religion and Science* **44**:289–322. [LC]
Rai T. S. & Fiske A. P. (2011) Moral psychology is relationship regulation: moral motives for unity, hierarchy, equality, and proportionality. *Psychological Review* **118**(1):57–75. [JG, LT]
Rand D. G. (2016) Cooperation, fast and slow: Meta-analytic evidence for a theory of social heuristics and self-interested deliberation. *Psychological Science* **27**(9):1192–206. [MNS]
Rand D. G. & Epstein Z. G. (2014) Risking your life without a second thought: Intuitive decision-making and extreme altruism. *PLOS ONE* **9**(10):e109687. [MNS]
Rand D. G., Greene J. D. & Nowak M. A. (2012) Spontaneous giving and calculated greed. *Nature* **498**:427–30. [MNS]
Rand D. G., Tomlin D., Bear A., Ludvig E. A. & Cohen J. D. (2017) Cyclical population dynamics of automatic versus controlled processing: An evolutionary pendulum. *Psychological Review* **124**(5):626. [MNS]
Rappaport R. (1971) The sacred in human evolution. *Annual Review of Ecology and Systematics* **2**:23–44. [SA]
Reddish P., Jong J., Lanman J. A., Tong E. M. W. & Whitehouse H. (2016) Collective synchrony increases prosociality towards non-performers and outgroup members. *British Journal of Social Psychology* **55**(4):722–738. doi: 10.1111/bjso.12165. [rHW]
Reddish P., Jong J., Tong E. & Whitehouse H. (in preparation) Interpersonal synchrony affects performers' sense of agency. [rHW]
Richardson L. (2006) *What terrorists want: Containing the threat*. Random House. [aHW]
Richerson P. & Henrich J. (2012) Tribal social instincts and the cultural evolution of institutions to solve collective action problems. *Cliodynamics: The Journal of Theoretical and Mathematical History* **3**(1):38–80. [aHW, LG]
Richert R. A., Whitehouse H. & Stewart E. A. (2005) Memory and analogical thinking in high-arousal rituals. In: *Mind and religion: Psychological and cognitive foundations of religiosity*, ed. H. Whitehouse & R. McCauley, pp. 127–45. AltaMira Press. [aHW]
Rink A. & Sharma K. (2018) The determinants of religious radicalization: Evidence from Kenya. *Journal of Conflict Resolution* **62**(6):1229–61. [AE]
Roberts G. (2005) Cooperation through interdependence. *Animal Behaviour* **70**(4):901–908. [LC]
Rochat P. (2001) *The infant's world*. (2nd edition 2004.) Harvard University Press. [PR]
Rochat P. (2009) *Others in mind: Social origins of self-consciousness*. Cambridge. [PR]
Rochat P. (2014/2015) Origins of possession: Owning and sharing in development. Cambridge University Press. [PR]
Rochat P. (2018) The ontogeny of human self-consciousness. *Current Directions in Psychological Science*. Available online September 17, 2018 at https://doi.org/10.1177/0963721418760236. [PR]
Rossano M. J. (2010) *Supernatural selection: How religion evolved*. Oxford University Press. [aHW]
Rothschild Z. K., Abdollahi A. & Pyszczynski T. (2009) Does peace have a prayer? The effect of mortality salience, compassionate values, and religious fundamentalism on hostility toward out-groups. *Journal of Experimental Social Psychology* **45**(4):816–27. [AE]
Russell Y. I., Gobet F. & Whitehouse H. (2014) Mood, expertise, analogy, and ritual: An experiment using the five-disc tower of Hanoi. *Religion, Brain, and Behavior* **6**:1–21. doi: 10.1080/2153599X.2014.921861. [aHW]
Sageman M. (2004) *Understanding terror networks*. University of Pennsylvania Press. [SA]
Salmon C. (1988) The evocative nature of kin terminology in political rhetoric. *Politics and the Life Sciences* **17**:51–57. [LC]
Samaha N. (2015, April 24) How Arabs reached out to Armenians amid 1915 massacre. *Al Jazeera*. Available at: https://www.aljazeera.com/news/2015/04/arabs-reached-armenians-1915-massacre-150424102949363.html. [IGH]
Samuelson P. A. (1993) Altruism as a problem involving group versus individual selection in economics and biology. *American Economic Review* **83**:143–48. Available at: http://www.jstor.org/stable/2117655. [AMC]
Sani F., Bowe M. & Herrera M. (2008) Perceived collective continuity and social well-being: Exploring the connections. *European Journal of Social Psychology* **38**(2):365–74. [MBa, VKC]
Sani F., Bowe M., Herrera M., Manna C., Cossa T., Miao X. & Zhou Y. (2007) Perceived collective continuity: Seeing groups as entities that move through time. *European Journal of Social Psychology* **37**(6):1118–34. [VKC]
Schori-Eyal N., Klar Y., Roccas S. & McNeill A. (2017) The shadows of the past: Effects of historical group trauma on current intergroup conflicts. *Personality and Social Psychology Bulletin* **43**(4):538–54. doi: 10.1177/0146167216689063. [MBa, JK]
Schumann K., McGregor I., Nash K. A. & Ross M. (2014) Religious magnanimity: Reminding people of their religious belief system reduces hostility after threat. *Journal of Personality and Social Psychology* **107**(3):432–53. [AE]
Schwartz F. & Jones R. (2018, May 14) Scores killed as Palestinians protest U.S. embassy opening in Jerusalem. *Wall Street Journal*. Available at: https://www.wsj.com/articles/at-least-16-palestinian-protesters-killed-as-u-s-opens-embassy-in-jerusalem-1526298531. [IGH]
Sedikides C., Gaertner L., Luke M. A., O'Mara E. & Gebauer J. E. (2013) A three-tier hierarchy of self-potency: Individual self, relational self, collective self. *Advances in Experimental Social Psychology* **48**:235–95. [LG]
Segal K., Jong J. & Halberstadt J. (2018) The fusing power of natural disasters: An experimental study. *Self & Identity* **17**(5):574–586. [WBS]
Sela Y. & Shackelford T. K. (2014) The myth of the myth of martyrdom. *Behavioral and Brain Sciences* **37**:376–77. doi: 10.1017/S0140525X13003488. [aHW]
Service E. R. (1971/1962) *Primitive social organization: An evolutionary perspective*. Random House. [J-LD]
Sharp C. A., Rentfrow P. J. & Gibson N. J. S. (2015) One God but three concepts: Complexity in Christians' representations of God. *Psychology of Religion and Spirituality* **9**(1):95–105. doi: 10.1037/rel0000053. [JEL]
Sheikh H., Ginges J. & Atran S. (2013) Sacred values in intergroup conflict: Resistance to social influence, temporal discounting, and exit strategies. *Annals of the New York Academy of Sciences* **1299**:11–24. [SA]
Sheikh H., Gómez Á. & Atran S. (2016) Empirical evidence for the devoted actor model. *Current Anthropology* **57**:S204–209. [SA]
Shenhav A., Rand D. G. & Greene J. D. (2012) Divine intuition: Cognitive style influences belief in God. *Journal of Experimental Psychology: General* **141**(3):423. [MNS]
Shutts K. (2015) Young children's preferences: Gender, race, and social status. *Child Development Perspectives* **9**(4):262–66. [PR]
Shutts K., Brey E. L., Dornbusch L. A., Slywotzky N., Olson K. R. & Pavlova M. A. (2016) Children use wealth cues to evaluate others. *PLOS ONE* **11**(3):e0149360. [PR]
Sidanius J., Pratto F. & Mitchell M. (1994) In-group identification, social dominance orientation, and differential intergroup social allocation. *The Journal of Social Psychology* **134**(2):151–67. doi: 10.1080/00224545.1994.9711378. [R-MR]
Singer J. A. & Salovey P. (1993) *The remembered self: Emotion and memory in personality*. Free Press. [aHW]
Singer P. (1981) *The expanding circle: Ethics and sociobiology*. Farrar, Straus & Giroux. [DC]
Skitka L. J., Bauman C. W. & Sargis E. G. (2005) Moral conviction: Another contributor to attitude strength or something more? *Journal of Personality and Social Psychology* **88**(6):895–917. doi: 10.1037/0022-3514.88.6.895. [DC, ZJM]
Skitka L. J. & Houston D. A. (2001) When due process is of no consequence: Moral mandates and presumed defendant guilt or innocence. *Social Justice Research* **14**(3):305–26. [ZJM]
Sloman S. A. (1996) The empirical case for two systems of reasoning. *Psychological Bulletin* **119**(1):3–22. [MNS]
Slote M. A. (1964) An empirical basis for psychological egoism. *Journal of Philosophy* **61**:530–37. doi: 10.2307/2023495. [AMC]
Smeekes A. & Verkuyten M. (2013) Collective self-continuity, group identification and in-group defense. *Journal of Experimental Social Psychology* **49**(6):984–94. [MBa]
Smeekes A. & Verkuyten M. (2014) When national culture is disrupted: Cultural continuity and resistance to Muslim immigrants. *Group Processes & Intergroup Relations* **17**(1):45–66. [MBa, VKC]
Smith A. (1982) *The theory of moral sentiments*. ed. D. D. Raphael & A. L. Macfie. Liberty Fund. (Original work published in 1759.). [ELK]
Smith D., Schlaepfer P., Major K., Dyble M., Page A. E., Thompson J., Chaudhary N., Saladi G. D., Mace R., Astete L., Ngales M., Vinicius L. & Migliano A. B. (2017) Cooperation and the evolution of hunter–gatherer storytelling. *Nature Communications* **8**(1853):1–9. [JG]
Smith E. R. & Henry S. (1996) An in-group becomes part of the self: Response time evidence. *Personality and Social Psychology Bulletin* **22**(6):635–42. [JEL]
Smith J. R. & Louis W. R. (2009) Group norms and the attitude–behavior relationship. *Social and Personality Psychology Compass* **3**(1):19–35. doi: 10.1111/j.1751-9004.2008.00161.x. [WRL]
Smith L. G. E., Thomas E. F. & McGarty C. (2015) We must be the change we want to see in the world: Integrating norms and identities through social interaction. *Political Psychology* **36**(5):543–57. [WRL]

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

Solnit R. (2009) *A paradise built in hell: The extraordinary communities that arise in disaster*. Penguin. [LT]
Solnit R. (2010) *A paradise built in hell: The extraordinary communities that arise in disaster*. Penguin. [WBS]
Somasundaram O., Tejus Murthy A. G. & Raghavan D. V. (2016) Jainism – Its relevance to psychiatric practice; with special reference to the practice of Sallekhana. *Indian Journal of Psychiatry* **58**(4):471–74. [AE]
Sonne J. W. H. & Gash D. M. (2018) Psychopathy to altruism: Neurobiology of the selfish–selfless spectrum. *Frontiers in Psychology* **9**:Article 575. doi: 10.3389/fpsyg.2018.00575. [AMC]
Sosis R. (2003) Why aren't we all Hutterites? Costly signaling theory and religious behavior. *Human Nature* **14**:91–127. [aHW]
Sosis R. & Kiper J. (2014) Religion is more than belief: What evolutionary theories of religion tell us about religious commitment. In: *Challenges to religion and morality: Disagreements and evolution*, ed. M. Bergmann & P. Kain, pp. 256–76. Oxford University Press. [JK]
Sosis R., Kress H. C. & Boster J. S. (2007) Scars for war: Evaluating alternative signaling explanations for cross-cultural variance in ritual costs. *Evolution and Human Behaviour* **28**(4):234–47. [aHW]
Sosis R., Phillips E. J. & Alcorta C. S. (2012) Sacrifice and sacred values: Evolutionary perspectives on religious terrorism. In: *Oxford handbook of evolutionary perspectives on violence, homicide, and war*, ed. T. Shackelford & V. Weeks-Schackelford. pp. 233–53. Oxford University Press. [JK]
Sperber D. & Baumard N. (2012) Moral and reputation in an evolutionary perspective. *Mind and Language* **27**(5):495–518. [AM]
Sperry P. (2005, July 28) When the profile fits the crime. *The New York Times*. Available at: https://www.nytimes.com/2005/07/28/opinion/when-the-profile-fits-the-crime.html. [MBo]
Sprinzak E. (1990) The psychopolitical formation of extreme left terrorism in a democracy: The case of the Weathermen. In: *Origins of terrorism: Psychologies, ideologies, theologies, states of mind*, ed. W. Reich, pp. 65–85. Woodrow Wilson Center Press. [JG]
Stack S. (1987) Celebrities and suicide: A taxonomy and analysis, 1948–1983. *American Sociological Review* **52**(3):401–12. [AE]
Staub E. & Vollhardt J. (2008) Altruism born of suffering: The roots of caring and helping after victimization and other trauma. *American Journal of Orthopsychiatry* **78**(3):267. [MBa]
Stern J. & Berger J. M. (2015) *ISIS: The state of terror*: HarperCollins. [MBo]
Stillwell A. M., Baumeister R. F. & Del Priore R. E. (2008) We're all victims here: Toward a psychology of revenge. *Basic and Applied Social Psychology* **30**(3):253–63. [VKC]
Stouffer S. A., Lumsdaine A. A., Lumsdaine M. H., Williams R. M. Jr., Smith M. B., Janis I. L. & Cottrell L. S. Jr., (1949) *The American soldier: Combat and its aftermath*. Princeton University Press. [aHW]
Strassmann J. E., Zhu Y. & Queller D. C. (2000) Altruism and social cheating in the social amoeba *Dictyostelium discoideum*. *Nature* **408**(6815):965. [LC]
Strehlow T. G. H. (1947) *Aranda traditions*. Melbourne University Press. [aHW]
Sugden R. (1993) Thinking as a team: Towards an explanation of nonselfish behavior. *Social Philosophy and Policy* **10**:69–89. doi: 10.1017/S0265052500004027. [AMC]
Swami V., Voracek M., Stieger S., Tran U. S. & Furnham A. (2014) Analytic thinking reduces belief in conspiracy theories. *Cognition* **133**(3):572–85. [MNS]
Swann W. B., Bastian B., Gómez A., Jensen J. & Whitehouse H. (2012) When group membership gets personal: A theory of identity fusion. *Psychological Review* **119**(3):441–56. [arHW]
Swann W. B. Jr., Buhrmester M. D., Gómez A., Jetten J., Bastian B., Vázquez A., Ariyanto A., Besta T., Christ O., Cui L., Finchilescu G., González R., Goto N., Homsey M., Sharma S., Susianto H. & Zhang A. (2014a) What makes a group worth dying for? Identity fusion fosters perception of familial ties, promoting self-sacrifice. *Journal of Personality and Social Psychology* **106**(6):912–26. [arHW, LG, SA, WRL, WBS]
Swann W. B. Jr., Gómez Á., Buhrmester M. D., López-Rodríguez L., Jiménez J. & Vázquez A. (2014b) Contemplating the ultimate sacrifice: Identity fusion channels pro-group affect, cognition, and moral decision making. *Journal of Personality and Social Psychology* **106**(5):713–27. [WBS]
Swann W. B. Jr., Gómez Á., Dovidio J. F., Hart S. & Jetten J. (2010a) Dying and killing for one's group: Identity fusion moderates responses to intergroup versions of the trolley problem. *Psychological Science* **21**(8):1176–83. [WBS]
Swann W. B. Jr., Gómez A., Huici C., Morales J. F. & Hixon J. G. (2010b) Identity fusion and self-sacrifice: Arousal as a catalyst of pro-group fighting, dying, and helping behavior. *Journal of Personality and Social Psychology* **99**(5):824–41. doi: 10.1037/a0020014. [aHW, WRL, WBS, DX]
Swann W. B. Jr., Gómez A., Seyle D. C., Morales J. & Huici C. (2009) Identity fusion: The interplay of personal and social identities in extreme group behavior. *Journal of Personality and Social Psychology* **96**(5):995–1011. doi: 10.1037/a0013668. [aHW, SA, LG, WRL, CR, DX]
Swann W. B. Jr., Gómez Á., Vázquez A. G., Guillamón A., Segovia S. & Carillo B. (2015) Fusion with the cross-gender group predicts genital sex reassignment surgery. *Archives of Sexual Behavior* **44**:1313–18. [SA, WBS]
Swann W. B. Jr., Jetten J., Gómez Á., Whitehouse H. & Bastian B. (2012) When group membership gets personal: A theory of identity fusion. *Psychological Review* **119**(3):441–56. doi: 10.1037/a0028589. [aHW, SA, LG, JK, WRL, WBS, DX]
Swann W. B. & Talaifar S. (2018) Introduction to special issue of *Self and Identity* on identity fusion. *Self and Identity* **17**(5):483–86. [WBS]
Syme K. L., Garfield Z. H. & Hagen E. H. (2015) Testing the bargaining vs. inclusive fitness models of suicidal behavior against the ethnographic record. *Evolution and Human Behavior* **37**(3):179–192. Available at: http://dx.doi.org/10.1016/j.evolhumbehav.2015.10.005. [aHW]
Tajfel H. & Turner J. C. (1979) An integrative theory of intergroup conflict. In: *The social psychology of intergroup relations*, ed. W. G. Austin & S. Worchel, pp. 33–47. Brooks-Cole. [aHW, LG]
Tanti C., Stukas A. A., Halloran M. J. & Foddy M. (2011) Social identity change: Shifts in social identity during adolescence. *Journal of Adolescence* **34**(3):555–67. [CR]
Tasuji T., Whitehouse H., Chan J., Henderson D., & Reese E. (in preparation) The development of identity fusion in adolescence via shared experiences. [rHW]
Tetlock P. (2003) Thinking the unthinkable: Sacred values and taboo cognitions. *Trends in Cognitive Science* **7**:320–24. [SA]
Teymoori A., Bastian B. & Jetten J. (2017) Towards a psychological analysis of anomie. *Political Psychology* **38**:1009–23. [WBS]
Thaler R. (1980) Toward a positive theory of consumer choice. *Journal of Economic Behavior and Organization* **1**(1):39–60. [CYO]
Thielmann I. & Böhm R. (2016) Who does (not) participate in intergroup conflict? *Social Psychological and Personality Science* **7**(8):778–87. Available at: https://doi.org/10.1177/1948550616660160. [R-MR]
Thomas E. F. & Louis W. R. (2014) When will collective action be effective? Violent and non-violent protests differentially influence perceptions of legitimacy and efficacy amongst supporters. *Personality and Social Psychology Bulletin* **40**:263–76. doi: 10.1177/0146167213510525. [WRL]
Thomas E. F., McGarty C. & Louis W. R. (2014) Social interaction and psychological pathways to political extremism. *European Journal of Social Psychology* **44** (1):15–22. doi: 10.1002/ejsp.1988. [WRL]
Thomas E. F., McGarty C. & Mavor K.I (2016) Group interaction as the crucible of identity formation: A glimpse at the origins of collective identity and action. *Group Processes and Intergroup Relations* **19**:137–51. doi: 10.1177/1368430215612217. [WRL]
Thomas E. F., Smith L. G. E., McGarty C. & Postmes T. (2010) Nice and nasty: The formation of pro-social and hostile social movements. *International Review of Social Psychology* **23**:17–55. [WRL]
Thomsen L. & Carey S. (2013) Core cognition of relational models. In: *Navigating the social world: What infants, children and other species can teach us*, ed. M. Banaji & S. Gelman. Oxford University Press. [LT]
Thomsen L., Green E. G. T. & Sidanius J. (2008) We will hunt them down: How social dominance orientation and right-wing authoritarianism fuel ethnic persecution of immigrants in fundamentally different ways. *Journal of Experimental Social Psychology* **44**(6):1455–64. doi: 10.1016/j.jesp.2008.06.011. [R-MR]
Thornhill R. & Fincher C. L. (2014) The parasite-stress theory of sociality, the behavioral immune system, and human social and cognitive uniqueness. *Evolutionary Behavioral Sciences* **8**(4):257–64. [AE]
Tinbergen N. (1963) On aims and methods of ethology. *Zeitschrift für Tierpsychologie* **20**:410–33. [rHW]
Tobeña A. & Vilarroya O. (2014) Normative seeds for deadly matrydoms. *Behavioral and Brain Sciences* **37**:378–79. doi: 10.1017/S0140525X13003506. [aHW]
Tooby J. & Cosmides L. (2010) Groups in mind: The coalitional roots of war and morality. In: *Human morality and sociality: Evolutionary and comparative perspectives*, ed. H. Høgh-Olesen, pp. 191–234. Palgrave MacMillan. [AM]
Trivers R. L. (1971) The evolution of reciprocal altruism. *Quarterly Review of Biology* **46**:35–57. [AM]
Trivers R. (2006) The elements of a scientific theory of self-deception. *Annals of the New York Academy of Sciences* **907**(1):114–31. doi: https://doi.org/10.1111/j.1749-6632.2000.tb06619.x. [R-MR]
Turchin P., Brennan B., Currie T. E., Feeney K. C., François P., Hoyer D., Manning J. G., Marciniak A., Mullins D., Palmisano A., Peregrine P., Turner E. A. L. & Whitehouse H. (2015) Seshat: The global history databank. *Cliodynamics: The Journal of Quantitative History and Cultural Evolution* **6**(1):77–107. [arHW]
Turchin P., Currie T. E., Whitehouse H., François P., Feeney K., Mullins D., Hoyer D., Collins C., Grohmann S., Savage P. E., Mendel-Gleason G., Turner E. A. L., Dupeyron A., Cioni E., Reddish J., Levine J., Jordan G., Brandl E., Williams A., Cesaretti R., Krueger M., Cecceralli A., Figliulo-Rosswurm J., Tuan P-J., Peregrine P., Marciniak A., Preiser-Kapeller J., Kradin N., Korotayev A., Palmisano A., Baker D., Bidmead J., Bol P., Christian D., Cook C., Covey A., Feinman G. M., Júlíusson Á. D., Kristinsson A., Miksic J. N., Mostern R., Petrie C., A., Rudiak-Gould P., ter Haar B., Wallace V., Mair V., Xie L., Baines J., Bridges E., Manning J., Lockhart B., Bogaard A. & Spencer C. S. (2018) Quantitative historical analysis uncovers a single dimension of complexity that

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

structures global variation in human social organization. *Proceedings of the National Academy of Sciences USA* **115**(2):E144–51. [arHW]
Turchin P., Whitehouse H., Francois P., Slingerland E. & Collard M. (2012) A historical database of sociocultural evolution. *Cliodynamics: The Journal of Quantitative History and Cultural Evolution* **3**(2):271–93. [aHW]
Ulmer J. T. & Steffensmeier D. (2014) The age and crime relationship: Social variation, social explanations. In: *The nurture versus bio-social debate in criminology: On the origins of criminal behavior and criminality*, ed. K. Beaver, B. Boutwell & J. C. Barnes, pp. 377–96. Sage. [CR]
Vail K. E., Rothschild Z. K., Weise D. R., Solomon S., Pyszczynski T. & Greenberg J. (2010) A terror management analysis of the psychological functions of religion. *Personality and Social Psychology Review*, **14**(1):84–94. [AE]
Van den Berghe P. L. & Barash D. P. (1977) Inclusive fitness and human family structure. *American Anthropologist* **79**:809–23. [CTP]
Van Leeuwen N. (2014) Religious credence is not factual belief. *Cognition* **133**(3):698–715. [MBo]
Vansina J. M. (1985) *Oral tradition as history*. University of Wisconsin Press. [PW]
van Zomeren M. & Louis W. R. (2017) Culture meets collective action: Exciting synergies and some lessons to learn for the future. *Group Processes & Intergroup Relations* **20**(3):277–84. doi: 10.1177/1368430217690238. [WRL]
van Zomeren M., Postmes T., Spears R. & Bettache K. (2011) Can moral convictions motivate the advantaged to challenge social inequality? Extending the social identity model of collective action. *Group Processes & Intergroup Relations* **14**(5):735–53. doi: 10.1177/1368430210395637. [DC]
Varnum M. E. W. & Grossmann I. (2016) Pathogen prevalence is associated with cultural changes in gender equality. *Nature Human Behaviour* **1**:Article 0003. [AE]
Varnum M. E. W & Grossmann I. (2017) Cultural change: The how and the why. *Perspectives on Psychological Science* **12**(6):956–72. [AE]
Vaughan D. K. & Schum W. A. (2001) Motivation in U.S. narrative accounts of the ground war in Vietnam. *Armed Forces and Society* **28**:7–31. [aHW]
Vazire S. & Funder D. C. (2006) Impulsivity and the self-defeating behavior of narcissists. *Personality and Social Psychology Review* **10**(2):154–65. doi: 10.1207/s15327957pspr1002_4. [R-MR]
Vázquez A., Gómez A., Ordoñana J. R., Swann W. B. Jr. & Whitehouse H. (2017) Sharing genes fosters identity fusion and altruism. *Self and Identity* **16**(6):684–702. doi: 10.1080/15298868.2017.1296887. [arHW, WBS, DX]
Vignoles V. L. (2011) Identity motives. In: *Handbook of identity theory and research*, ed. S. J. Schwartz, K. Luyckx & V. L. Vignoles, pp. 403–32. Springer. [MBa]
Vollhardt J. R. (2012) Collective victimization. In: *Oxford handbook of intergroup conflict*, ed. L. R. Tropp & L. Tropp, pp. 136–57. Oxford University Press. [MBa]
Vollhardt J. R. & Bilewicz M. (2013) After the genocide: Psychological perspectives on victim, bystander, and perpetrator groups. *Journal of Social Issues* **69**(1):1–15. [MBa]
Vollhardt J. R., Bilewicz M. & Olechowski M. (2015) Victims under siege: Lessons for Polish–Jewish relations and beyond. In: *The social psychology of intractable conflicts*, ed. E. Halperin & K. Sharvit, pp. 75–87. Springer. [MBa]
Walker R., Hill K., Flinn M. & Ellsworth R (2011) Evolutionary history of hunter–gatherer marriage practices. *PLOS ONE* **6**(4):e19066. [PW]
Walsh C. & Neff L. (2018) We're better when we blend: The benefits of couple identity fusion. *Self & Identity* **17**:587–603. [WBS]
Wang Q. & Aydin C. (2008) Cultural issues in flashbulb memory. In: *Flashbulb memories: New issues and new perspectives*, ed. O. Luminet & A. Curci, pp. 247–68. Psychology Press. [MBa]
Warner R. H., Kent A. H. & Kiddoo K. L. (2016) Perceived collective continuity and attitudes toward out-groups. *European Journal of Social Psychology* **46**(5):595–608. [VKC]
Watson-Jones R., Clegg J., Legare C. H. & Whitehouse H. (2014) Task-specific effects of ostracism on imitation of social convention in early childhood. *Evolution and Human Behavior*. **35**(3):204–10. [rHW]
Watson-Jones R. E., Legare C. H. & Whitehouse H. (2016) In-group ostracism increases high fidelity imitation in early childhood. *Psychological Science* **27**(1):34–42. doi: 10.1177/0956797615607205. [rHW]
Weatherston D. & Moran J. (2003) Terrorism and mental illness: Is there a relationship? *International Journal of Offender Therapy and Comparative Criminology* **47**(6):698–713. [MNS]
Wegner D. M. & Giuliano T. (1980) Arousal-induced attention to self. *Journal of Personality and Social Psychology* **38**:719–26. [LG]
Weinberg S. (1999, April) A designer universe? Paper presented at the Conference on Cosmic Design of the American Association for the Advancement of Science, Washington, D.C. Available at: http://www.physlink.com/Education/essay_weinberg.cfm. [AMC]
Weisfeld G. E. (1979) An ethological view of human adolescence. *Journal of Nervous and Mental Disorders* **167**:38–55. [aHW]
Weiss David J. & Weiss J. (2014) Inferring cognition from action: Does martyrdom imply its motive? *Behavioral and Brain Sciences* **37**(4):380. doi: 10.1017/S0140525X13003518. [aHW]
White G. L., Fishbein S. & Rutsein J. (1981) Passionate love and the misattribution of arousal. *Journal of Personality and Social Psychology* **41**(1):56. [MNS]
Whitehouse H. (1992) Memorable religions: Transmission, codification, and change in divergent Melanesian contexts. *Man, New Series* **27**(4):777–97. Reprinted in: Pachis P. & Wiebe D., eds. (2014) *In the sights of history and the cognitive sciences*, pp. 479–510. Equinox. [arHW]
Whitehouse H. (1995) *Inside the cult: Religious innovation and transmission in Papua New Guinea*. Oxford University Press. [aHW]
Whitehouse H. (1996) Rites of terror: Emotion, metaphor, and memory in Melanesian initiation cults. *Journal of the Royal Anthropological Institute* **2**(4):703–15. Reprinted in: Corrigan J., ed. (2004) *Religion and emotion: Approaches and interpretations*. Oxford University Press. [aHW]
Whitehouse H. (2000) *Arguments and icons: Divergent modes of religiosity*. Oxford University Press. [aHW, SA]
Whitehouse H. (2001) Transmissive frequency, ritual, and exegesis. *Journal of Cognition and Culture* **1**(2):167–82. [aHW]
Whitehouse H. (2002) Religious reflexivity and transmissive frequency. *Social Anthropology* **10**(1):91–103. [aHW]
Whitehouse H. (2003) Why do we need cognitive theories of religion? In: *Religion as a human capacity: A festschrift in honor of E. Thomas Lawson*, ed. T. Light & B. C. Wilson. Brill. [aHW]
Whitehouse H. (2004) *Modes of religiosity: A cognitive theory of religious transmission*. Rowman AltaMira Press. [arHW, DX]
Whitehouse H. (2005) Emotion, memory, and religious rituals: An assessment of two theories. In: *Mixed Emotions*, ed. K. Milton & M. Svasek. Berg. [arHW]
Whitehouse H. (2011) The coexistence problem in psychology, anthropology, and evolutionary theory. *Human Development* **54**:191–99. [aHW]
Whitehouse H. (2013) Three wishes for the world (with comment). *Cliodynamics: The Journal of Theoretical and Mathematical History* **4**(2):281–323. [arHW, DX]
Whitehouse H. (2016a) What motivates extreme self-sacrifice? *Pacific Standard* **9**(2):26–31. [aHW]
Whitehouse H. (2016b) Ritual and social evolution: Understanding social complexity through data. In: *Computational history and data-driven humanities*, ed. B. Bozic, G. Mendel-Gleason, C. Debruyne, & D. O'Sullivan. doi: 10.1007/978-3-319-46224-01. [rHW]
Whitehouse H., François P. & Turchin P. (2015) The role of ritual in the evolution of social complexity: Five predictions and a drum roll. *Cliodynamics* **6**(2):199–210. Available at: http://escholarship.org/uc/item/4836f93g. [aHW]
Whitehouse H. & Hodder I. (2010) Modes of religiosity at Çatalhöyük. In: *Religion in the emergence of civilization: Çatalhöyük as a case study*, ed. I. Hodder. Cambridge University Press. [aHW]
Whitehouse H., Jong J., Buhrmester M. D., Gomez A., Bastian B., Kavanagh C. M., Newson M., Matthews M., Lanman J. A., McKay R. & Gavrilets S. (2017) The evolution of extreme cooperation via shared dysphoric experiences. *Scientific Reports* **7**:44292. doi: 10.1038/srep44292. [arHW, WRL, DX]
Whitehouse H. & Laidlaw J. (2004) *Ritual and memory: Towards a comparative anthropology of religion* AltaMira Press. [aHW]
Whitehouse H. & Lanman J. A. (2014) The ties that bind us: Ritual, fusion, and identification. *Current Anthropology* **55**(6):674–95. [arHW]
Whitehouse H. & Martin L. H., eds. (2004) *Theorizing religions past: Archaeology, history, and cognition*. AltaMira Press. [arHW]
Whitehouse H. & Martin L. H., eds. (2005) History, memory, and cognition. *Historical Reflections/Reflexions Historiques* **31**(2, Special Issue). [aHW]
Whitehouse H. Mazzucato C. Hodder I. & Atkinson Q. D. (2014a) Modes of religiosity and the evolution of social complexity at Çatalhöyük. In: *Vital matters: Religion in the organization and transformation of a neolithic society*, ed. I. Hodder. Cambridge University Press. [aHW]
Whitehouse H. & McQuinn B. (2012) Ritual and violence: Divergent modes of religiosity and armed struggle. In: *Oxford handbook of religion and violence*. ed. M. Juergensmeyer, M. Kitts & M. Jerryson. Oxford University Press. [aHW]
Whitehouse H., McQuinn B., Buhrmester M. & Swann W. (2014b) Brothers in arms: Libyan revolutionaries bond like families. *Proceedings of the National Academy of Sciences USA* **111**:17783–85. [aHW, SA]
Wiessner P. (1986) !Kung San networks in a generational perspective. In: *The past and future of !Kung ethnography*, ed. M. Biesele, R. Gordon & R. Lee, pp. 103–36. Helmut Buske Verlag. [PW]
Wiessner P. (2014) The embers of society: Firelight talk among the Ju/'hoansi bushmen. *Proceedings of the National Academy of Sciences* **111**(39):14013–14. [PW]
Wiessner P. (in press) Collective action for war and for peace: A case study among the Enga of Papua New Guinea. *Current Anthropology*. [PW]
Wiessner P. & Tumu A. (1998) *Historical vines: Enga networks of exchange, ritual and warfare in Papua New Guinea*. Smithsonian Institution Press. [PW]
Williams F. E. (1928) *Orokaiva Magic*. Humphrey Milford. [aHW]
Wood G. (2016) *The way of the strangers: Encounters with the Islamic State*. Random House. [AE]
Wright L. (2006) *The looming tower*. Knopf Doubleday. [MBo]
Xygalatas D. (2012) *The burning saints: Cognition and culture in the fire-walking rituals of the Anastenaria*. Routledge. [aHW]

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press

Xygalatas D. (2015) The biosocial basis of collective effervescence: An experimental anthropological study of a fire-walking ritual. *Fieldwork in Religion* **9**(1):53–67. doi: 10.1558/fiel.v9i1.53. [DX]

Xygalatas D., Mitkidis P., Fischer R., Reddish P., Skewes J., Geertz A. W., Roepstorff A. & Bulbulia J. (2013) Extreme rituals promote prosociality. *Psychological Science* **24** (8):1602–605. doi: 10.1177/0956797612472910. [aHW, DX]

Yehuda R., Daskalakis N. P., Lehrner A., Desarnaud F., Bader H. N., Makotkine I., Flory J. D., Bierer L. M. & Meaney M. J. (2014) Influences of maternal and paternal PTSD on epigenetic regulation of the glucocorticoid receptor gene in Holocaust survivor offspring. *American Journal of Psychiatry* **171**(8):872–80. [MBa]

Yilmaz O., Karadöller D. Z. & Sofuoglu G. (2016) Analytic thinking, religion, and prejudice: An experimental test of the dual-process model of mind. *The International Journal for the Psychology of Religion* **26**(4):360–69. [MNS]

Yustisia W., Putra I. E., Rufaidah A., Whitehouse H. & Kavanagh C. (under review) The role of religious fundamentalism and tightness–looseness in promoting collective narcissism and extreme group behaviour. [aHW]

Zaal M. P., Laar C. V., Ståhl T., Ellemers N. & Derks B. (2011) By any means necessary: The effects of regulatory focus and moral conviction on hostile and benevolent forms of collective action. *British Journal of Social Psychology* **50**(4):670–89. [ZJM]

Zahavi A. (1975) Mate selection - A selection for a handicap. *Journal of Theoretical Biology* **53**:205–14. [J-LD]

https://doi.org/10.1017/S0140525X18000249 Published online by Cambridge University Press