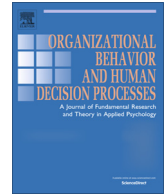




Contents lists available at ScienceDirect

## Organizational Behavior and Human Decision Processes

journal homepage: [www.elsevier.com/locate/obhdp](http://www.elsevier.com/locate/obhdp)

# Infectious diseases, contamination rumors, and ethnic violence: Regimental mutinies in the Bengal Native Army in 1857 India

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## ARTICLE INFO

## Article history:

Received 30 December 2012

Accepted 15 October 2014

Accepted by Michael Morris, Ying-yi Hong and Chi-yue Chiu

## Keywords:

Contamination rumors

Purity norms

Contagious disease

Cross-cultural prejudice

Intergroup conflict

Ethnic violence

Disgust avoidance

Mutiny

## ABSTRACT

The current paper connects anxiety about disease contamination to that about cultural contamination and the exclusionary behavior toward ethnic outgroups that it incites. We suggest that when individuals are exposed to disease fears, an epistemic groundwork is laid for construing outgroups as sources of contamination. We begin with a pilot experiment showing that contagious disease anxiety primes opposition to legalization of illegal aliens. We then analyze historical data about the diffusion of rumor-based ethnic violence, showing that Indian regiments of the East India Company were more likely to mutiny against their British officers if they had been exposed some months earlier to a cholera discourse. (These mutinies were proximally caused by acceptance of a rumor that the Company administration had violated a cultural taboo.) We discuss implications for studying the cognitive antecedents of the diffusion of beliefs and practices in organizations and in cultures.

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## Introduction

False rumors about an ethnic outgroup's violations of cultural taboos often incite exclusionary behavior, including ethnic violence (Fine, 2007). How do these "wedge rumors" spread – what makes people more or less likely to accept them as credible? Many theorists have proposed cognitive antecedents (Allport & Postman, 1965; Bartlett, 1932; Kashima, 2000; Sperber, 1996). Rumor transmission theory, since Allport and Postman's (1965) pioneering work, is based on the paradigm of a one-way telephone call; it says little about the social and emotional context of accepting a rumor (Difonzo & Bordia, 1997, 2007). However, if we are to understand how rumors spark the tinder of inter-group differences, we need to know more about the psychological and social conditions under which negative perceptions of outgroups become accepted, particularly perceptions of outgroups as norm-violators. In his epidemiological account of culture, Sperber (1996) proposed that the extent to which any new idea is considered plausible depends on related prior beliefs and discourses. Kashima (2000) found that stories became more stereotype consistent as they are retold, consistent with Bartlett's (1932) idea that serial reproduction of a story

leads to its conventionalization. How does hearsay about an outgroup's disrespect of cultural norms become assimilated as fact, often leading to ethnic violence?

We propose that construals of an outgroup's purported actions as cultural contamination can be primed by anxiety about disease contagion. Schaller (2011; Schaller & Murray, 2011; Schaller & Neuberg, 2012) theorized that chronic and contextually aroused feelings of vulnerability to disease trigger avoidance and exclusionary responses to foreigners, part of a 'behavioral immune' system, a suite of psychological mechanisms that motivate distance from others who may carry disease-causing pathogens. Faulkner, Schaller, Park, and Duncan (2004) found that personal vulnerability to disease is correlated with oppositional attitudes to entry of foreign immigrants; other studies, for example by Navarrete and Fessler (2006) have found similar effects for heightened in-group pride.

We argue that the social effects of contagion anxiety go beyond actions for reducing health risks, such as excluding foreign and unfamiliar groups. Disease contagion anxiety makes people more susceptible to construing outgroup members as sources of cultural contamination even when the out-groups are already present and familiar. The exclusionary responses we investigate range from denial of citizenship to ethnic violence. Our theory linking disease contamination and cultural contamination draws on the literatures

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on disgust in contamination psychology (Rozin & Nemeroff, 1990), the moral psychology of ingroup purity (Haidt, 2012), and negative responses to cultural mixing (Chiu, Gries, Torelli, & Cheng, 2011). We prove evidence from two different studies—a priming experiment (the pilot study), and an analysis of archival data using event-history methods (the main study).

The pilot experiment found that exposure to flu discourse induces participants to oppose a formal pathway for the legalization of illegal immigrants already in the United States. Note that this is an exclusionary act relevant to the purity of the ingroup and not one that could protect one's health, as it changes the identity of these people but not physical proximity. Our historical study analyzed antecedents of a wave of mutinies against British officers by Indian soldiers of the Bengal Native Army in 1857. The historical data allows us to observe the effects of a real-world 'treatment' condition—an independently documented series of rituals related to cholera several months before, to which some regiments were exposed and some not.

Cholera had been a persistent part of life in mid-nineteenth century India. For villagers, a superstitious practice for forestalling the 'evil' of cholera was to transfer an offering, of a *chapatti*, a disk-shaped cake of unleavened bread to some neighboring villages, which in turn passed it on in a chain mail fashion (Arnold, 1986). The circulation of chapattis was a ritual of expelling cholera, but largely uncorrelated with the actual incidence of the cholera in 1856–57. Hence, some native regiments of the East India Company were exposed to this ritual of disease avoidance by local villagers in their vicinity, while other regiments were not similarly exposed. A few months later, many Hindu and Moslem soldiers came to believe an incendiary rumor that their British officers had violated their religious taboos by supplying them with cartridges made with the fat of cows and pigs. We examine whether the rumor-accepting mutinous regiments tended to be the ones previously exposed to the cholera rituals.

In abstract terms we have a historical setting where the outcome is violence against an out-group, in an organization known for strict norms of compliance (a regiment) and where disobedience, much less violence is rare (Hough, 1855; Rose, 1982). The treatment condition, of exposure to contagious disease, has the following features: (1) the discourse of contagious disease is external to the focal actors (regiments) and not generated by them (2) the rituals in neighboring villages were uncorrelated to the actual incidence of cholera in regiments, hence the discourse about contagious disease is strongly symbolic but external to the actual risk of disease itself. If regiments that were exposed to this 'treatment' were more likely to mutiny over cultural contamination rumors that would constitute evidence that contagious disease discourse made groups susceptible to the unfounded rumor about cultural contamination. We control for cholera infection rates, regimental characteristics such as wages and demographic diversity, and features of the local environment such as distance from native place of recruitment, presence of Christian Missions in the vicinity, size of local British presence, and proximity to the telegraph. We also control for spatial and temporal diffusion of events, as well as the occurrence of festivals that provided exogenous free spaces for organizing a mutiny. We draw on a novel event history dataset assembled from primary and secondary sources by Rao and Dutta (2012, who studied the timing of violence) to show how prior exposure to disease discourse made some regiments more likely to engage in violent mutiny.

### Infectious diseases, contamination rumors, and ethnic violence

Schaller and colleagues (e.g. Schaller, 2011; Schaller & Murray, 2011; Schaller & Neuberg, 2012) draw on evolutionary arguments to suggest that inter-group prejudices are threat management

mechanisms. In their framework, different threats elicit functional responses in order to ensure reproductive success. Emotions are the early warning alarms triggered in response to cues such as a slithering snake (fear) or rotting objects (disgust). Infectious diseases elicit disgust and underlie xenophobic reactions to foreigners. In the Schaller model, foreigners are sources of pathogens and also are unaware of local norms that prevent the spread of diseases. Faulkner et al. (2004) showed that when primed with infectious diseases people preferred immigrants from familiar places than unfamiliar places – preferring immigrants who were less subjectively foreign. Navarette, Fessler, and Eng's (2007) study suggested that ethnocentrism is higher among people attuned to disease avoidance such as among women in the first trimester of pregnancy (which heightens disgust reactions).

We propose that anxieties about infectious disease not only prime concerns about foreigners as disease threats but also prime the concerns about cultural outgroups as sources of cultural contamination, which spark actions to defend group norms that may have no effect on personal health or even may put personal health in grave danger. Contamination psychology was elucidated in research on sympathetic magic and the 'law of contagion', wherein mere contact is enough to transfer the essence of a contagious object or individual to others (Frazer, 1890; Rozin & Nemeroff, 1990). Rozin, Millman, and Nemeroff (1986) found that a clean shirt touched by a sterilized cockroach, or a laundered shirt previously worn by a disliked colleague were viewed as undesirable, but respondents could not verbalize why (also see Rozin, Markwith, & McCauley, 1994). The transfer of impurity is categorical rather than ordinal, i.e. not a matter of degree (Haidt & Algoe, 2004), and the contagion of impurity persists long after the source of contamination has been taken out of the picture (e.g. De Jong, 2013; Frazer, 1890/1959: 35; Rozin & Fallon, 1987). These results have been supported across cultures such as American, Indian, Israeli, Japanese, Greek, and Hopi cultures (Haidt, Rozin, McCauley, & Imada, 1997; Hejmadi, Rozin, & Siegal, 2004).

The notion that ethnic outgroups raise cultural purity or contamination concerns has been discussed by theorists of globalization such as Barber (1996) and Bayart (2005) who suggest inflows for culturally foreign immigrants often precede reactionary movements to narrow cultural identities; for example, African immigrants in France gave impetus to right-wing parties seeking to change the bases of French national identity. Morris, Mok, and Mor (2011) found that priming the mix of an inflowing foreign culture and local cultures triggers a response of need for cognitive closure among residents of a society who have low identification with the foreign culture. Need for cognitive closure, in turn, gives rise to heightened adherence to ingroup cultural norms (Fu et al., 2007). Further studies priming cultural mixes show conditions under which it evokes defensive, exclusionary responses (e.g. Chiu & Cheng, 2007; Chiu et al., 2011), including negative attitudes about foreign brands (Torelli & Cheng, 2011; Torelli, Chiu, Tam, Au, & Keh, 2011) and cross-national acquisitions (Tong, Pun-Zee Hui, Kwan, & Peng, 2011). These exclusionary responses on the symbolic level can be understood as a response to the construal of ethnic outgroups as sources of cultural contamination.

We begin with a pilot study to corroborate our argument of a causal circuit from disease thoughts to outgroup exclusion, even when the outgroup is already present and familiar.

### Pilot experiment

#### Participants

We posted an online study on the Mechanical Turk platform. Respondents were all US adults older than 18 years of age. Among 1082 completed responses, the mix of gender in the sample was

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