

Review Paper

Why clean the toilet if others don't? Using a social dilemma approach to understand users of shared toilets' collective cleaning behaviour in urban slums: a review

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ABSTRACT

Shared toilets are a common good in urban slums, but need to be maintained and cleaned for users to positively benefit from having access to them. Collective participation of the shared toilet users is required to keep them clean and ensure adequate hygiene. However, users' decisions on whether to participate or not in the cleaning of the shared toilets are a social dilemma. If each of the shared toilets' users decided not to participate in their cleaning, the facilities could end up in a deteriorated unhygienic state and become a health risk to them and to the community at large. In this paper, we provide an overview of the social dilemma approach and highlight how the factors important in the management of social dilemmas can be relevant to understanding the cleaning behaviour of shared toilet users in urban slums.

Key words | cleaning, collective action, cooperation, shared toilets, social dilemma, urban slums

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INTRODUCTION

Recent studies show an increasing trend in the use of shared toilets as the most accessible and viable sanitation option in developing countries' urban slum settlements (Schouten & Mathenge 2010; WHO/UNICEF 2012; Mazeau *et al.* 2013). They have been found to be the most viable for slum areas despite the space limitations caused by an ever increasing population in these areas (McFarlane 2008; Schouten & Mathenge 2010; Katukiza *et al.* 2012; UN-Habitat 2012). However, one of the reasons why shared toilets are still classified as unimproved by the United Nations Joint Monitoring Programme for Water and Sanitation is the lack of cleanliness and acceptability (WHO/UNICEF 2012). Dirty toilets are common in urban slums (Tumwebaze *et al.* 2013) and limit the health and social benefits derived from having access to these facilities (Tumwine *et al.* 2002; Jenkins & Scott 2007). In most urban slums, a toilet is often shared by different families (Karn *et al.* 2003; Gulyani & Talukdar 2008), and normally there are some users who do not cooperate in its cleaning (Wegelin-Schuringa & Kodo

1997; Tumwebaze *et al.* 2014). Their decision to not help with the cleaning and to use the facilities while dirty exposes themselves and others to the risk of contracting diseases, such as diarrhoea (Tumwine *et al.* 2002; Rahman 2006; Buttenheim 2008). In addition, an individual's decision to leave a shared toilet dirty can cause inconvenience, disgust and/or conflict with the other users (Curtis & Biran 2001).

While there is greater use of shared toilets, especially in sub-Saharan Africa, it is widely recognized that it is important to keep them clean (Biran *et al.* 2011; Nyametso 2012). Shared toilets encompass a range of facility types (communal, public or semi-private) and these vary within and between settings (Mazeau *et al.* 2014). In this literature review, we define shared toilets to be facilities to which access is restricted to a limited number of user households within the same compound or households close to each other (Mazeau *et al.* 2013). Furthermore, we define a shared toilet with restricted access as a 'common good' as opposed to a 'public good', which in the case of shared sanitation means a communal and public

toilet. The restricted number of user households of shared toilets makes them suitable for analysis based on the study of social dilemmas. The safe use of a common good (shared toilet) is interdependent with the sharing user households' collective cooperation to participate in keeping the toilet clean. It is this interdependence, that individuals have to make cleaning choices on whether to participate in cleaning or not, that leads to social dilemmas (Chen *et al.* 1996; Foddy *et al.* 1999).

Hitherto, very few studies have focused on the behaviours of users and their cleaning of shared toilets. More empirical research is warranted that deals with how to resolve the dirty state of shared toilets and can help to promote how users can take a lead role in their cleaning. The objective of this paper is to show that the cleaning of shared toilets is a social dilemma that can be explained from the social dilemma context.

SOCIAL DILEMMAS

The most widely used definition of social dilemmas is that proposed by Dawes (1980), who defines social dilemmas as situations characterized by two main properties:

1. The social payoff to each individual for defecting (non-cooperative) behaviour is higher than the payoff for cooperative behaviour, regardless of what the other society members do.
2. All individuals in the society receive a lower payoff if all are non-cooperative than if all cooperated.

In the case of the cleaning of shared toilets, each user is in the social dilemma:

1. If he or she does not participate in cleaning, then he or she is better off because he or she does not have to make an effort to clean, but benefits from the cleaning of others.
2. However, if many or all users do not participate in cleaning, then all users of the shared toilet suffer from the harm caused by being exposed to the risk of contracting diseases.

Social dilemma research has focused mainly on prisoner's dilemmas, commons dilemmas and public goods dilemmas. Commons and public goods dilemmas are the aspects analysed in this paper to understand the cleaning behaviour of shared toilet users.

Public goods dilemmas focus on resources or services that can be enjoyed by all members of a group or society regardless of their contribution (Brown-Kruse & Hummels 1993; Sheizaf & Larose 1993). While it could be in each individual's interest not to pay for these services, but to still have access to them, if all individuals decided not to pay for such services, they are likely to collapse (Balliet 2010). Some examples of public goods include: roads, transport, education and health services, among others. Most shared toilets in slums are provided by the owners of the households (Mazeau *et al.* 2013). As such, some users show no responsibility in their cleaning or reason that it is the role of the household owners to clean the shared toilets since they pay rent (Wegelin-Schuringa & Kodo 1997; Tumwebaze 2014). Thus, public goods dilemma resolution factors such as trust, group identity, cooperation and norms could be essential in understanding the cleaning behaviour of shared toilet users.

Commons dilemmas originate from the tragedy of the commons (Hardin 1968). They are based on the paradox about the grazing patterns of herdsmen from a community who share a common resource (grazing land) that they over grazed, leading to its depletion (Hardin 1998). According to Ostrom *et al.* (2002), the tragedy of the commons is central in human ecology and the study of the environment. Examples of commons dilemmas include, but are not limited to, depletion of water sources and forests, environmental pollution, and poor solid waste and excreta disposal. Shared toilets can become an environmental and health hazard if poorly used or not kept clean (Tumwine *et al.* 2002; McFarlane 2008).

COOPERATION AND COLLECTIVE ACTION IN SOCIAL DILEMMAS

Cooperation manifested by individuals making decisions that support collectivism is important to sustain resource use and/or ensure the durability of public goods (Olson 1965; Ostrom 1998, 2000; Vanvugt & DeCremer 1999). Likewise, cooperation among users of shared toilets to participate in their cleaning is important to maintain the cleanliness of the facilities. Unfortunately, research has shown that individuals often make non-cooperative decisions regardless of their effect on others, even when

the aggregate harm is greater than the profit attained by an individual alone (Kopelman *et al.* 2002). Understanding the influencing factors of cooperation and collective action in public and common goods dilemmas could be of relevance to the collective cleaning of shared toilets.

METHODS

The data about publications on social dilemma and collective cleaning of shared toilets were compiled through key word searches in existing databases and recommendations from colleagues with knowledge on the topic. The key search words used were: social dilemma, cleaning, collective action, cooperation, and shared sanitation and hygiene. During these searches, key word combinations were done according to each of the social dilemma factors discussed. Majorly, Scopus and Web of Science Data libraries and Google Scholar searches were done for this article. One limitation of Google Scholar, however, is that it has no advanced search function and does not provide distinctive identification numbers for the articles. Yet, it does provide a good supplement to main data libraries and to articles published by major publishers, such as Elsevier, Springer, Taylor & Francis, and John Wiley & Sons.

Discussion of social dilemma factors and application to users' cleaning of shared toilets

The concepts presented in this section are from papers on the factors influencing cooperation in commons dilemmas (Kopelman *et al.* 2002), a conceptual review of decision-making in social dilemmas (Weber *et al.* 2004) and social dilemmas (Dawes 1980).

Group size

The size of a group has an influence on individual decisions' manifestation of cooperative or non-cooperative behaviour (Bonacich *et al.* 1976). Some studies, such as those comparing three to seven groups or more, contend that cooperation is greater in smaller than bigger groups, and that the likelihood of individuals to make decisions that benefit group interests is higher in smaller groups (Marwell & Schmitt

1972; Hamburger *et al.* 1975; Bonacich *et al.* 1976; Isaac & Walker 1988). Most studies report that the level of cooperation and self-efficacy declines with the increase in group size (Fox & Guyer 1977; Liebrand 1984).

The effect of group size as used in commons and public goods social dilemmas could be comparable to the cleanliness challenge of toilets shared by a big number of families in urban slums (Bartlett 2003; Karn *et al.* 2003; Gulyani & Talukdar 2008). One of the principal reasons why the Joint Monitoring Programme for Water and Sanitation characterizes shared toilets as unimproved is inadequacy in terms of their cleanliness and acceptability (UNICEF & WHO 2012). However, in the recently proposed post-2015 targets and indicators for drinking water, sanitation and hygiene, shared toilets can be considered improved if shared by not more than five households (WSSCC 2014). A sanitation study conducted in Kampala slums in Uganda found that the greater the number of families sharing a toilet, the less likely were the facilities to be clean (Günther *et al.* 2012). Facilities were more likely to be cleaner if they were shared among fewer households (Tumwebaze 2014). Similarly, findings from a study conducted in Bangladesh on the challenges of local environmental problems facing the urban poor reported that cleaning is one of the sanitation challenges in situations where a single communal toilet was being shared among more than 10 to 20 families (Rahman *et al.* 2010).

Group dynamics

The nature of individuals' groups and their developments and interactions influence the way they behave in social dilemma situations (Moreira *et al.* 2013). Weber and colleagues report in a conceptual review on decision-making that group associations and identifications are important social features in social dilemmas. Individuals often behave differently when in groups than when alone (Weber *et al.* 2004). In groups where individuals have strong associations among each other, trust and cooperation is high, and may result in the prioritization of collective actions or individuals restraining themselves for the collective good of the group (Kramer *et al.* 1986). However, group dynamics have also been found by researchers to perpetuate the free-rider syndrome such as in public goods dilemmas, where some individuals,

for instance, may not want to pay the taxes that are meant to help in the provision of public services of which they are beneficiaries (Erev *et al.* 1993).

From a sanitation perspective, the heterogeneous and transient nature of users of shared toilets in urban slums might compound their relationship with other households in regard to the cleaning of the shared toilets (Isunju *et al.* 2011; Joshi *et al.* 2011). The rural-to-urban movement of some slum dwellers or the regular changing of living locations within slums on the part of some families may impede the development of social relationships among the users of shared toilets that could support their collective cleaning behaviour (Miah & Weber 1991; Okot-Okumu & Oosterveer 2010; Schouten & Mathenge 2010).

Gender

Most gender studies show that women are more likely than men to be cooperative when dealing with social dilemmas (Stockard *et al.* 1988; Sell *et al.* 1993; Nowell & Tinkler 1994; Cadsby & Maynes 1998). Summary findings from some studies show that strong cooperation exists in more female groups than in male or mixed groups (Nowell & Tinkler 1994), that women are more likely than men to cooperate (Stockard *et al.* 1988) and that women were found to have more cooperative behaviour in negotiations than men (Walters *et al.* 1998).

As reported in social dilemma studies, women have also been found to have more influence than men in the management of water and sanitation services (Assaad *et al.* 1994; MoWE 2009). For instance, women play a more influential role in ensuring good hygiene practices within the home or even in the cleaning of the shared toilet facilities in slums than men (Elmendorf & Isely 1983; Zwane & Kremer 2007; Graf *et al.* 2008). However, a sustainable management system of shared toilets by users in urban slums needs the active involvement of both men and women (Hanchett *et al.* 2003; Mara 2003).

Attribution

Attribution refers to individual inferences about the causes of certain events or behaviours (Duncan 1976; Blount 1995; Stouten *et al.* 2006). In a study on information preferences

and the corresponding consumption behaviour in common pool resource management, the authors found that individuals' decisions to voluntarily restrict consumption in resource crises among other things depended on what they believed caused the scarcity (Brucks & Mosler 2011). Similarly, a study conducted in California when there was a severe drought found that people who believed that the water shortages were due to natural climatic conditions restricted their use of water to the optimal limits, while those who thought that the cause had been induced by other people did not (Talarowski & McClintock 1978).

In the field of sanitation, a number of preventable diseases such as diarrhoea are attributed to the lack of adequate sanitation and hygiene (Ezzati *et al.* 2002; Bartram & Cairncross 2010; Kumar & Subita 2012). Yet, some residents in urban slums may not prioritize engagement in hygiene practices, such as the cleaning of shared toilets if they think it is not their duty to clean or if this arrangement is compounded by other limitations, such as lack of water or cleaning equipment (Wegelin-Schuringa & Kodo 1997; Bapat & Agarwal 2003; Hanchett *et al.* 2003). However, they might be more disposed to participate in cleaning when informed that the dirty state of the toilet originates from the unintended non-cleaning of others due to the carelessness of young children or the inability of sick users to participate in cleaning (see unintended non-cooperation).

Social motives

Social motive factors arise when individuals take into consideration others' outcomes when making choices (Maccrimmon & Messick 1976). Social motives that affect the way individuals cooperate in social dilemmas are: altruism (motivation to maximize other individual's gains), competition (individual motivation to maximize relative gains by working against the interests of other individuals in the group to which he or she may belong), cooperation (motivation to maximize joint gains) and individualism (maximization of one's own individual gains without working with the other individuals in the group in which he or she may belong) (McClintock 1972; Liebrand 1984; Liebrand & van Run 1985; Kopelman *et al.* 2002). Most evidence on social motives shows that people with high individualistic and competitive traits are more aggressive in making

self-gains than people with cooperative and altruistic characteristics (Kramer *et al.* 1986; Roch & Samuelson 1997; Kopelman *et al.* 2002). A study on the effects of social motives on behaviour across two cultures (American and Dutch) looking at altruism, cooperation, competition and individualism, found that cross-cultural differences existed in regard to the distribution of social motives. Whereas in Holland the percentage of altruistic and cooperative individuals was 50–60%, in America these percentages ranged from 26% to 40%.

In the context of sanitation and hygiene, understanding individuals' social motives and how they might influence the maintenance and cleanliness of shared sanitation facilities is important. Social motives are manifested by the willingness of the users of shared toilets to directly participate in their cleaning and/or maintenance (Burra *et al.* 2003; McFarlane 2008; Roma *et al.* 2010; Thieme 2010). The cleaning management of a toilet depends on the proportion of cooperators to non-cooperators who share a toilet. If cooperators dominate, then self-management of the user group can be successful. However, if non-cooperators prevail, then the user group will be better off by engaging a cleaning service.

Social norms

Social norms are the embodiment of collective beliefs and values that impact how people behave and/or interact within certain groups or settings (Bicchieri 2006). Evidence from a number of studies shows that social norms are instrumental in fostering cooperation among people faced with social dilemmas (Biel *et al.* 1999; Bicchieri 2002; Thøgersen 2008). In a study by Biel & Thøgersen (2007) on the activation of social norms in social dilemmas, it is reported that social norms often guide behaviour in specific contexts. The authors also state that it is necessary to frequently activate the norms so that people keep following them (Biel & Thøgersen 2007). Thus, chances are high that if a group of individuals have some binding social norms, decisions made by such individuals are more likely to be collective than in situations where social norms are less significant (Steg & Vlek 2009). However, it is worth mentioning that social norms may be injunctive – approved behaviours by important others or institutionalized, descriptive – performed behaviours or personal norms – self-internalized

behaviours performed as personal obligations (Thøgersen 2008; Fishbein & Ajzen 2010; Mosler 2012). Some studies have reported on the strong relationship of personal norms with cooperation (Bratt 1999; Thøgersen 1999). It is argued that people may conform to a social norm if they find it legitimate or reasonable, and not necessarily because of fear or sanctions (Dawes 1980, Thøgersen 2008).

In sanitation, a wide range of studies have shown that social norms are important in health promotions, or the adoption of health-related behaviours (Pinfold 1999; Dellstrom Rosenquist 2005; Mahon & Fernandes 2010; Rheinländer *et al.* 2010; Curtis *et al.* 2011). Tumwebaze *et al.* (2014), in their study on the determinants of households' cleaning intentions for shared toilets, found that individuals cleaning of shared toilets significantly related to their perceived personal norms to use a clean toilet. In situations where certain social norms may constrain people's adoption of health behaviours or hygiene practices, such as hygienic maintenance of shared toilets, researchers have pointed out the need to develop health-protecting social norms or changing existing norms to support the promotion and adoption of health behaviours (Curtis *et al.* 1997, 2009; Waterkeyn & Cairncross 2005; Bartram & Cairncross 2010; Mosler 2012).

Social identity

Social identity refers to the perception of oneness within a group (Blake & Fred 1989). An individual's social attachment or sense of belonging determines their level of cooperation in a given situation. Blake & Fred (1989) argue that social identification leads to activities that correspond to identifying with and supporting institutions, thereby, reinforcing the antecedents of identification. A study by Dawes *et al.* (1988), on the importance of group identity in cooperation, contends that consensus by subjects promising to cooperate was an important indicator of social identity and could in itself be a sufficient condition to elicit cooperation among individuals (Dawes *et al.* 1988). Cooperation and collectivism are, thus, rooted in a coherent sense of social belonging (Van Zomeren *et al.* 2008).

Likewise, the strength of social identity among slum residents who share toilets could be essential in enhancing individual tendencies to collectively participate in toilet

cleaning in users who have shared norms or who value cleanliness (Crook & Aye 2006; Hulland *et al.* 2013). This is because social identities shape relationships within groups and can reinforce collective initiatives (Moffat & Finnis 2005; Alcock *et al.* 2009). However, in situations dealing with transient slum dwellers, the establishment of solid social identities and the creation of collective institutions, such as those required concerning the cleaning of shared toilets, may be difficult and challenging (De-Graft Aikins & Ofori-Atta 2007; Owusu 2010; Joshi *et al.* 2011; Appeaning Addo 2013).

Behaviour of others

Various studies show that individuals make decisions regarding the way they behave depending on how they perceive or interpret the behaviour of other individuals in dilemma situations (Fujii & Yanagida 2005; Bogaert *et al.* 2008; Brucks & Mosler 2011; Nettle *et al.* 2011; Balliet & Van Lange 2013; Declerk *et al.* 2014). This is because human decisions occur in settings where the choices of two or more interdependent actors have strong implications on both their outcomes and those of others (Liebrand 1984).

Likewise, Kelley & Stahelski (1970) study on social interaction as the basis of cooperators' beliefs about others, argue that several plausible assumptions lead to the deduction that cooperators and competitors will have different beliefs about what other people are like in respect to cooperativeness and competitiveness. The authors report that when cooperative and competitive people interact, the cooperative individual tends behaviourally to become like the competitive one. Because of this behavioural change, the competitor misjudges the cooperator, taking him to be competitive, and the cooperator and not the competitor is aware of the latter's dominant role in their relationship. The cooperators will believe that others reciprocate their cooperativeness as opposed to competitiveness, while competitors will believe that other people are uniformly competitive (Kelley & Stahelski 1970).

Evidence from studies dealing with total sanitation shed light on how collective mechanisms can steer individuals to adopt sanitation and hygiene behaviours (Pattanayak *et al.* 2009; Whaley & Webster 2011; Engel & Susilo 2014).

However, no studies were found that directly looked at the link between the users of shared toilets and their participation in their cleaning. This is a field that would, thus, benefit from more evidence-based research. It would be interesting to find out, for instance, how cooperators react when other users of the shared toilet are not cooperative in cleaning, and if non cooperators would change their ways and participate in cleaning due to other users' cooperation.

Communication

The role of communication in enhancing cooperation among individuals and collective decision-making is reported to be a key factor in social dilemmas (Bouas & Komorita 1996; Balliet 2010). It is also important in understanding how cooperation or group relationships influence decision-making processes (Bornstein *et al.* 1989). The reinforcement of group identity feelings and the commitment to cooperate is said to be the most important function of communication in resolving social dilemmas (Kerr & Kaufman-Gilliland 1994). Literature shows that the content of messages is a potent factor in resolving social dilemmas (Thompson & Stoutemyer 1991). Face-to-face communication is reported as more effective in cultivating and strengthening cooperation than e-mails, depending on the nature of the decisions to be made, their content and the complexity of the issues (Frohlich & Oppenheimer 1998). Frohlich and Oppenheimer's findings are also similar to that of a review study by Balliet (2010) on communication and cooperation, in which Balliet found communication to have a large positive effect on cooperation, with face-to-face communication having a stronger effect than written messages.

Similarly, the importance of communication is reported in a number of sanitation and hygiene studies (Pinfold 1999; Bajracharya 2003; Curtis 2003). These studies highlight appropriate communication channels, communication skills and knowledge as crucial to the fostering of desired sanitation and hygiene behaviour (Curtis *et al.* 2001; Lüthi *et al.* 2009; Schouten & Mathenge 2010). However, research is still needed to better understand the modes of communication among users of shared toilets in urban slums and its influence on their collective cleaning behaviour.

Trust

Trust may be defined as the confidence, faith or predictability an individual has about others (Jonker & Treur 1999). Rothstein (2000), in his article on trust, social dilemmas and the strategic construction of collective memories, contends that trust is needed to move from non-cooperative to cooperative states (Rothstein 2000). In a study on the influence of trust, accountability and self-monitoring on decision makers' willingness to contribute to a public goods dilemma experiment, the authors found that strong perceptions of trust, high accountability and self-monitoring had a positive impact on individuals' willingness to cooperate (De Cremer *et al.* 2001). In a study by Mosler (2012), it was shown that trust could be fostered by a public commitment of participants to cooperate.

Likewise, encouraging trust among users of shared toilets is important to improve their cleaning cooperation. If a toilet user highly trusts that other sharing families will participate in keeping the shared toilet clean, he or she might be cooperative in cleaning it as well. While trust has been mentioned in different sanitation and hygiene studies as important (Chitekwe-Biti 2009; Roma *et al.* 2010; Schouten & Mathenge 2010; Hendriksen *et al.* 2012), further research is needed on the linkage of trust with participation in the cleaning of shared toilets.

Unintended non-cooperation

Unintended situations sometimes affect the way individuals interact or cooperate in certain situations (Van Lange *et al.* 2002; Tazelaar *et al.* 2004). A study on how to overcome the detrimental effects of unintended non-cooperation in social dilemmas found that unintended non-cooperation often may lead to interpersonal misunderstanding or discrepancies between the intended and actual outcomes of an interaction partner (Van Lange *et al.* 2002). For instance, arriving late for an appointment due to unexpected traffic could lead one to interpret that as a sign of uncooperativeness (Van Lange *et al.* 2002). It is reported that negative unintended situations exert detrimental effects on the impressions of partners' benign intent and cooperation. This was found in a study that examined whether unintended non-cooperation exerted detrimental effects on impressions and cooperation

(Tazelaar *et al.* 2004). The authors also found that such detrimental effects could be effectively reduced by communication (Tazelaar *et al.* 2004).

Concerning sanitation and hygiene, circumstances may arise outside the control of individuals that may limit their performance of expected responsibilities. These might include homelessness, lack of funds and ignorance (Burra *et al.* 2003; Magadi *et al.* 2003; De-Graft Aikins & Ofori-Atta 2007; Owusu 2010; Patel *et al.* 2013). For example, while a user of a shared toilet may have the desire to clean on a given day, the lack of water available may be a limiting factor, since water shortage is a common problem, as cited in some studies (Graf *et al.* 2008; Thieme 2010; Stoler *et al.* 2012).

A main limitation for this paper is that, although much literature can be found dealing with social dilemmas, not much exists on the cleaning of shared toilets. Also, it was found that much research on socio-cognitive behavioural determinants has a limited focus. While a number of social dilemma studies on the influence of social norms on individual decision-making exist, they mostly do not take into account such cognitive determinants as risks, attitudes, injunctive norms (influence of persons individuals consider important in their lives), ability and self-regulation. However, the factors discussed in this paper, when combined with the study of other related determinants, such as socio-cognitive factors, could lead to more holistic findings and guide the focus of interventions aimed at improving shared toilet users' participation in their cleaning. In addition, this paper will help to fill the knowledge gap by providing information relevant to social dilemma reviews and/or field investigations regarding the cleaning behaviour of shared toilet users and/or general hygienic maintenance of shared toilets.

CONCLUSION

Shared toilets are a common good in developing countries' urban slums and their cleaning requires the collective participation of all user families. In this paper, we have presented the social dilemma factors important to understanding the collective cleaning behaviour of shared toilet

users in urban slums. With the proposed inclusion of shared toilets (if shared by not more than five families) into the post-2015 millennium development goals for drinking-water, sanitation and hygiene, further field research and interventions are important to promote the collective cleaning of shared toilets by user families.

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