

# How Does Emotion Relate To Cooperation In Social Dilemmas? A Review Of Literature

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## Abstract

In recent years, human society represents social dilemmas everywhere. This article reviews the relationship between emotions (anger, fear, trust, pride) and cooperation in social dilemmas. Given the context of social dilemmas, the economic game paradigm is applied for experimentation, allowing one to study the behavioural characteristics, particularly related to cooperation and emotions. The present review is confined to experimental studies that explicitly explored the relationship or effects of various emotions on cooperative or non-competitive behaviour in social dilemmas. The review findings revealed a negative correlation between anger and cooperation. Nonetheless, there is a positive association between cooperation and fairness judgment, and established evidence shows a positive correlation with trust and pride as well. This paper also inferred that fear of exploitation has a negative relationship; nevertheless, the absence of fear has a positive association with cooperation in social dilemmas. Based on the available literature and review findings, this research has inferred effects, causation, and correlation between selected emotion and cooperation. However, there is yet a margin for future researchers to investigate both long-term and short-term effects of emotions and cooperation, using a combination of cross-sectional and longitudinal social surveys and experimentations.

**Keywords:** Emotions, Cooperation in Social Dilemmas, Anger, Fear, Trust, Pride

## Introduction

There are several global challenges, such as global warming, overgrazing of common land, overpopulation, overuse of resources, pollution, overfishing, and many others. These challenges can be considered social dilemmas. As Van Lange and colleagues (2013) declared, social dilemmas are everywhere around us, challenging the well-being of society. It is hard to envision a sphere of life that is not dogged by any social dilemma. Individuals encounter social dilemmas at every step, from little day-to-day choices to broader government actions, impacting world-widely (Osbaldiston & Sheldon, 2002). Let's take an example of overpopulation that constantly

contributes to social and environmental problems, e.g., poverty, climate change, and scarcity of food and energy. These are all ripe for a discussion to address critical questions: Why do these problems emerge? How do people across the world connect to these problems? What will happen if the population is increasing continuously? How will scarce resources ensure a quality lifestyle for present and future generations? Particularly, how do our behaviours influence overpopulation, and how to mitigate these problems for humans' well-being?

Social dilemmas have been defined in various ways. The term 'social dilemma' was coined by Dawes (1980), referring to it as a matter of choices. Dawes (1980) defined that a

person develops one' dominating strategy given social dilemmas to yield a higher outcome for socially defecting or selfish choices. Such behaviours are opposed to socially cooperative choices, regardless of what others do. Further, Kollock (1998) referred to social dilemmas, where individuals' rationality results into collective irrationality. Later on, some researchers (e.g., Messick & Brewer, 2005; Osbaldiston & Sheldon, 2002; Van Lange & Joireman, 2008) identified gaps in the definition of social dilemmas, emphasising time and spatial perception. Subsequently, Van Lange et al. (2013) highlighted temporal perception in situations, where immediate self-interests are at odds with long-term shared interests.

Furthermore, Osbaldiston and Sheldon (2002) incorporated spatial dimension in social dilemmas and informed that individuals in a particular location/region might benefit at the cost of people's suffering at other locations/regions. Also, Krueger et al. (2014) revealed that social dilemmas impose limitations on individuals' control over their outcomes – expressing that what individuals receive is based on what they and others do. It highlights that people behaves according to their strategy, vis-à-vis others, while striving for the same.

In sum, social dilemmas symbolise a conflict between personal and collective interests Borgstede et al., 2018), where one fulfils his/her self-interest at the cost of others' interests, vis-à-vis another is concerned about others' welfare, dominating the cooperative choices (Osbaldiston & Sheldon, 2002). More precisely, social dilemmas have three main characteristics (Dawes, 1980; Messick & Brewer, 2005). Firstly, the non-cooperative choices are always more beneficial for individuals than cooperative choices – irrespective of others' preferences. Secondly, individuals' non-cooperative choices are always more disadvantageous to others than cooperative ones. Lastly, the collective amount of harm/damage to others due to non-cooperative choices is more significant than individual's benefit. These highlights that an individual's interest in social dilemmas discourages people from investing their efforts, or money at the cost of collective benefits. Consequently, non-cooperation between individuals leads to the

possible resource deterioration (Kopelman et al., 2002).

A critical analysis of the literature revealed to understand the variance in structure of various types of social dilemmas, particularly the number of persons involved (e.g., dyad vs. groups), period of interaction (e.g., single vs. repeated), and meaning of cooperation (e.g., contribution or non-consumption of resources; M. Fischer et al., 2021; Van Lange et al., 2013). Therefore, social dilemmas are a sensitive research domain, where slight variation may have huge effects on cooperative choices (Ledyard, 1995). Given the global significance and ubiquity of social dilemmas, it is crucial to explore how individuals and societies deal with social dilemmas and why individuals choose to cooperate or defect. Further, there is a need to explore mechanisms by which cooperation may be engendered in people facing social dilemmas. In recent years, psychologists, sociologists, economists, and political scientists have been interested in understanding motivates, related strategies, and consequences to promote cooperative behavior (Weber et al., 2004). Cooperation is complex to perform, requiring individuals to think beyond their short-term and long-term interests to solve social dilemmas. However, there is yet more to explore regarding enhancing cooperation in social dilemmas because of rapidly changing scenarios of human lives.

Human emotions and cooperation play an integral role in our individual and social lives. Emotions are increasingly recognised as natural responses, shaping interpersonal relationships and influencing various personal and collective outcomes (Liu, 2006). Literature defined and interpreted emotion in multiple ways, featuring its diverse facets. Some experts emphasised the physiological aspects of emotion, e.g., feeling (Frijda, 1986; James, 1994), some viewed the cognitive aspects, e.g., judgment or appraisal (Lazarus, 1991; Plutchik, 1980; Solomon, 1998), while some underlined the social meaning, e.g., angry, guilt (Averill, 1980; Thoits, 1989). Researchers agreed that emotion is a multi-pronged and evolving process, which begins with emotional cues and induces an emotional response, either in physiological arousal or behavioural reactions (Gross, 1999; Liu, 2006). Within the pragmatic definition of emotion, it is

described as multi process-oriented and induced by specific stimuli (personalities, situations, or objects), activating relevant emotional components, for example, physiological arousal, facial expressions, subjective experience (e.g., feeling), and action (e.g., anger; Wubben et al., 2009). Overall, emotion is the episodic and short-term pattern of perception, communication, and action responding to particular physical or social challenges. Understanding the psychological underpinnings of both emotions and subsequent cooperation is of practical significance.

Emotion plays a critical role in facilitating, promoting and maintaining interpersonal and social relationships, and prosocial and antisocial behaviours (Eisenberg & Fabes, 1992; Lockwood et al., 2014). Longstanding evidence recommends that emotions are goal-oriented, accompanied by instrumental actions and motivation, influencing cooperation in social dilemmas (Polman & Kim, 2013). Emotionally driven goal-pursuit is a significant predictor of cooperation in social dilemmas, affecting people's choice to cooperate and the number of shared resources and efforts that emotion triggers. For instance, emotion-guided goals in anger include a desire to antagonise others (Lockwood et al., 2014; Polman & Kim, 2013). A large body of literature has investigated the interplay between the various components of emotion and cooperation, particularly in the context of social dilemmas.

Given the context, this research paper aims two-fold: a) review and highlight the contributions of previous research on human emotions and cooperation within the social dilemma in the field of psychology, and b) present recommendations and possible future research directions.

In the following sections, this comprehensive review presents the review strategy, key findings, and conclusion to highlight the relationships between emotions and cooperation in social dilemmas.

### **How Researchers have Investigated Relationships between Emotion and Cooperation in Social Dilemmas**

Generally, social dilemmas have been modelled in economic games, using varied situations, which provide a straightforward, efficient, and transparent pathway to investigate

cooperation through various social interactions (Thielmann et al., 2015). Given social dilemmas, there are three main metaphoric discourses in economic games, i.e., Prisoner's Dilemma Game (PDG), Public Goods Game (PGG), and Common-Pool Resource (CPR) Dilemma Game (Haesevoets et al., 2015). These economic games apply several emotions, decisive for cooperative choices. For example, PDG is a paradox of decision analysis – where an individual goal competes with another individual or group. In PDG, one participant gains the most benefits and defects, while the other acquires less and cooperates (Acevedo & Krueger, 2005). In PGG, all participants can benefit from a collective public resource, notwithstanding who contributed or cooperated (Kollock, 1998). Cooperation or contribution in PGG does not relate to personal benefits; however, defection yields more personal advantages, and less collective benefits (Shank et al., 2015). Within CPR Dilemma Game, participants may harvest or extract resources from the pool, and their self-interest leads to collective disaster and resource depletion. CPR Dilemma is also known as the tragedy of the common or social traps, where individuals' short-term rewarding behaviour results in long-term collective costs (Cross & Guyer, 1980; Keser & Gardner, 1999; Kopelman et al., 2002; Platt, 1973).

Given the context of social dilemmas, the economic game paradigm is applied for experimentation to measure participants' cooperative behaviour. This paradigm provides an opportunity to quantitatively assess cooperative behavioural characteristics, unconscious decision-making, and interpersonal relationships (Haselhuhn & Mellers, 2005; Watabe et al., 2015). Thus, the economic paradigm has become a central tool for exploring behaviours – what factors influence decision-making process and how this process differs in varied contexts (Brosnan, 2021). Literature suggests that economic games are preferred due to the simplicity of normative solutions and an aspiration to assess what individuals do (Haselhuhn & Mellers, 2005). Notably, two different mechanisms, i.e., frame of reference and cooperative social decision-making, have been proposed for this research. As De Dreu et al. (1992) informed, individuals' frame of reference

influences social decision-making, representing cognitive activity to achieve the desired outcomes – where choices not only affect individuals' outcomes but also the interdependence. Further, De Dreu and McCusker (1997) explained that people cooperate according to their frame outcome (gain vs. loss), subject to their social motives and behavioural options. In economic games, the dual system analytical framework is employed (Rand et al., 2015) to analyse the cognitive mechanisms underlying decision-making process for cooperation. In such dual cognitive systems, one is often fast, emotional, intuitive, and automatic, while the other is slow, deliberate, and controlled (Frederick, 2005). Reflecting on these decisions, people usually cooperate because of inhibition, self-control, or selfish deliberation.

A growing literature in the behavioural and social sciences, particularly psychology, documented various emotions and cooperation in social dilemmas. Psychologists assume emotion as the predominant driver to formulate meaningful decisions (Ekman, 2007; Frijda, 1988; Keltner et al., 2014), which serve as the conduit to regulate and boost positive emotions (e.g., joy, trust, love, pride) or avoid negative emotions (e.g., fear, anger, guilt). Positive emotion facilitates cooperation and social functioning (Algoe et al., 2010), while negative emotion serves as an altered signal to raise concern for social norms and potential threats (Zheng et al., 2017). Emotion moderates the effects of increasing or decreasing cooperation, influencing individual and collective well-being; therefore, it is crucial to understand and identify potential processes of emotion and collaboration, particularly within social dilemmas.

Social, cultural, developmental, and evolutionary psychologists emphasised that an analytical overview of the social dilemmas, where emotions are elicited, is a prerequisite to building an understanding of emotion and subsequent actions (Campos et al., 1989; Markus & Kitayama, 1991; Morris & Keltner, 2000; Tooby & Cosmides, 1990). Emotion conveys particular intentions for interaction and coordination in certain situations; however, establishing and maintaining cooperation is the decisive principle.

In the purview of social dilemma, the potential emotional influence on prosocial behaviour is well documented in psychology. There are several instances where researchers applied primary and secondary research methodologies, including experiments, field research, and reviews, to investigate the role of emotion and cooperation in social dilemmas. This research postulates that humans are equipped with multiple emotions, each associated with varied motives and preferences, directing their behaviours. Although a significant strand of literature is available, presenting the relationship of cooperation on various emotions separately, nonetheless there is a scarcity of comprehensive review analysing the contribution of both emotions and cooperation in the context of social dilemmas. This review aims to present an analytical synthesis, and contribution of emotion and cooperation within social dilemmas in psychology to bridge the gap.

The present review is confined to those experimental studies that explicitly explored the relationship or effects of various emotions on cooperative or non-competitive behaviour in social dilemmas. Under this critical review, we have been able to identify a handful of studies fulfilling the objectives of the present review. Since laboratory experiments have a broader potential to measure causality, more experimental studies are included to investigate the causal relationship between varied emotions and cooperation. Generally, experiments used a controlled environment to manipulate subjects, using emotion-induced procedures and behavioural tasks (Lane, 2017). This is often done by introducing participants to particular situations, and subsequently, their effectiveness on specific emotions and behaviour is validated. Some experiments also collected baseline information to compare results during and after experiments. Given the context above, this review critically analysed and cautiously inferred the available data to assess the effect, relationship, and/or correlation between emotion and cooperation in social dilemmas. However, this review had some limitations, where the spurious correlation was inferred and reported. This paper intends to build an intellectual stance and informative understanding, identify previous research patterns, highlight the relationship

between varied emotions and cooperation in social dilemmas, and propose new areas and visions for future research.

### **Relationship between varied Emotion and Cooperation in Social Dilemmas**

This section reviews evidence on the relationship between varied emotions and cooperation in social dilemmas. Arguably, humans have a more comprehensive array of emotions and the capacity to master their emotions, which other species cannot (Panksepp, 1998). Although correlation does not imply causation, human emotions and cooperation share a strong connection and influence. Over the last decades, social dilemmas have provided an avenue to closely examine an interplay between emotions and cooperation and their associated factors. Social dilemmas have become a central tool to explain behaviour due to motives of actions. Previous studies have examined the relationship between emotions and cooperation, primarily considering economic game experiments looking at social dilemmas. This review predominantly studied, and prioritised emotions of a) anger, b) trust, c) fear, and d) pride to examine their relationship with cooperation in social dilemmas.

### **Relationship between Anger and Cooperation in Social Dilemmas**

Anger is one of the primary emotions, characterised by antagonism when one feels deliberately wrong. Anger is the most pervasive emotion (Allred, 1999), which may be interpreted from facial expressions as signs of aggression and induced reaction to engage in a conflict, such as a name-calling or confrontation (Averill, 1982; A. H. Fischer & Roseman, 2007). Anger is also a primary driving force when an individual feels threatened by external forces and takes an appropriate reaction (DiGiuseppe & Tafrate, 2007), e.g., the desire to condemn or punish others, obtain rewards through denial, or judge others, which results in non-cooperative and antisocial behavior (Rudolph et al., 2004). Anger may have a positive or negative connotation and is closely related to fairness judgments (Averill, 1982). Fairness judgment is based on the principles of equality, equity, or deservingness, which is self-biased and triggered by unequal distribution (Hertel et al., 2002).

Based on the economic games experiments within social dilemmas, Pillutla and Murnighan (1996) asserted that anger can be negatively correlated with cooperation. The angry proposer offers the angry responder less money, ultimately resulting in a non-cooperative response. Similarly, Sinaceur and Tiedens (2006) highlighted the weaker association between anger and cooperation, revealing that angry negotiators offer minor benefits but take more concessions from their counterparts. It shows that angered participants behave more competitively (or non-cooperatively), grabbing more resources from others.

Given resource dilemmas, Knapp and Clark (1991) investigated the effects of anger and other emotions amongst psychology students. All participants were randomly assigned to read an angry, sad, happy, or neutral story, followed by a laboratory simulation to solve resource dilemmas. This study found a negative correlation between anger and cooperation, where sad and angry participants were less cooperative and more competitive, depleting the resources and achieving less profit than happy or neutral participants.

Kassinove et al. (2002) investigated the association of emotion and cooperative (non-competitive) decisions in a 100-trial Iterated Prisoner's Dilemma (IPD) game. Initially, all participants completed the State-Trait Anger Expression Inventory to determine their level of anger and tendency to become angry in response to unfair treatment. The participants, who secured high and low scores were grouped to play 100-trials IPD, recording their own and opponent's reactions, along with gain or loss on each trial. In the IPD trial, an individual's selection for a competitive response resulted in the best payoff, while the counterpart selected a cooperative (non-competitive) response. Kassinove et al. (2002) also found a negative correlation between anger and cooperation, where players in the high anger group responded more non-cooperatively (or competitively) than others. Even their tendency to cooperate was weakened, when paired with an angrier partner. They revealed that anger had strong direct and indirect effects on promoting cooperation in social dilemmas.

Further, Van Kleef et al. (2008) reviewed the intrapersonal and interpersonal effects of

anger and cooperation within various conflicts, including social dilemmas. The intrapersonal effect refers to the effect of emotions on an individual's cognition and behaviour; however, the intrapersonal effect is associated with others' influences (Morris & Keltner, 2000; Van Kleef et al., 2004). Van Kleef et al. (2004) affirmed that anger sometimes elicits cooperative or competitive behaviour (defection), while sometimes vice versa. The effect of rage at intrapersonal was found to be positively associated with competition and negatively correlated with cooperation. Nonetheless, the robustness of the effect of anger was striking at interpersonal, determined by individuals' interdependence, their tendency to process information, and the justifiability of anger expressions.

Polman and Kim (2013) examined the effects of emotionally guided goals, termed as emotivation (including anger) on cooperation in a hybrid social dilemma (PGD and CPR). Varied participants were recruited for three online experiments and engaged in social dilemmas. Findings suggested that the cooperative behaviour of participants, including the number of shared resources that participants give or take, is associated with their emotivation (and anger). They revealed that participants experienced more anger than other emotivation. Also, the angry participants took more shared resources from others ( $M=26.35$ ,  $SD=17.68$ ) and gave fewer shared resources to others ( $M = 40.15$ ,  $SD = 20.39$ ), aligning to antagonise others. Summing up, anger decreases the motivation to cooperate in social dilemmas. Further, Adam and Brett (2015) explored the effects of anger on balancing cooperative and competitive elements in negotiation experiments. They found that anger is less effective and does not elicit more enormous concessions, and cooperation-inhibiting effective reactions drive response.

Bartke et al. (2019) informed that participants in anger induction treatment are mostly inclined to behave more competitively than cooperatively. They performed a PGD experiment, where participants were induced with the motives of anger and care through autobiographical recall. They found that participants' preferences for cooperation are subjective to their motives, where anger elicited

less willingness to contribute to public goods than care. Moreover, anger-induced participants demonstrated more competitiveness towards payoff differences; however, showed less cooperation.

In experimental social dilemmas, the equal distribution or contribution of resources provides a sense of fairness amongst participants – closely related to anger. Along with equality, some researchers highlighted another distributive principle of equity, when there is a significant difference between the recipients' profit and wealth (Lamm & Schwinger, 1983; Van Dijk & Grodzka, 1992). Eek et al. (2001) examined the effects of fairness on cooperation in PGD, considering willingness to pay as a measure of cooperation. They found a positive correlation between perceived fairness of distribution and willingness to pay, associated with equality and equity. Though this experiment provides reliable evidence, however, did not seem more robust than the previous, as the willingness to pay is seen as positive and higher for PGD. It indicates the positive effect on the degree of cooperation in social dilemmas. Further, Samuelson (1993) found that co-operators are more concerned with fairness, while non-cooperators with self-interest.

Previous research on fairness and social dilemmas mainly focused on correlation; however, Eek and Biel (2003) provided an extension, investigating the interplay between perceived fairness of resources distribution and cooperation. They highlighted the collective consequences of individual choices, where manipulation influenced cooperation and the decision of fairness. It showed that people tailor a fair degree of cooperation when they perceive it to be fair.

Based on the findings above, it may be concluded that there is clear evidence showing a negative association between anger and cooperation in social dilemmas. Contrary, there is moderate evidence of a positive association between fair judgment and cooperation in social dilemmas.

### **Relationship between Trust and Cooperation in Social Dilemmas**

Trust is used in multiple connotations (Williamson, 1993), such as articulate expressions and confidence as a powerful

emotion (Barber, 1983). White et al. (2008) defined trust as a belief system enabling others to behave constantly in the given situations. Trust is recognised widely in shaping cooperation (Rackman et al. (1996), and yielding positive outcomes (Arrow, 1974). Dasgupta (1988) endorsed that cooperation among organisations, groups, and individuals is based on trust. Mayer et al. (1995) found trust as a tactical asset for an organisation during the reorganisation crisis. Trust is the multi-dimensional paradigmatic emotion (Driscoll, 1978), independent of rational consideration to some extent (Mcknight et al., 1998).

On account of social dilemma, the factor in inducing and promoting the concept of trust is of central significance (Kramer & Tyler, 1995). In simple words, it is mandatory to understand how trust is experienced psychologically to evaluate its effects on cooperation in social dilemmas. Kramer and Tyler (1995) formed a theoretical structure to explain how individuals experience trust in psychological behaviour.

Jones and George (1998) highlighted two types of trust, i.e., conditional and unconditional, and studied their effect on cooperation. Results showed that trust is positively correlated with cooperation under a dependent state. Further, Acedo and Gomila (2013) examined the impact of conditional trust on participants' readiness to cooperate in social dilemmas. Fessler and Haley (2003) highlighted trust as a critical determinant affecting directly or indirectly cooperation. They investigated the impact of thirteen emotions on cooperation and found a positive association between trust and cooperation. Pruitt and Kimmel (1977) also endorsed a significant relationship between trust and cooperation in social dilemmas. Buchan et al. (2011) reported trust as a state belief, indicating people's expectations about others' behaviours in social dilemmas.

In a broad spectrum, the way others perceived trust was studied by Parks and Hulbert (1995) and concluded a positive correlation between trust and cooperation in social dilemmas. Researchers also examined the association of trust with human well-being and financial growth and found that trust is positively correlated with all these factors (Bjørnskov, 2012; Knack & Zak, 2003). Arrow (1972) and Fukuyama (1995) established evidence that

society's economic strength is strongly predicted by the level of trust and cooperation, where higher trust is essential to ensure healthier financial functionalities. Van Staveren and Knorringa (2007) theorised that trust enhances collective action and cooperation between organisations and individuals to boost the economy. Further, Putnam (1993) found that people from the areas with more trust in local government showed greater civic cooperation.

Further, Knack and Keefer (1997) studied the association between country-level trust, cooperation, and economic growth. Findings showed that the enhancement of country-level trust is positively associated with financial and economic development and cooperation. La Porta et al. (1997) studied the correlation between trust and judicial competency, particularly declining corruption. Additionally, participants' intention to trust and contribute to social dilemmas was thoroughly studied in numerous researches, where trust was seen as an essential factor for cooperation (Dawes, 1980; De Cremer, 1999; Kelley & Grzelak, 1972). Some researchers designed theoretical frameworks to comprehend the significance of trust in building cooperation. Pruitt and Kimmel (1977) explained the structural goal/expectation theory, presented by Yamagishi (1986). Further, Kahneman and Tversky (1979) theory of prospect also explained that people do not find it attractive to gain despite losing what they already have, therefore, show less trust to cooperate in social dilemmas.

Some studies also looked into the aspect of reframing the social dilemmas. Schwartz-Shea and Simmons (1995) and Parks (1994) explained that trust and cooperation are correlated with each other, considering the dilemmas' reframing. Brewer and Kramer (1986) identified that incentive is one of the significant constraints in establishing cooperation. Individual-level trust decreases if people are unwilling to cooperate; therefore, reframing social dilemmas may increase trust and cooperation.

Trust is considered a superior predictor of cooperation in social dilemmas. Researchers explained the difference in trust between resource and public dilemmas (Parks & Hulbert, 1995; Yamagishi & Sato, 1986) and concluded that participants' fear of failure predicts trust – if others will not contribute efficiently, then there

would be a wastage of time and money, so trust would not nurture. To overcome this issue, fear must be eliminated to foster healthier trust, positively impacting cooperation in social dilemmas. Further, Yamagishi and Sato (1986) revealed that trust is linked with the ways individuals deteriorate fear.

Given the context of conflict, Mcknight et al. (1998) examined how the intensity of conflict controls or regulates the relation between cooperation and trust. Van Staveren and Knorringa (2007) also explained that trust is a prerequisite in enhancing the cooperation and collective action between individuals and reducing conflicts in social dilemmas. Tyler and Dawes (1993) highlighted the role of appropriate behaviour in raising trust and cooperation in social dilemmas. De Cremer (1999) proved that effectiveness positively correlates with cooperation and trust in social dilemmas. Deutsch (1960) and Kim et al. (2019) also found a positive association, informing that high trustworthiness and trust promote cooperation in social dilemmas.

Scientists explained that trust and cooperation are correlated in society (Kramer et al., 1996; Parks & Hulbert, 1995). Acedo and Gomila (2013) expressed that cooperative behaviour is closely linked with trusting behaviour, while cooperation has no relationship with reciprocity. Balliet and Van Lange (2013) conducted meta-analysis and found a correlation between trust and cooperation in social dilemmas.

Given the above review findings, it may be inferred that trust is associated with various motives and feelings; thus, difficult to determine. Nonetheless, researchers, using multiple techniques, concluded that trust positively correlates with establishing and maintaining cooperation in social dilemmas at an individual, interpersonal and societal level.

### **Relationship between Fear and Cooperation in Social Dilemmas**

Fear is the primitive, natural, and powerful emotion induced by a perceived threat or risk. It is not merely identified with a conscious feeling of being afraid; instead, considered a protective emotion that urges to confront the danger. Fear is a great force that prompts self-preservation;

nonetheless, fear of being exploited by others also induces a sense of cooperation. Sometimes fear is termed as contempt and taken as the earmark of cowardice (Westermayr, 1915). Although literature used both fear and greed within social dilemmas, the effect or relationship of fear with cooperation is under discussion for this review.

Coombs (1973) introduced the term fear in PDG as a dominant strategy for non-cooperation. Later on, Pruitt and Kimmel (1977) coined the goal/expectation theory, highlighting the positive relationship between fear and cooperation, and postulating that an individual will cooperate while having no fear of being gyped due to the non-cooperation of others.

Amid PGD, the fear that others will not cooperate is dominant (Parks & Hulbert, 1995). Liebrand et al. (1986) established that fear is critical in social dilemmas. Komorita and Parks (1996) revealed a negative correlation, informing that lower levels of fear increase cooperation in social dilemmas. Some researchers found a strong correlation between fear and non-cooperation, refraining people to cooperate ((Dawes et al., 1986; Rapoport, 1967). Scholars also highlighted that efficacy is critical to reducing fear of being exploited by others and enhancing cooperation (De Cremer, 1999; Kerr, 1992; Kerr & Kaufman-Gilliland, 1994). Further, De Cremer (1999) found that fear directly affects the fairness, trust, and cooperation. Furthermore, Poppe and Utens (1986) concluded that the absence of fear of being cheated was positively associated with cooperation. The fear of punishment is beneficial to understand how individuals organise themselves and enforce cooperation to comply with social norms.

Fear is a distinct motive leading to individuals' non-cooperative choices, where participants prefer mutual defection to unilateral cooperation. Some experts discussed the relationship between fear and cooperation in social dilemmas (Ahn et al., 2001; Płatkowski, 2017). Płatkowski (2017) examined fear in multi-person social dilemmas and concluded that generalisation led to the existence of fear in N-person PD, PGD, and CPR. Further, Ahn et al. (2001) informed that payoff parameters are associated with fear, where fear of losing is the dominant strategy, which a player receives from cooperation if the other player defects.



Simpson (2003) explored the relationship of fear with cooperation in social dilemmas, using a gender lens, and highlighted those females and males respond differently to fear in social dilemmas.

Bruins et al. (1989) randomly assigned conditions to participants to examine the effect of the saliency of fear and greed in social dilemmas. Results revealed that cooperation is more common when fear has low saliency. Notably, the fear of being exploited is seen as decisive for cooperation. Rau et al. (2020) explained individual differences resulting from fear of exploitation in social dilemmas.

Fear is critical in determining cooperation in social dilemmas. It may be inferred that non-cooperation may be encouraged when fear is salient. Conversely, the absence of fear is positively associated with cooperation in social dilemmas.

### **Relationship between Pride and Cooperation in Social Dilemmas**

Pride is a positive emotion, classified as self-conscious and social, when an individual feels responsible for oneself or a socially valued behaviour (Mascolo & Fischer, 1995). Pride is varied from basic emotions, e.g., anger, because it involves complex appraisals of self-worth or moral virtues (Lewis, 2008; Williams & Desteno, 2009). Pride is also a driving force with significant social functions, motivating the acquisition of skills and cooperation (Dorfman, 2016).

Pride is more likely to activate prosocial and cooperative behaviour. Generally, individuals feel pride in expressing moral accomplishments, which encourages prosocial conduct (Dorfman et al., 2014; Hart & Matsuba, 2007; Sanders et al., 2018). Diverse cultural research revealed that pride is associated with positive valence and potency (Van Osch et al., 2013). Meanwhile, pride also has a negative connotation and is linked with competitiveness (non-cooperation; Cheng et al., 2010; Holbrook et al., 2014; Tracy et al., 2009; Tracy & Robins, 2007a).

Pride is distinguished from basic emotions and studied widely in regulating social behaviours (Baumeister et al., 1994; Beer et al., 2003; Niedenthal et al., 1994). Wubben et al. (2012) indicated pride as an adaptive social

emotion. Mainly pride was seen as the most noteworthy emotion for prosocial behaviour, which drives action for socially valued achievements (Tracy & Robins, 2007a). Dorfman et al. (2014) also acknowledged the significance of pride compared to non-social positive emotions (e.g., joy) for promoting cooperation in social dilemmas.

Researchers have classified pride into two sub-categories, i.e., authentic and hubristic – indicating their relationship with prosocial and antisocial behaviours. Authentic pride refers to accomplishment and confidence, while hubristic pride signifies arrogance and vanity (Carver et al., 2010). People usually volunteer more when feel more pride, resulting in cooperation; therefore, evidence highlighted that authentic pride is strongly correlated with cooperation (Tracy & Robins, 2007b; Wubben et al., 2012). Conversely, hubristic pride results in exploitation or antisocial (Campbell & Foster, 2007; Tracy et al., 2009). Further, Wubben et al. (2012) found that authentic pride leads to more cooperation than hubristic pride, which invariably signalled defection. This study explained that proud people believe in competition and are motivated selfishly. Broadly, Yeung and Shen (2019) also demonstrated that authentic and hubristic pride is correlated with effective and ineffective leadership and cooperative behaviours, which is inconsistent with the previous study (Maner & Case, 2016).

Although researchers mainly focused on the benefits of pride at an individual level (Katzir et al., 2010; Weiner, 1985; Williams & Desteno, 2009), various experts emphasised its societal benefits (De Hooze et al., 2007; Fessler & Haley, 2003; Frank, 1988; Haidt, 2003). Tangney et al. (2007) viewed pride as a moral barometer, providing feedback on social acceptability. Recent research endorsed a positive association between pride and prosocial behavior, where the more participants felt pride in their fair behaviour, the more they cooperated (Van der Schalk et al., 2012).

Given the social dilemmas, Dorfman et al. (2014) investigated the influence of pride on cooperation and found that pride activates more cooperative choices and contributes more to socially valued behaviour than other emotions. Also, they implied that higher cooperation

stimulates a sense of conscious pride. However, it is essential to look into the effects of pride on a generally positive mood that promotes cooperation (Hertel & Fiedler, 1994; Tan & Forgas, 2010; Van Lange et al., 2013).

Pride is more likely to increase people's willingness to reciprocate, even when reciprocating is costly. Given social dilemmas, psychologists found an association of pride with both cooperative/prosocial behaviour e.g., altruism (Hart & Matsuba, 2007), and antisocial behaviours, e.g., aggression (Baumeister et al., 1994; Tracy et al., 2009). Further, Dorfman (2016) revealed marginally significant effect of pride on cooperation, indicating that participants cooperate more when feel pride ( $M = 30.6$ ,  $SD = 21.32$ ).

Owing to social dilemmas, pride motivates people to forgo their self-interest to pursue collective and social interests, promoting socially valued outcomes. Pride is pleasant and motivates cooperative decisions; therefore, people cannot ignore it.

## **Conclusion and Future Research**

### **Directions**

Human beings are social creatures; therefore, humans must cooperate to adapt to the environment and cope with unpredictable changes better. Our society has represented social dilemmas everywhere, with limited resources in recent years. A potential way to manage and cope with these unforeseen changes and promote cooperation in social dilemmas may be emotion. Given the context of social dilemmas, exploring the factors that promote human cooperation is crucial.

Social dilemmas portray mixed emotion situations, indicating a conflict between personal and collective interests. Various experimental games were modelled based on real-life situations in addressing how individuals deal with mixed and conflicting emotions. Research on social dilemmas is the cornerstone of understanding cooperation's behavioural foundations and their associations with emotions. Its relevance is widespread at the individual, interpersonal and societal levels. This paper presents an in-depth and comprehensive review of the evidence, exploring the relationship of cooperation with positive (trust, pride), and negative emotions

(anger, fear), within the theoretical paradigm of social dilemmas.

Evidence revealed that social dilemmas capture significant issues of human psychology, highlighting the struggle between individual and communal choices. Often research communities, particularly psychologists, adhere to these issues and explore various aspects of cooperation in society. This is a fact that evolving emotion plays a critical role in facilitating and maintaining both interpersonal and social relationships, and prosocial and antisocial behaviour. Therefore, several researchers applied varied emotions, either discretely or aggregately, to examine their effect on cooperation in social dilemmas.

Findings of this paper endorse the modern beliefs on cooperation, categorised into two schools of thought, i.e., economic and sociability approaches. According to the economic approach, humans are not inclined towards cooperation, while sociability suggests vice versa. Humans are motivated by safety concerns and reasoning; therefore, generally choose rationally according to the economic approach, where irrational choices may occasionally be regarded as rational acts (Bicchieri, 2006). Conversely, the sociability perspective argues that cooperation is natural, increasing survival by ensuring protection (Parks, 2012). This review highlighted both basic and social emotions, acknowledging economic and social aspects of cooperation, thus paving the way for future researchers to investigate other aspects of cooperation and emotions comprehensively.

There is moderate evidence showing a negative correlation between anger and cooperation, nonetheless a positive association between fairness judgment and cooperation. Similarly, evidence showed a positive correlation between cooperation and trust, and pride. Further, this paper inferred that fear of exploitation has a negative relationship; nevertheless, the absence of fear has a positive association with cooperation in social dilemmas.

Based on the available literature and review findings, this research has inferred effects, causation, and correlation between selected emotions and cooperation. However, there is yet a margin for future researchers to investigate both long-term and short-term effects of emotions on cooperation, using a combination of cross-

sectional and longitudinal social surveys and experimentations. Further, research strongly emphasises a thorough investigation of an interplay between emotion and cooperation, where systematic reviews and meta-analyses may enrich existing literature. This review argued that mostly discrete emotions had been studied independently; therefore, supplementary researches are desirable to examine the interplay of collective emotions, which may yield different outcomes, subject to the situation. Future research is required to explore the causal effects, and sociability of emotion and cooperation, particularly investigating individual and group differences characteristics.

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