It Takes Two to Tango: Nudging Cooperative Behavior with a Proverb

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Abstract

To align private and public interests in social dilemmas, formal regulations have been developed providing enforcement mechanisms to promote cooperation and decrease free riding. Although formal rules depending on sanctioning free riders and rewarding cooperators work in some cases, they are costly to implement. In addition, unless individuals' behavior is observed and external monitoring is high, these legally binding rules are not effective. In a 2x2 lab experimental design, this paper investigates whether a proverb encouraging cooperation can foster voluntarily cooperative behavior in a Voluntary Contribution Mechanism (VCM) public goods game with low monitoring and no punishment mechanisms. The results show that a proverb reflecting an injunctive norm of cooperation increase contribution levels with no significant difference between its effect and a non-proverbial injunctive statement' effect. In addition, no moderating effect for social type is found; the results show no statistically significance difference in the effect of both the injunctive proverb and the injunctive statement on contribution between prosocials and proselfs . The results of this paper imply that proverbs could be used by policy makers as a soft low-cost intervention in social (norms) marketing campaigns such as in vaccination posters for public health campaigns.

Keywords: Cooperation, Public Goods Game, Proverbs, Injunctive Norms, Nudging

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1. Introduction

Promoting cooperation among unrelated individuals has received a significant attention from scholars and policy makers. In law and economics, it directly relates to the provision of public goods. The dilemma in such situations arises from the conflict between the individual rational behavior and the optimal collective outcome. Public goods are then not expected to be privately (voluntarily) produced since everyone has an incentive to free ride and no assurance is made that others will contribute. This situation represents a market failure that requires state interventions. The state may directly produce public goods. However, it can also indirectly encourage the provision of such goods by establishing and enforcing binding formal arrangements (Drahos, 2004:324-325). To align private and public interests, formal regulations have been developed to provide enforcement mechanisms to decrease free riding. Laws regulating pollution, compulsory licensing, fines, defining and altering property rights such as introducing intellectual property laws, copyrights and patent rights, and tax-subsidy schemes are all examples of such rules that provide incentives for individuals to take part in public goods provision (Anomaly, 2015:120). According to the traditional law and economics perspective, these rules affect human behavior through the incentives and sanctions they impose on individuals' material payoff (Galbiati and Vertova, 2008:147).

However, there are two concerns with this traditional perspective. First of all, it does not provide an explanation for cooperation emerging in situations where violating the legal rule would yield more material benefits than adhering to it (Galbiati and Vertova, 2008:147). This perspective does not explain the emergence of groups voluntarily cooperating for providing public goods (Drahos, 2004:336). In fact, behavioral evidence shows a deviation from the rational behavior expected by the traditional model. The literature survey conducted by Ledyard (1995) and Chaudhuri (2010) shows that individuals contribute more than what is expected by the traditional rational choice model in a one-shot and repeated public goods game. Behavioral evidence suggests that human behavior can be influenced by informal rules defining the appropriateness of actions and thus cooperation can be sustained using non-monetary punitive measures and incentives such as social and moral norms (see, Knight, 1998; Fehr and Fischbacher, 2004; chapter 4 in Ostrom, 2005). Communication of an injunctive norm about what should or should not be done is found to matter in the provision of public goods. Norm talk about cooperation is argued to discourage free riding and overcome social dilemmas acting as "uniquely human communicative regulation of collective action" (Shank et al., 2019:99-100).

Secondly, although formal rules depending on sanctioning free riders and rewarding cooperators work in some cases, they are costly to implement. They

imply double costs; the first one relates to the cost of observing and monitoring individuals' behavior and the second one is the actual cost of punishments[2] and rewards (Capraro et al., 2019:1). Moreover, unless individuals' behavior is observed and external monitoring is high, these legally binding rules are not effective (Barron and Nurminen, 2020:1; Ostrom, 2005:131). There are several realistic social dilemmas with these characteristics of impossible or costly monitoring such as recycling, littering, vaccination, employees' effort provision and pollution (Barron and Nurminen, 2020:1). Accordingly, it is of a social benefit to investigate cheap instruments that can foster voluntarily cooperation, especially in those social dilemma settings with low observability of individuals' behavior or costly monitoring, which do not depend on material rewards and sanctions. One such instrument is norm nudging.

When encountering a decision involving uncertainty such as the case in social dilemmas, individuals usually turn to their environment for heuristics (Mousavi and Gigerenzer, 2017: 367). These heuristics including social and moral norms are usually transmitted via cultural mechanisms which are often supported by the use of language in terms of conveying statements and narratives about normative behavior such as in folklore (Ostrom, 2005:118-126). Proverbs are argued to be the most concise form of folkloric linguistic products that stores and transmits heuristics of (injunctive) social and moral norms in a certain culture across generations (Haas, 2002: 596). They represent concise and short sentences expressing social norms and cultural virtues which provide value judgments and moral guidance on actions in a metaphorical and memorable manner (D'Angelo, 1977:366-367; Gibbs and Beitel, 1995:134). Once internalized, they are argued to become unconscious as well as conscious standards for actions and attitudes (Lau et al., 2004: 2; Page and Washington, 1987:50). Thus, they are portrayed as a proxy for moral and injunctive social norms (i.e. what is socially approved as the right thing to do) in different cultures and they have a potential role to induce socially desired behavior acting as a peculiar type of injunctive-norm nudges as will be discussed in the third section.

Although several studies have provided an evidence that (injunctive) norms can influence cooperative behavior, no previous study has experimentally examined the effect of proverbs on individuals' behavior especially in the context of public goods game. Accordingly, the main objective of this paper is to investigate whether a proverb reflecting a cooperative injunctive norm can nudge voluntary cooperative behavior in a VCM public goods game with low observability of individuals' contributions and no punishment mechanisms. Since proverbs can be considered a peculiar case of injunctive normative discourse, this paper also investigates whether

[2] These costs include the costs of operating prisons and collecting fines.

there is a difference in the magnitude of effect between an injunctive proverb and an injunctive non-proverbial statement that both reflect a norm of cooperation. In addition, this paper examines whether there is a moderating effect of the social type on the relationship between the proverb/the injunctive statement and cooperation. Taking into account the heterogeneity in prosocial inclination can provide additional insights on the sub-groups on which proverbs and injunctive statements have the largest effect.

To investigate these questions, Egyptian proverbs are identified and utilized in a 2x2 design of one shot Voluntary Contribution Mechanism (VCM) public goods game with no feedback on contributions nor punishment mechanisms. The four treatments represent a baseline with no intervention, a treatment with a neutral proverb unrelated to cooperation, a treatment with an injunctive proverb encouraging cooperation and a treatment with a typical injunctive statement telling what most people think is the socially appropriate behavior. The 2x2 ANOVA results indicate that containing an injunctive norm of cooperation, whether the statement is a proverb or non-proverbial, increase contribution. Each of the injunctive proverb and the injunctive statement is found to increase contribution levels with no significant difference between their effects. In addition, the effects of both the injunctive proverb and the injunctive statement on contribution are not found to significantly differ according to the social type of the subjects (i.e. being prosocials or proselfs[3]).

The remainder of this paper is structured as follows. In section two, a review of the relevant literature is provided. Section three discusses the behavioral predictions. Section four outlines the experimental strategy. Results are discussed in the fifth section. Finally, section six concludes.

2. Related Literature

This paper relates to a number of literature strands. The first closest strand is the literature on norm nudges in social dilemmas. Social norms whether descriptive (i.e. what most people do) or injunctive (i.e. what is socially approved as the right thing to do), moral norms and religious norms are found to affect cooperative and pro-social behavior. Barron and Nurminen (2020) found moral norm-nudging in terms of labelling contributions above a specified threshold as "good" to increase average contribution in a low monitoring one-shot public goods game. Yet, their results do not indicate the net effect of moral norms as the nudge used represents a

[3] Prosocials are those who tend to care about maximizing joint outcomes and equality and have high perceived appropriateness of prosocial actions while Proselfs aim at maximizing their payoff only and have a lower perceived appropriateness of prosocial actions (Bogaert et al., 2008; Hillenbrand & Verrina, 2021).

bundled nudge; it introduces both a focal point and a moral massage. Thus, their study does not provide the individual effects of those two components of the nudge. Our paper, hence, focuses only on the effect of moral/injunctive component. In addition, to avoid bundled nudges, our experiment is designed as 2x2 between subject to disentangle the effect of the injunctive message and being a proverb. Similarly, Dal Bó and Dal Bó (2014) utilized a message containing moral appeals and found it to have a positive effect on contributions. However, one concern raised by the authors is whether this effect is driven by the intrinsic value behind the messages or because the messages were labeled as moral in the experiment. Another concern reported is that in the moral messages, justifications behind acting in a moral manner and recommendations of contributing the whole tokens were stated (Dal Bó &. Dal Bó, 2014, p.37). This casts questions on the power of moral messages in their study. Our study addresses these concerns by using a proverb and a statement that reflect injunctive norms without being labeled as moral or spelling out neither a rationale nor a suggestion of the contributed tokens which could provide an answer to these issues. Capraro et al. (2019) also used injunctive norm nudge in an unrepeated design without feedback by asking the participants about what they and their society think the morally right thing to do before taking actual decisions. This intervention not only increased the average giving in the prisoner dilemma but also had a spillover effect across cooperative and altruistic behavior as well as real-life charity donations. Mussio and de Oliveira (2022) also reported that injunctive norm messages encouraging students to protect themselves and/or their community in posters promoting flu vaccination campaign increased the number of vaccinated students. Both descriptive and injunctive social norms are also found to have a positive effect on prosocial behavior in dictator games (Krupka and Weber, 2009). In addition, Frey and Meier (2004) reported, in a field experiment, that nudging students with a descriptive norm in the form of the percentage of other students who contribute to funds helping needy and foreign students increased contribution to those funds. However, they found students who are highly prosocial or highly selfish to be not responding to the intervention by further increasing or decreasing their contribution; only those with social preferences in between were sensitive to norm intervention. Yet, descriptive norms have been also found to generate a boomerang effect (e.g., Richter et al., 2018; Schultz et al., 2018); an effect that is not yet documented for injunctive norms. This happens as descriptive norms communicate the common behavior in place which might not be the socially desired behavior. Thus descriptive norms are argued to be beneficial only in environments where most individuals already behave in a desirable manner (Cialdini et al., 2006). A second reason for this boomerang effect is that descriptive norms work as an anchor point that might enhance the desired behavior for those acting below the standard communicated by the norm but decrease it for those acting beyond the communicated standard (Schultz et al.,

2018). One solution that has been proposed to tackle the boomerang effect of descriptive norm messages is to add injunctive norms (Cialdini et al., 1991; Richter et al., 2018). Finally, focusing on religious norms, Rand et al. (2014) showed that religious exhortations in terms of exposing the participants to Christian passage about charity giving increased Christians' cooperative behavior in an online prisoner dilemma game.

Additionally, some studies employed norm talk communication to nudge cooperative behavior. For example, Chaudhuri et al. (2006) allowed each generation to leave an advice in a free-form message to the next generation and found that a norm of cooperation got passed to the successors and that the treatment where the advice was common knowledge had the highest contribution. Similarly, Shank et al. (2019) allowed participants in a public goods game to choose and send a message from a norm talk menu and found that contribution increased after each norm talk communication. These results suggest that using an injunctive message about cooperation activates the injunctive norm of cooperation and boosts cooperation even in the absence of reputational cost and any other social punishments. In the same sense, proverbs are, by definition, an advice transmitted from one generation to another about what should be done and are used as norm talk in everyday conversation. Accordingly, showing proverbs encouraging cooperation to participants in social dilemma games may act as a reminder of the injunctive norm of cooperation and foster their contribution levels in the absence of monitoring and punishment mechanisms.

As can be noted, literature on norms and social dilemmas has explored the effects of moral, descriptive and injunctive norms on prosocial and cooperative behavior with a consensus on the positive effect of injunctive norms on cooperation. Yet, there is no previous utilization of proverbs which is surprising given that proverbs are frequently used in our daily talk expressing injunctive norms and cultural virtues. Thus, this paper adds to the literature of norm nudging in social dilemma by investigating the effect of a peculiar type of injunctive-norm nudges (i.e. a proverb reflecting a norm of cooperation) in promoting voluntary cooperation in social dilemmas.

In addition, very few studies in the literature on norms investigated whether people are heterogenous in their reaction to norms interventions in social dilemmas based on their social type. Social types are usually captured in psychology and economics by social value orientation (SVO) defined as the weight assigned to own relative to others' welfare (Offerman et al., 1996). SVO categorizes individuals into prosocials (which varies between cooperators and altruists) and proselfs (which can be further categorized into individualists and competitors). Studies reported that heterogeneity in social value orientation (SVO) explain different interactions in

social dilemmas. For example, in the meta-analysis conducted by Balliet et al. (2009), prosocials are found to cooperate more than proselfs. In addition, proself types are found to pursue their own payoff maximization while prosocial types cooperate also in the field (for a review see, Bogaert et al., 2008). However, whether social types have a moderating effect on how people react to norm-based interventions in social dilemmas is heavily understudied. As mentioned above, Frey and Meier (2004) found that only those with social preferences in between are sensitive to the interventions. Frey and Meier (2003:18-19) explained that as pro-sociality increases, the sensitivity to social norm that encourage more contribution decreases as "People who are already more willing to behave pro-socially do not care that much about the prosocial behavior of others, even when they know that the majority are free-riding. In contrast, people who tend not to contribute are much more influenced by the pro-social behavior of others". This result implies that the effect of social norm interventions that are encouraging more contribution is stronger on less prosocial people.

Since proverbs are normative discourse, this paper also relates to the studies on the role of social discourse in influencing behavior. Bénabou et al. (2018) developed a theoretical model in which they show how circulating arguments affect pro-social behavior as individuals concerned about self and social image produce and consume narratives as cues justifying their behavior. Hillenbrand and Verrinac (2022) experimentally investigated the role of those arguments and reported that positive stories justifying pro-social actions increase pro-social behavior in dictator games. They suggested that narratives work through affecting the perceived appropriateness of actions and the social image. They also found that, while both prosocial and proselfs are responding to the positive narrative, the effect of positive narratives is mainly driven by proself type. Their result that positive narratives have a stronger effect on proself than prosocial type is consistent with the previously discussed findings of Frey and Meier (2003). Accordingly, this paper adds to the previous strands by examining whether proverbs can promote voluntary cooperation and how heterogeneous prosocial inclinations interact with the utilized injunctive norm interventions.

Another relevant strand is the cultural economics literature[4] investigating how folklore-based measures of social and moral norms affect behavior. Few studies have investigated this relationship and concluded that folklore's products can explain contemporary economic behavior. For example, Asanov et al., (2020) investigated the relationship between motifs in folktales and microeconomic behavior as well as macroeconomic outcomes. They identified association between individual choices in dictator game and die-in-cup tasks and motifs in folktales in

[4] For a review on the effect of culture on economic outcomes, see Fernández (2008).

the country of experiment. In addition, they constructed a motif distance index summarizing differences in the motif repertoire between countries and found it to robustly explain differences in GDP per capita across countries. Similarly, Michalopoulos and Xue (2021) investigated whether motifs in folktales affect contemporary trust, risk taking and gender attitudes. Their results indicate a positive association between contemporary self-reported trust levels as well as GDP per capita and narratives of low tolerance of antisocial behavior. They also found risk-related motifs where the character succeeds (fails) lead to more (less) contemporary appetite for risk and entrepreneurial activity. In addition, featuring relatively more images of dominant and physically active men and dependent and home-bound women in narratives is found to be linked to less contemporary female participation and integration into the labor market. Taking proverbs as another folklore-based proxy for norms, Weber et al., (1998) employed comparative content analysis of American and Chinese proverbs related to risk-taking and suggested that the longstanding cultural differences captured in proverbs make a significant contribution to the explanation of those differences in risky choice behavior. In addition, Abou-Zaid (2013) noticed that the observed economic behavior in the United States such as the Americans' preferences for current consumption versus future consumption and saving, the value of hard work, the value of education attainment, and the risk taking behavior all are in line with the U.S. folklore of proverbs and popular sayings. As can be noted, none of the previously mentioned studies employed experimental investigation on the effect of folklore-based measures of norms such as motifs and proverbs on behavior. Thus, this paper contributes to this strand by employing experimental investigation on the effect of proverbs as a proxy for injunctive norms on cooperative behavior.

A final related strand is the one on expressive law which argues that legal rules work through their expressive function which can affect those individuals not prone to be affected by the material incentives-sanctions structure. Legal rules are obligations backed by incentives which means that these rules regulate behavior by stating what people ought to do as well as by the enforcement they provide. The normative "obligation" aspect of formal rules is argued to act as a reminder of social and moral norms which, when internalized, can have an effect on human preferences and behavior; they also provide behavior standards and focal points by what they express which can provide a coordination device (Cooter 1998; McAdams, 2000). Bernasconi et al. (2013) tested whether an expressive obligation with no sanction can impact behavior in public goods game and found that high percentage of participants in the obligation treatments contributed exactly the obligation level. In a similar vein, Galbiati and Vertova (2014) found that an exogenous obligation of contributing a minimum level without sanctions or incentives structure has a per se positive effect on average contribution levels in public goods game. However, Tyran and Feld (2006) found that an obligation of

full contribution with high sanction deterred free riding behavior almost perfectly in a public goods game experiment while the same obligation with mild sanction was effective only when the obligation was endogenously chosen. Relating to expressive law, proverbs can be considered as an expressive informal rule. They convey an obligation in certain situations from a cultural/social perspective without implying material sanctions or rewards for this obligation.

Some scholars have also explicitly tackled the interplay between laws and social norms enforcement remarking the role of laws in both reflecting and shaping the societal values. Some pointed out that laws can impact norms in societies. Benabou and Jean (2011) explained two mechanisms through which laws can affect the perceived social norms. The first one is a direct mechanism that change the norm itself by shifting the material payoff of the desired behavior through sanctioning the undesired action and increasing its related stigma. The second mechanism is informational through providing information on the prevailing social norms without changing them. Galbiati et al. (2021) indeed shows that the introduction of lockdown measures related to Covid-19 in the UK affected norms perception on social distance and this affect was channelled through providing information on the prevailing norms which decreased the gap between the actual and perceived norms. Casoria et al (2021) found similar results with regard to French social distancing laws and the perceived appropriateness of both socialising and its related sanctions. Their results show that the introduction of these measures changed the perceptions of norms on social distance while lifting them brought back the same perceived norms before the lockdown; these results were explained as people perceive illegal behavior to be socially inappropriate. In this sense, Casoria et al (2021) argue that, beside monetary incentives, compliance relies on the perceived social norms about the appropriate behavior and thus, public policy can be enforced, especially in low monitoring cases, by utilizing and tuning the perceived social norms. Similarly, Berneri et al. (2024) found the legality of the action to affect social and moral norms with regard to wearing facemasks in the Covid pandemic; however, changing the related fines has no significant impact on norms. Their results partially justify why laws usually mirror norms in society by suggesting that individuals align their social and moral norms to match legal rules. While the previous papers suggest that laws can successfully adjust norms to the desired behaviour by legal rules, Acemoglu and Jackson (2017) modelled the interaction between social norms and enforcement of law and showed that when laws and norms are contradicting, legal rules could backfire and law breaking increases as cooperation with law enforcement (e.g. whistle-blowing) decreases. Their model also suggests that gradually introducing laws that are consistent with the existing norms is more likely to affect behavior and upcoming norms. The findings of Mulder et al. (2024) support and justify this notion as they found that laws existence are correlated with more social norm enforcement in the sense that the existence of an institutional

backing for a norm increases confronting this norm's violators by decreasing the social cost of confrontation. This discussion shows that while laws can shape and influence social norms, social norms can also limit laws effectiveness. Thus introducing legal interventions that utilizes those social norms reflecting the desired behavior is more likely to be effective in influencing people's behavior. This paper, hence, adds to the previous discussion by investigating the effect of a social norm intervention in the form of a proverb that could be translated into a soft regulatory tool which is (1) highly consistent with the prevailing social norms and (2) adds institutional support to those desired norms.

3. Behavioral Predictions

This first hypothesis of this paper builds on the theoretical model by Kölle and Quercia (2021) showing how injunctive norms can promote cooperation. They modelled the utility function of decision makers as a function of monetary payoff of a specific action given the actions of other actors and a term reflecting a social norm function as follows:

$$u_i(\pi_i, a_i) = \pi_i(a_i, a_{i-1}) + \gamma_i N(a_i)$$

A degree of appropriateness that reflects the injunctive norm is assigned by the social norm function $N(a_i)$ in a sense that if the behavior is consistent with the norm, then $N(.)\geq 0$ but if the action is not consistent with the norm, $N(.) < 0$. $\gamma_i$measures the degree of conforming to norms by actors where $\gamma_i > 0$ when actors care about norm compliance and thus get a positive utility by behaving in the socially appropriate manner. Accordingly, if actors give positive (even if small) weight to norm compliance, their utility will increase by choosing to cooperate when an injunctive norm of cooperation exists. Several scholars explained why people assign weight to norms compliance. For example, Cialdini and Goldstein (2004) elaborate in detail on different motivations that explain why individuals comply with norms and conform to others' behavior/beliefs which can be categorized into three factors: the desire to be correct, gaining social approval and maintain a positive self-concept. Similarly, Gross and Vostroknutov (2022) explain that people may want to follow norms due to internalization of these norms, the desire to have good social and/or self-image and social learning (i.e beliefs about others' behavior).[5]

[5] Accordingly, preferences and expectations (beliefs about others' behavior) are argued to be two causal mechanism through which norms can affect (prosocial) behavior. On the one hand, social norms can shift preferences towards the option of cooperation through internalization and self-image which make them closer to moral norms as they are not dependent on social expectations. When internalized, these norms can evoke a good feeling when cooperating or a feeling of shame when acting in an individualistic manner which increase the payoff of cooperating. On the other hand,

However, the existence of an injunctive norm of cooperation within a specific society or group does not guarantee that individuals who care about norm compliance will cooperate. This is explained by the Theory of Normative Conduct formed by Cialdini and his colleagues (Cialdini et al., 1990; Cialdini et al., 1991; Reno et al., 1993; Kallgren et al., 2000) which emerged to explain the mixed results regarding the effect of norms on human's behavior by introducing the concept of Normative Focus. According to this theory, norms are not in force in all times and situations. As stated by Kallgren et al. (2000, p.1011), "It is misguided to expect that because norms are constantly in place within a person or culture, they are constantly in force". Instead, norms primarily affect human behavior powerfully and systematically only when the norm is activated when making decisions. Thus, in presence of many norms at the same time, the behavior will be affected by the focal norm. Hence, in order for the norm of cooperation to influence behavior, a norm-focus procedure is required. However, this theory suggests that norm-focus procedures will be more useful in driving the desired conduct if the activated norm is injunctive rather than descriptive (Cialdini et al., 1991; Reno et al., 1993). This is justified as an injunctive norm induces the desired behavior by shifting focus away from the descriptive norm that promotes undesired conduct, if any, as well as by guiding behavior toward what is desired irrespective of what is done by others in the same setting (Reno et al., 1993, p.104). This theory is consistent with the Goal Framing Theory developed by Lindenberg (2001, 2006) which argues that since humans' attention is selective, behavior and its related cognitive processes are governed and framed by goals pursued at the moment. The theory distinguishes between three overarching goal frames that can be active in any situation: (1) hedonic goal frame that relates to improving the emotional state and how one feels in a situation; (2) the gain goal frame that is relevant to improving personal resources but does not involve direct emotions; (3) the normative goal frame that is tied to acting appropriately in the right and ought-to-be way. The goal frame that becomes focal dominates the other goal frames pushing them into the background while staying in the foreground (Lindenberg, 2001, 2006). When a goal frames becomes salient, it creates "modularity by affecting what we attend to, what information we are sensitive to, what information we neglect, what chunks of knowledge and what concepts are being activated at a given moment, what we like and dislike, what we expect others to do, what criteria for goal achievement are being applied, and so on" (Lindenberg & Steg, 2013, p.40). According to this

social norms can also affect prosocial behavior by changing the beliefs about others' behavior through social expectations (House, 2018). However, this paper is limited to the first step of establishing a causal relation between injunctive proverbs and behavior while examining experimentally the exact mechanisms through which injunctive proverbs/statements can affect cooperative behavior is out of the scope of this paper and can be further examined.

theory, the main factor determining which goal frame will be focal and salient is situational cues including social, cultural and moral norms (Lindenberg, 2006).

Based on the above, an exposure to statements stating the perceived ought-to-do action is considered an injunctive-norm focus procedure as illustrated in the Focus Theory of Normative Conduct. This also holds for proverbs as they reflect injunctive norms in societies. Since injunctive norms communicate (perceptions of) what should be done, proverbs can be categorized as a peculiar type of injunctive norms as proverbs express cultural virtues and moral guidance and suggest a course of action accordingly. As Winfree (2018, p.63) states, "Proverbs provide moral guidance by transmitting the median experience as long as the median experience reflects what could be described as the "right" behavior. The proverbs may, however, convey a set of rewards and punishments with pursing a path. These rewards and punishments may be as simple as being better or worse off." Hence, proverbs can be considered as a special case of injunctive norm statements that inform people about what is culturally/socially perceived as approved and should be done. For example, the Egyptian proverb utilized in this paper "One hand cannot clap" or its international version " It takes two to tango" does not explain a descriptive norm that people cooperate. Instead, they reflect an injunctive norm that people should cooperate. Accordingly, proverbs exposure may nudge the desired behavior acting as an injunctive-norm focus procedure. Additionally, in consistent with the Goal Framing Theory, the exposure to proverbs and non-proverbial injunctive statements can act as a form of norm-based frame and serve as a normative cue to act appropriately which enhance the salience of the normative goal frame.

Put it differently, it can be argued that, if people care about norm compliance, exposing them to a statement reflecting an injunctive norm of cooperation, whether being a proverb or not, will enhance their cooperation as this will (1) activate the norm of cooperation making it the focal norm in the setting (2) serve as a normative cue communicating the social/cultural perception of acting appropriately which enhance the salience of the normative frame. Based on the above, the first general behavioral prediction of this paper is that exposing individuals to statements reflecting an injunctive a norm of cooperation shall increase their cooperative behavior by activating an injunctive norm of cooperation and thus impacting the perception of appropriateness of actions. Hence, the average contribution in a public goods game for the groups treated with an injunctive norm of cooperation is expected to be higher than in the baseline condition with no injunctive intervention. The first prediction consists of two parts. The first part predicts that a typical non-proverbial statement conveying an injunctive norm of cooperation shall increase contribution level. The second part hypothesizes that a proverb encouraging

cooperation affects cooperative behavior. Accordingly, the first hypothesis is as follows:

H1: Injunctive norm statements increase cooperation compared to a baseline condition

H1a: Cooperation is higher on average in the group treated with a non-proverbial statement communicating an injunctive norm of cooperation compared to the control group

H1b: Cooperation is higher on average in the group treated with a proverb encouraging cooperation compared to the control group

The paper also explores whether there is a difference in the magnitude of effects between a proverb and a non-proverbial statement reflecting a norm of cooperation; however, a hypothesis about this difference is not formulated. In other words, this paper suggests that both a proverb and a non-proverbial statements reflecting an injunctive norm of cooperation shall increase cooperation. However, which statement shall have a stronger effect on cooperation is ambiguous. On the one hand, the construal level theory (CLT) suggests that actions and objects in situations can be represented at two levels of abstraction; high level and low level construals. High level construal entails higher abstract, decontextualized, more coherent and super-ordinate representation of objects and actions while low level construal entails more concrete contextualized subordinate information about the objects and actions. In this sense, representing an action on the higher construal level gives less concrete information about the specific action conducted and its context while it revolves more about the general meaning of that action. Representing an action in high-level terms can be done by linking it to a superordinate purpose in terms of why one performs it while linking the action to subordinate means in terms of how one performs it represents low level construal (Trope and Liberman, 2010).

According to this theory, psychological distance is a major determinant of what level of construal is activated. Representing the action at higher psychological distance (time, spatial, social, hypothetical) activates high level construal (Liberman et al., 2002). Which construal level is activated is argued to have an effect on individuals' judgements especially moral judgments. Eyal et al. (2008), for example, found that representing the moral action at high level construal (i.e. more psychological distance) lead to stronger moral judgment. In addition, Agerstrom and Bjorklund (2009) reported that harsher moral judgments on not acting in altruistic manner were found in distant rather than close representation of situations. However, Gong and Medin (2012) found that moral judgment is stronger when lower level construal is primed in four studies. They also replicated the study

of Eyal et al. (2008) and found results contrary to the study of Eyal et al. (2008) and consistent with their previous four experiments.

A proverb encouraging cooperation such as the one utilized in this paper "One hand cannot clap" is more abstract and general than a typical injunctive norm-based statement telling people what most people think what should be done in a specific situation. One hand cannot clap explain that a cooperative action should be adopted in order to get the work done (efficiently) but a statement telling subjects that one should contribute is providing how this cooperative action should be done specifically. In this sense, the non-proverbial injunctive statement represents a lower level construal of the moral prosocial action.

On the other hand, proverbs are common and familiar in daily talks across one culture which might make them less socially distant and thus they might activate less high construal level than initially thought. The familiarity of proverbs is also argued to make proverbs accepted in arguments without criticism (D'Angelo, 1977:365). In addition, a familiar stimulus is processed more fluently due its cognitive ease. This tends to develop preferences and attitudes in favor of this familiar stimulus; an effect known as the mere exposure effect (see, e.g., Zajonc, 1968; Fang et al., 2007; Kahneman, 2011). This may mean that because proverbs are more familiar and commonly used, they are less socially distant and will be processed more easily leading to a stronger effect on behavior than non-proverbial statement reflecting the same norm. However, given the mentioned mixed results in literature, which of them would have a stronger effect cannot be predicted priorly. Hence, this paper expects that both a proverb and a non-proverbial statement reflecting an injunctive norm of cooperation shall increase cooperation but whether one of them has a stronger effect cannot be priorly determined.

However, injunctive statements might have heterogeneous effects on individuals with different prosocial inclinations. Although the literature on the moderating effect of social type in the context of norm nudging is underdeveloped, this paper formulates a tentative hypothesis that a proverb and a non-proverbial statement encouraging cooperation shall have a greater effect on a proslef person compared to a prosocial one following the argument of Hillenbrand and Verrina (2022). Hillenbrand and Verrina (2022) developed a theoretical model where they explain that a narrative signaling the high perceived appropriateness of a prosocial action has a stronger effect on a pro-self than a prosocial individual. This is as narratives give cues on the perceived appropriateness of an action and individuals are assumed to update their prior perception of appropriateness in the same direction of these narratives. Since a proself individual has an initial low perceived appropriateness of prosociality, being exposed to a narrative reflecting a high perceived appropriateness of a prosocial action will have a stronger effect on her than on a

prosocial individual who already has an initial high perceived appropriateness of prosociality.

As both an injunctive proverb and an injunctive non-proverbial statement, by definition, communicate the perceived appropriateness of actions, it can be argued that they have a similar effect on different social types as the narratives in Hillenbrand and Verrina (2022). For subjects with initial prosocial preference, encountering a proverb/ non-proverbial statement reflecting a cooperative norm is assumed to support their initial prosocial preference (high perceived appropriateness of prosocial behavior) leading to slightly more contribution since they do not have to do much updating to their prior perceptions. To put it differently, those who belong to the prosocial type are already near the prosocial edge on the proself-prosocial spectrum and have a high appropriateness' perception of cooperation; thus they do not have much room for increasing their prosociality, even if they are willing to, when they get reminded of a norm emphasizing the high perceived appropriateness of acting cooperatively. This means that prosocial type's response might be quite inelastic to the normative intervention that encourage them to be cooperative because they are already prosocial. But for subjects with proself preference, the opposite may hold. Thus, the positive effect of a proverb/ non-proverbial statement encouraging cooperation is argued to be stronger on a proself than a prosocial individual. Accordingly, the second hypothesis[6] of this paper consists of two parts as follows:

H2: An interaction effect of social type with injunctive norm statements exists; proselfs react stronger to injunctive norms than prosocials.

H2a: A non-proverbial injunctive statement has a greater effect on a proself compared to a prosocial decision maker

H2b: A Cooperation-encouraging proverb has a greater effect on a proself compared to a prosocial decision maker

To summarize H1 and H2, this paper argues that a proverb/non-proverbial statement encouraging cooperation shall increase cooperative behavior on average and this increase is assumed to be largely driven by proself subjects.

[6] H2 is pre-registered as an exploratory hypothesis.

4. Methodology

4.1 Identification and Selection of Proverbs

Egyptian proverbs relevant to the norm of cooperation were first pre-identified by the author using the most recent Egyptian proverbs corpus found.[7] Two cooperation-related proverbs were found; One hand cannot clap and A basket has two handles for two people to carry it. An online survey was conducted to select one proverb. The objective of this online survey was to validate that the utilized proverb is understood by individuals to be reflecting the desired norm of cooperation, familiar and still used. This is as it is argued that the impact of a proverb on the listeners is stronger when this proverb is more familiar and used by them (Lauhakangasp, 2007:82). In addition, as it is argued by the lexical hypothesis,[8] the more socially significant the proverb is, the more familiar and frequently used it should be as it reflects experience in the most concerned aspects of life (Haas, 2002: 595-597). The design of the online survey can be found in *Appendix: A1*. It contains questions aiming at identifying the norms, familiarity and usage of proverbs. Descriptive analysis for the survey and proportion tests conducted to justify the selection of the utilized proverbs can be found in *Appendix: A2*.

The proverb selected for the experiment is "One hand cannot clap". That proverb is the one chosen by most subjects to reflect the cooperation norm as well as most reported to be familiar and used in daily life. As shown in *Appendix: A2*, around 99% of the sample chose cooperation as the most encouraged norm by "One hand cannot clap" while 95% of the sample chose cooperation as the most encouraged norm by "A basket has two handles for two people to carry it". Regarding familiarity and usage, almost 97% of the sample reported that they are familiar with One hand cannot clap (vs. 84% for the other proverb) and 47% of the respondents reported the frequent use of One hand cannot clap (vs. 24% for the other proverb). A neutral proverb unrelated to cooperation was also selected based on the survey. This proverb is "Learning at young age is akin to craving in stone". It is chosen based on the number of subjects reporting that it is related to norms other than cooperation. 84% of the survey respondents reported that this proverb relates to

[7] Ezzat, A., 2003. Al-Shakhsya Al-Masrya fe Al-Amthal Al-Shaabya [Egyptian Character in Proverbs]. Arab Civilization center, Cairo.

[8] The lexical hypothesis is a hypothesis in personality psychology explaining that the most socially important and relevant traits and concepts will be eventually encoded by people in their everyday language. For more details, see Uher, J., 2013. Personality Psychology: Lexical Approaches, Assessment Methods, and Trait Concepts Reveal Only Half of the Stort-Why it is Time for a Paradigm Shift. *Integer Psychol. Behav. Sci., 47*(1), pp. 1-55.

other norms than cooperation which is learning and education (more details can be found in *Appendix: A2*).

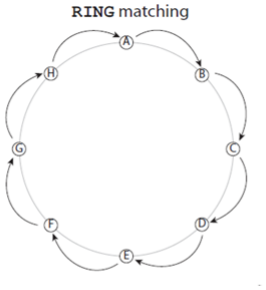
4.2 Experimental Design and Procedures

4.2.1 Design

This experiment was pre-registered at https://aspredicted.org/blind.php?x=BFT_CLW. The experimental design consisted of three separate tasks: a social type elicitation task, a filler task and a public goods game (PGG). The social type elicitation (SVO) task is always conducted at the beginning of the experimental session to identify subject's social types with making sure that the interventions do not affect the SVO task. The SVO task is a task used in psychology and recently in economics to measure only preferences unconfounded by beliefs in non-strategic situations. The SVO slider measure is adopted in this experiment for its high reliability, predictive power and comparability to other SVO measures (Ackermann and Murphy, 2019). The SVO Slider Measure consists of 6 primary items, in terms of dictator games varying in marginal rates of substitution. Each primary item consists of 9 options with different monetary allocation to the self and another person. For every primary item, the subject chooses among the 9 options the allocation she prefers most. After completing the 6 primary items, subjects are categorized into four types; Altruists, Prosocials (Cooperators), Individualists and Competitors (Murphy et al., 2011).

Each subject is paid for their choice in only one randomly chosen item of the SVO task in addition to the choice of a randomly chosen item of another selected subject. Ring matching is applied to determine the final payoff for this task for each subject as follows. Subject A receives the payoff she allocated to herself in a randomly selected item and in addition, receives the payoff that subject H allocated to the other in an item that is randomly selected for subject H. Subject B then receives the payoff she allocated to the self in a randomly selected item and in addition, receives the payoff decision maker A allocated to the other in the item that was selected for her, and so forth, until the ring is closed. Figure (1) shows the ring matching procedure. The advantage of this procedure is that it provides incentives as the choice will have monetary consequences not only for the subject but also for the others but without involving strategic interaction (Ackermann and Murphy, 2019). At the beginning of the experiment, subjects are informed about the random selection of one SVO item for payment and therefore they should consider each item in the SVO task as payoff relevant.

Figure (1): Ring Matching Procedure



Source: Crosettoa et al. (2019)

In the second part of the experiment, a short filler task is conducted to address any carryover or priming effect that could be happening as a result of the SVO task. This task is the slider effort task in which subjects are shown a single screen containing 48 sliders ranging from 0 and 100 and are asked to move as many of them to the middle position (at 50) within 120 seconds (Gill and Prowse, 2012). In the instruction, subjects are told that after reaching a specific threshold of correctly positioned sliders, they will earn a fixed payoff. This threshold is pre-chosen to be 0 correctly positioned sliders; however, subjects are not informed about this zero threshold.

In the third task, a linear voluntary contribution mechanism (VCM) public goods game is played. All subjects in a session are randomly matched into a group of four and each group is randomly assigned to one of the four treatments of a 2x2 between subject design with Injunctive Norm of cooperation (Yes/No) and Proverb (Yes/No) as between subject factors. The choice of 2x2 design allows to disentangle the effect of proverbs from the effect of injunctive norms. In other words, if an effect of a cooperative proverb (vs baseline) is observed, this design allows to tell whether this is an effect of being a proverb or an effect of containing an injunctive social norm. In each treatment, the four members of each group play anonymous one-shot VCM public goods game where each one is endowed with 20 points. Each member is asked to decide how many of the 20 points (from 0 to 20) they want to contribute to a group project, and how many they would like to keep in a private account. The sum of contributions in a group is multiplied by the factor 1.6 and then divided equally among the 4 group members; that is, the marginal public-good contribution rate is 0.4. This means that every point kept in the private account increases individual payoff by one point while every point contributed to the group project increases each member's payoff by 0.4 points. Each player

chooses their contribution level $g_i \in$ [0,20], and their payoffs are described in the function below.

$$\pi_i = 20 - g_i + 0.4 \sum_{j=1}^{4} g_j \qquad (1)$$

where g_j is contribution made by group member j to the group project.

The game is played for one round to eliminate any strategic behavior that could develop by multiple rounds game in order to identify the per se effect of the utilized proverb. Subjects choose their public goods contribution simultaneously and no feedback is given regarding each subjects' contribution in the group to mimic a situation in which it is difficult to observe individuals' contribution level. Subjects in the group cannot know the decisions made by the other members in their group and only the collective contribution to the group account is revealed at the end of the experiment when each subject is shown her detailed payoffs for the whole experiment.

After reading the instructions and answering the comprehension questions of the public goods game and right before making their actual contribution, subjects are shown a different statement depending on the experimental condition they are assigned to. The treatments differ in whether there is a proverb and an injunctive norm of cooperation in the statement. Table (1) represents the treatment design for the PGG task. In the Control treatment, no statement is shown to participants before making their contribution. In the Neutral Proverb treatment, subjects are shown a proverb containing no injunctive cooperation norm in form of a neutral proverb that is not related to cooperation which is "Learning at young age is akin to craving in stone". In the Injunctive Statement treatment, subjects see a non-proverbial statement containing an injunctive norm of cooperation in form of "In a previous similar study, the majority of participants indicated that the most socially appropriate action is to contribute substantially to the group project". There is no deception in this statement as the researcher bases this statement on previous results obtained by Kölle and Quercia (2021). In the Injunctive Proverb treatment, participants see the proverb containing an injunctive norm of cooperation which is "One hand cannot clap".

Treatments are randomized at group level meaning that groups in each session will see different statements but the members in the same group will see the same statement. Yet, subjects are not informed that they will see a statement before making their decision. Subjects do not know either that their group's members see the same statement. In addition, subjects are asked right after making their

contribution how many points they expected anyone in their group to contribute to the group account.[9]

Table (1) Treatment Design

	No Injunctive Norm of cooperation	Injunctive Norm of cooperation
No Proverb	Control (No Statement)	Injunctive Statement
Proverb	Neutral Proverb	Injunctive Proverb

Since demand effect is a concern in experiments in which the experimenter gives information to the participants,[10] subjects are asked at the end of the experiment about what they think the researcher expect to happen following Hillenbrand and Verrina (2022). In addition, an attention check for the treatments' interventions is performed by giving subjects different statements and asking them to choose the statement that appeared on their screen before making their decision in the PGG.

Finally, socio-demographic information was collected about gender, religion and religiosity, household financial status, region, age and the major of their study. Gender has been argued to explain different pro-social behavior in general and cooperative behavior in social dilemmas in particular. Prior research shows that some studies found women to be more prosocial and cooperative and other studies found men to contribute more while others found no significant difference (for a review, see Eckel and Grossman (2008); Molina et al., 2013). Religion and the degree of religiosity is also found to affect pro-social and cooperative behavior through promoting the morality of actions. Religious individuals have been argued to be more pro-social and trustworthy (see, Xygalatas, 2013 for a review). In addition, mixed results have been reported on how economic status affect pro-sociality and cooperation. Some found that lower status individuals are less prosocial while others found them to be more prosocial (see, Wang, 2021 for a brief review). Moreover, it has been found that individuals living in rural areas are more prosocial than those living in urban areas (see, Steblay (1987); Afolabi, 2014). Prior research also suggests a positive relationship between age and prosocial behavior (Sze, 2012; Sparrow, 2021). Major is also added as it is argued in literature that

[9] Although this experiment is not designed to explore or disentangle the mechanisms through which injunctive norms might work, the inclusion of expectations may help in exploring whether there might be a preference effect of the injunctive treatments as if there is a remaining effect after controlling for expectations, this might give a suggestive evidence that injunctive proverbs/statements work through influencing preference beside affecting beliefs about others' contribution.

[10] However, de Quidt et al. (2018) find that this issue is not as severe as commonly assumed.

economics students are less prosocial (e.g. Meier and Frey, 2004; Mertins and Warning, 2014).

4.2.2 Procedures

The experiment took place at the lab of the Faculty of Economics and Political Science in Cairo University in May 2023. The experiment was conducted in Arabic and was computerized using z-Tree (Fischbacher, 2007). An informal pilot test of the study material was carried out with a small group of participants prior to collecting data. Feedback from the pilot study indicated the study was clear and plausible. In total, 35 sessions were conducted. The number of subjects in each session varied from 12 to 20 subjects. Undergraduate students were recruited by filling an online form sent to their e-mails with the time slots for the sessions. The sample size was constrained by a smallest-effect-size-of-interest power analysis. In total, 640 participants (61.56% female, average age 20.4 years) were recruited divided equally among the four treatments. Each session lasted on average for about 30 minutes. Before starting the experiment, subjects signed a consent form. During the experiment, the instruction for each task were shown on the subjects' computer screen at a time. After performing the SVO task, subjects performed the filler task for 3 minutes. Then, subjects were grouped into groups of four members where each group represented one of the treatments. Subjects received instructions about how the PGG works and how final payoffs are dependent on both own and others' contribution. Subject were then provided by examples to clarify how final payoffs are realized given the amount of the own contribution and the sum of the group members' contributions. Participants then had to answer few comprehension check questions to make sure they understood the task and the session continued only when all subjects provided a correct answer. Next, each group saw a statement according to which treatment they were assigned to. This statement lasted on the subjects' screens for 30 seconds before they were automatically directed to make their actual decision.

After making their contribution and answering a question about their expectation about any member's contribution in their group, subjects received a detailed feedback about their earnings in the three tasks and then they were asked to answer the post-experimental questionnaire. Finally, subjects received their earnings in cash. All subjects received a participation fee of 20 L.E plus their earnings from the three tasks. The range of payoff for the subjects in the whole experiment including the participation fee was restricted to between 52.55 and 112.4 Egyptian Pound (1.5 to 3.3 euros) which is a reasonable rate given the minimum Egyptian hourly wage and that the session lasted for less than an hour. The exchange rate in the experiment is 1 ECU= 0.35 L.E and subjects received on average 87.5 L.E (2.5 euros). English

translation of the experiment's instructions and post experimental survey can be found in *Appendix: A3*.

5. Results

640 students were recruited but 79 observations were eliminated from the analysis as they failed the attention check leaving a sample size of 561 participants (N= 124 in Control, 151 in Injunctive Proverb, 131 in Injunctive Statement and 155 in Neutral Proverb). Regarding the demand effect question, the answers of participants vary between either investigating people's behavior in economic situations/ social dilemmas, testing group's members cooperation/ trust/ risk attitudes or that they couldn't guess. Only 4 subjects in the Injunctive Statement treatment mentioned the effect of what is socially acceptable on behavior. However, those subjects' contribution varied between 0, 5, 10, and 15 ECUs and are not eliminated as a result. No subject mentioned the effect of the injunctive proverb in their answers. Table (2) provides a descriptive overview of the data by treatment.

Table (2) Descriptive Statistics by Treatment

	Mean Contribution	Mean Age	Female (%)	Urban (%)	Individualists (%)	Cooperators (%)	Mean Expectations
Control	7.9	20.5	66%	84.7	52.4%	38.7%	8.8
Injunctive Proverb	9.4	20.5	60%	81.5	54.3%	39.1%	10.2
Injunctive Statement	10.3	20.4	63%	78.6	58.8%	35.9%	10.8
Neutral Proverb	8.4	20.4	65%	75.5	60%	34.2%	9.3

In consistent with previous literature, positive contributions are made in the Control treatment with an average contribution level of 7.9 (accounting for 39.5 % of the maximum possible contribution). In the Injunctive Proverb treatment, the mean contribution level rose by about 19% compared to the Control treatment while an increase of only 6% in contribution level is found in the Neutral Proverb treatment. The highest increase in mean contribution level is found in the Injunctive Statement treatment with an increase of almost 30% over the Control treatment.

In order to test the general hypothesis that being exposed to injunctive treatments increases the contribution level (*H1*), a 2x2 ANOVA with the two dimensions of the treatments and their interaction is conducted (results can be found in *Appendix: A4-a*). No significant interaction effect is found. However, containing an injunctive norm of cooperation, whether the statement is a proverb or non-proverbial, is found

to have a significant main effect on contribution ($F(1,557)=8.95$, $P=0.002$, $\eta 2 =0.01$) confirming the first general hypothesis that those who were exposed to the injunctive treatments (M=9.8, SD=7.1) contribute more than those in the baseline (Control +Neutral Proverb) condition (M=8.1, SD=6.1). Being a proverb is not found to have a significant effect. These results confirm the first general hypothesis (*H1*) and indicate that what only affects contribution is containing an injunctive norm of cooperation and that this effect does not depend on whether the statement is a proverb or a non-proverbial statement.

To dig deeper into the individual effect of the treatments (*H1a & H1b*), OLS regressions are estimated. Model (1) in Table (3) represents a basic model where contribution is regressed only on a set of treatment dummies. Both injunctive proverb and injunctive statement are found to significantly increase contribution level compared to no statement at all while the neutral proverb has no significant effect on contribution as expected.

The dummy for social type is added in Model (2) in Table (3). For social type, 4 subjects are found to be altruists while 44 subjects are categorized as competitors. In consistent with the SVO literature (e.g. Bogaert et al., 2008; Wei et al., 2016), the altruists are pooled with cooperators while the competitive subjects are pooled with individualists giving one variable for social type with two levels (i.e. Proself[11] vs Prosocial). The results hold with a minor change in the magnitude of coefficients. Moreover, individualists are found to significantly contribute less than prosocials by 4.7 ECUs. In model (3) in Table (3), the set of controls from literature are added. After confirming no heteroskedasticity problem (test results are found in *Appendix: A4-b*), the results regarding treatments effects and social type do not change. The exposure to the injunctive proverb increases contribution by 1.3 ECUs at 10% significance level while the injunctive statement raises contribution by 2.5 ECUs at 1% significance level, compared to no statement. Being an individualist still reduces contribution by 4.7 ECUs relative to a prosocial at 1% significance level. Females are also found to significantly contribute more than males by 1.2 ECU. In addition, the findings show that subjects reporting that they are very religious contribute more by 4 ECUs relative to subjects reporting that they are not religious. Other control variables have no significant effect.

Finally, reported expectations about other group members' contributions are added in Model (4) in Table (3). No heteroskedasticity problem is detected (test results are found in *Appendix: A4-b*). The effect of the injunctive proverb becomes insignificant while the effect of the injunctive statement decreases in magnitude

[11] From now onward, proselfs and individualistic are used interchangeably in the text to reflect one category including both individualists and competitors.

from 2.5 to 1.2 ECUs. Similarly the magnitude of the effect of being individualist and very religious decreases with no change in significance level while the effect of being female becomes insignificant. These results might suggest that the effect of both injunctive treatments is mediated by expectations meaning that both injunctive treatments affect expectations about others' contributions which in turn has an effect on individual contribution. In case of the injunctive statement, expectations seem to mediate the treatment's effect on contribution partially which gives a suggestion that the injunctive statement utilized works also through preferences. However, for the injunctive proverb, expectations seem to fully mediate the effect on contribution.

At this stage, one might think that the injunctive proverb works only through expectations (beliefs). To test whether injunctive treatments indeed affect expectations, Model (1) in Table (4) is estimated. This model shows that both the injunctive proverb and the injunctive statement increases reported expectations about other group members' contribution at 10% and 1% significance level, respectively while the neutral proverb has no significant effect relative to the baseline. In Model (2) in Table (4), the dummy for social type is added. Again, the previous results do not change and being individualist is found to decrease reported expectations by 2 ECUs. Controls are added in Model (3) in Table (4) and the same results also hold. At this moment, this could provide an evidence that the two injunctive nudging treatments works either partially (in case of injunctive statement) or fully (in case of injunctive proverb) through expectations. However, one last concern is needed to be investigated before jumping to this conclusion.

Since the question regarding expectations was asked after making the contribution decision,[12] this may have the risk of reported expectations being actually affected by the contribution decision not the injunctive treatments. This is known as the false consensus effect where people's perceptions and social inference about others' behavior reflect their own behavior resulting in behavior affecting expectations and not the other way round (Ross et al., 1977). This can happen as people wish to justify their own behavior or prove that this is the appropriate action given the environment (Ross et al., 1977). This means that although a significant positive correlation between expectations and contribution level exists in Model (4)

[12] The question about expectations was not asked before the contribution decision to avoid eliciting ex ante expectations which could work as a second nudge along with the nudging statements. This could make it difficult to disentangle the net effect of the nudging statements on contributions given the experiment design which does not manipulate the beliefs about the behavior of others in the group (by, for example, changing the announced probability to a subject by which other members in her group see the same statement that she sees while holding the same nudging statement across treatments).

Table (3) OLS Estimates of Treatments Effects on Contribution Level

VARIABLES	(1) Contribution	(2) Contribution	(3) Contribution	(4) Contribution
Treatments:				
Injunctive Proverb	1.454*	1.342*	1.363*	0.483
	(0.812)	(0.763)	(0.780)	(0.658)
Injunctive Statement	2.362***	2.460***	2.533***	1.270*
	(0.839)	(0.789)	(0.800)	(0.677)
Neutral Proverb	0.418	0.632	0.568	0.198
	(0.807)	(0.759)	(0.769)	(0.646)
Individualistic		-4.741***	-4.705***	-3.499***
		(0.549)	(0.554)	(0.472)
Female			1.233**	0.623
			(0.576)	(0.485)
Urban			0.476	0.273
			(0.685)	(0.575)
Religion:				
Christian			0.235	0.656
			(1.076)	(0.904)
Other			3.846	4.167
			(3.203)	(2.688)
Religiosity:				
Slightly religious			1.584	2.589
			(1.994)	(1.675)
Moderately religious			1.836	2.391
			(1.893)	(1.589)
Very religious			4.065*	3.514*
			(2.329)	(1.955)
Age			0.233	0.0848
			(0.270)	(0.227)
Major:				
Political Science			-0.843	-0.676
			(0.699)	(0.587)

Statistics			-0.834	0.0959
			(0.985)	(0.829)
Not decided yet			0.681	0.441
			(0.917)	(0.769)
Financial Status:				
We can buy most of what we need but no saving			-0.627	-0.161
			(0.557)	(0.469)
We cannot buy what we need			1.027	1.037
			(1.479)	(1.241)
Expectations				0.587***
				(0.0388)
Constant	7.944***	10.85***	3.370	0.217
	(0.601)	(0.658)	(5.724)	(4.809)
Observations	561	561	561	561
R-squared	0.018	0.134	0.158	0.408

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

in Table (3), a causal effect running from expectations to contribution cannot be established as it might be the other way round.

When adding contribution in Model (4) in Table (4) without controls and in Model (5) after adding controls, it is found indeed that the coefficient of contribution is positive and highly significant while all the dummies of treatments (and social type) become insignificant. Although this finding give rise to a potential endogeneity concern, a suggestive evidence can be introduced that the effect of nudging treatments (and social type) on reported expectations is mediated by contribution and not that the effect of treatments on contribution is mediated by expectations. In other words, the relationship's direction is more likely to be running from contribution to reported expectations in this experiment given its design. One reason is that expectations about other members' contribution were reported after making the contribution decision which makes the existence of false consensus effect very potential. A second reason is that no subject had the knowledge that their group's members saw the same statement which she saw and thus the injunctive statements are not expected to affect expectations and beliefs about others' behavior which is already supported by Model (4) and Model (5) in Table (4) with and without control variables. In this sense, reported expectations is not likely to explain contribution in this setting and accordingly, Model (3) in Table (3) is validated and adopted. Indeed, the model misspecification tests (Link and Ramsey RESET tests results are found in *Appendix: A4-b*) also provide an evidence that Model (3) in Table (3) without including expectations is not mis-specified while Model (4) in Table (3) with expectations is mis-specified which again gives a validation for Model (3) in Table (3) . As a robustness check, all previous models are estimated using a set of Tobit models as the response variable is censored; contributions cannot fall outside the range between 0 and 20 in this experiment. The estimates (found in Tables A4.1 & A4.2 in Appendix: A4-c) represent marginal effects on the uncensored latent contribution and thus slightly differ in magnitude from the corresponding OLS estimates, but the results are highly consistent with OLS estimates.

The discussion above supports the first and the second part of the first hypothesis (*H1a & H1b*) that both a proverb encouraging cooperation and an injunctive statement can nudge voluntary cooperative behavior. Although the experiment is not designed to explore the mechanisms through which the injunctive nudges work, it gives only a suggestive evidence that this effect does not work through expectations since the likelihood that expectations is a mechanism for the effect of the injunctive proverb on contribution is low in this experiment design as discussed. However, further investigation needs to be done to examine the different working

mechanisms and to prove whether expectations mediate the examined relationship. Manipulating expectations (beliefs) in the experiment is one way that could prove that injunctive proverb/statement works through expectations.

Table (4) OLS Estimates of Treatments Effects on Expectations

VARIABLES	(1) Expectation	(2) Expectation	(3) Expectation	(4) Expectation	(5) Expectation
Treatments:					
Injunctive Proverb	1.372*	1.323*	1.500**	0.634	0.810
	(0.719)	(0.710)	(0.725)	(0.594)	(0.610)
Injunctive Statement	1.917**	1.960***	2.152***	0.698	0.870
	(0.744)	(0.734)	(0.743)	(0.618)	(0.630)
Neutral Proverb	0.495	0.589	0.631	0.265	0.343
	(0.715)	(0.706)	(0.714)	(0.590)	(0.600)
Individualistic		-2.080***	-2.057***	0.352	0.324
		(0.511)	(0.515)	(0.454)	(0.460)
					(1.153)
Contribution				0.513***	0.506***
				(0.0329)	(0.0335)
Constant	8.847***	10.12***	5.377	4.556***	3.672
	(0.533)	(0.612)	(5.317)	(0.623)	(4.464)
Controls	No	No	Yes	No	Yes
Observations	561	561	561	561	561
R-squared	0.015	0.043	0.072	0.334	0.348

Standard errors in parentheses[13]
*** p<0.01, ** p<0.05, * p<0.1

In order to test whether there is a statistical difference between the effects of the injunctive proverb and the injunctive statement, t-test is conducted to compare the means of both treatments. The findings (can be found in *Appendix: A4-d*) show no statistically significant difference in means (P=0.28). This provides an evidence that proverbs have the same effect of the typical injunctive norm based statements. An interesting further investigation, however, could be testing whether combining both an injunctive proverb and an injunctive statement shall magnify the effect of the nudge on cooperation.

[13] No heteroskedasticity problem is found. Test results are found in *Appendix: A4-b*

To test *H2* (*H2a* & *H2b)*, an interaction term between the treatments dummies and the social type variable is added. As displayed in Model (1) and (2) in Table (5), there is no statistically significant difference in the effect of the injunctive proverb and the injunctive statement on contribution between prosocials and proselfs. These results invalidates the second hypothesis. Social type is not found to moderate the effect of both the injunctive proverb and the injunctive statements. Instead, proselfs and prosocials are found to respond to these injunctive treatments with no statistically significant difference.

Table (5) OLS Estimates of Social Type Moderation Effect

VARIABLES	(1) Contribution	(2) Contribution
Injunctive Proverb	2.035*	2.077*
	(1.208)	(1.214)
Injunctive Statement	2.813**	2.756**
	(1.282)	(1.288)
Neutral Proverb	-0.766	-0.674
	(1.251)	(1.254)
Individualistic	-4.851***	-4.930***
	(1.158)	(1.161)
Injunctive Proverb # Individualistic	-1.179	-1.162
	(1.556)	(1.566)
Injunctive Statement #Individualistic	-0.553	-0.344
	(1.624)	(1.643)
Neutral Proverb #Individualistic	2.131	2.097
	(1.572)	(1.578)
Controls	No	Yes
Constant	10.92***	7.752
	(0.907)	(4.733)
Observations	561	561
R-squared	0.142	0.151

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

6. Discussion and Conclusion

The experiment in this paper is designed to study whether a proverb encouraging cooperation can foster voluntary cooperative behavior. The findings indicate that in social dilemmas (one- shot anonymous VCM public goods game) where there is no punishment mechanisms and monitoring individuals' actions is low, providing a simple and low-cost nudge in terms of a proverb encouraging cooperation is effective in inducing voluntary cooperation. The results also confirms the positive effect of a typical injunctive statement on cooperative behavior. In addition, no significant difference between their effects is found. The results further do not show a heterogenous effect of the injunctive treatments on different social types as there is no statistically significance difference in effect is found between prosocial and proselfs for both the injunctive proverb and the injunctive statement.

Our findings regarding the effect of both the injunctive proverbial and non-proverbial statements are consistent with the discussed theories and the experimental literature on injunctive norm effect on cooperation (e.g., Barron and Nurminen (2020); Dal Bó and Dal Bó (2014); Capraro et al. (2019); Mussio and de Oliveira (2022). It also provides an answer to the concerns raised in Barron and Nurminen (2020) and Dal Bó and Dal Bó (2014) regarding the significant individual effect of a normative message that is unbundled, unlabeled as moral, not followed by neither a justification to behave in a moral manner nor a recommendation to contribute.

Nevertheless, there are some caveats and concerns that are important to take into consideration when drawing inferences based on these findings. First of all, despite of the measures taken to address the experimenter demand effect, it is not clear how this effect might have driven our results. However, it is argued that nudges used by policy makers share similar features of the experimenter demand effect (Barron & Nurminen, 2020). Hence, we can argue that the potential existence of experimenter demand does not represent a big concern in our context since our study is investigating (and mimicking) a nudge that policy makers can utilize in promoting voluntarily cooperation.

Secondly, as already explained, there might be endogeneity concerns regarding the relation between expectations and contribution. Although the design of the experiment does not completely allow to test the different mechanisms through which proverbs affect behavior, only a tentative evidence is provided that, in this setting, the injunctive proverb might work through influencing preferences towards prosocial behavior. To confirm whether expectations (beliefs about others' behavior) are causal mechanisms through which proverbs can affect behavior, the beliefs about the behavior of the members' group should be experimentally

manipulated. Thus, one avenue for further research is related to investigating the mechanisms through which proverbs and injunctive statements work.

The third concern is the external validity of our results and the representation of our sample. Our findings are based on a lab experiment using students from a specific (Egyptian) culture. Although it has been argued that using students in artificial environment might not reproduce actual behavior in natural settings, the analysis of Rondeau, Poe & Schulze (2005) suggests similarity between field and lab cooperative behavior. Similarly, Englmaier & Gebhardt (2011) reported that participants' behavior in public goods game in lab correlates significantly with their behavior in the field. While this could enhance the external validity of our results, our results speak mainly to the Egyptian context. Our findings might be culture specific as our paper is limited to examining the effect of Egyptian proverbs on the behavior of Egyptian subjects. Proverbs are argued to be culture-specific so the natural first step in experimentally examining their effect on behavior would be done on the members of the original culture of proverbs. It is thus interesting to validate this relationship using other proverbs from different cultures as it might be the case that our results are driven by factors special to the Egyptian culture that might not hold for other cultures (e.g., Egyptians might be more inclined towards using proverbs in their talk or respect and give more weight to proverbs than people from different culture). Another future extension could be investigating the cross cultural effect of proverbs (i.e. whether exposing individuals to proverbs from a culture different from their own may activate norms and influence their behavior). Also, it is beneficial, as a field extension, to evaluate how effective this simple and cheap nudge (i.e. proverbs) in naturalistic settings. A final question that could also be investigated is whether combining both nudges (injunctive proverb and injunctive statement) can magnify their effect on cooperation.

To sum up, these results provide a novel evidence that cultural proverbs reflecting injunctive norms can have an impact on cooperative behavior and this impact does not differ from the typical injunctive norm based statements. Thus, proverbs have a significant potential to be added to the effective soft policy toolkit. The outcomes of this paper may have implications on public policy. Nudges, in general, have become an attractive tool for policy makers to induce desired behavior for its effectiveness and low cost. Thay are considered as a complement to mandatory law that can increase compliance to existing regulations and a partial substitute for traditional enforcement mechanisms requiring costly controls and sanctions (Peth et al., 2018, p.2). As discussed earlier, introducing a legal intervention based on a social norm in place reduces the probability of back firing and non-compliance since (1) it is consistent with the existing norms (2) it provides institutional support and legality to norm compliance which decrease the social cost of complying and blow whistling to non-compliance. The use of proverbial

wisdom, in particular, in public policy is argued to be beneficial for providing heuristics and being able to sustain the policy over time for capturing and reflecting human experience (Winfree, 2018, p.8, 63). In addition, symbolic action, that is a system of communication that relies on symbols, is argued to be valid policy tool when taking into consideration cultural values (Muers, 2018, p.19). Hence, proverbs, as other norm-based messages, could be used by policy makers in public or, what is commonly known as, social (norm) marketing campaigns through posters, official media (newspaper, TV and Radio) and social media channels. For example, in public health campaigns such as vaccination posters, a proverb such as "Prevention is better than cure" could be integrated as an injunctive-norm message; a similar approach to Mussio and de Oliveira (2022) that added injunctive norm messages encouraging students to protect themselves and/or their community in posters promoting flu vaccination campaign.

However, since the effectiveness of norm messages embedded in norm campaigns is argued to rely on the trust in the intervention's source (the message's issuer) and the credibility of the message (Bicchieri & Dimant, 2022), proverbs might have an advantage over the typical normative messages. This is as proverbs are argued to bring a third voice into social interactions and give a feeling of neutrality and detachment in the situations where they are utilized which can eliminate the credibility and trust concerns (Lauhakangasp, 2007). Moreover, the credibility of the normative message requires the credibility of data used in it (Burchell et al., 2013). For the typical descriptive messages (e.g., the majority of people do/don't behave in this manner) and injunctive messages (e.g., the majority of people perceive/ do no perceive this action to be appropriate), people need to believe that this is the prevailing descriptive/injunctive norm for the campaigns to be successful. Thus, the source of this norm information, which is usually surveys and questionnaires conducted to tackle behavior in specific situations, needs to be cited (Burchell et al., 2013). Using familiar proverbs can be more cost effective in this case since, as mentioned earlier, familiar proverbs are usually accepted in argument without criticism (D'Angelo, 1977:365). That is, relying on familiar proverbs might provide a more credible and a less costly way to communicate the social norms in place which make people less suspicious about the credibility of the communicated norms in those campaigns. In addition, proverbs are more general and flexible making one proverb applicable to different scenarios and behaviors which may provide a spillover effect across multiple behavioral domains.

In conclusion, while the discussed caveats point out that the findings of this paper should be treated with caution, providing interventions to enhance voluntary cooperation in settings with low observability represent an important issue to policy makers. This is as social welfare could significantly increase even when small

increases in cooperation rate are produced in such settings. This paper introduces cultural proverbs as a potential soft low-cost intervention in those settings.

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Ethical approval

The Ethics Committee in Erasmus University Rotterdam provided the approval of this study protocol (Experiment: ETH2223-0550 & Online survey: ETH2223-0300).

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Appendix

A1- Survey Design

Consent:

This survey is part of a research about proverbs and economic behavior. Its results will be used only for academic purposes. The identity of the participants in this survey is anonymous during and after the survey and no one including the researcher will be able to identify the participants. All data will be treated with confidentiality. Participation in this survey is voluntary and you can withdraw at any time. The survey consists of three parts and completing the survey shall take around 5 minutes. To take part in this survey, you should be 18 years old or older.

By continuing, you consent to

- participating in this survey
- storing and retaining the answers
- using and publishing the answers in this research and any related future research.

Do you want to continue?

- ○ yes
- ○ no

Are you 18 years old or older?

- ○ yes
- ○ no

1- Please choose the value that you think is most encouraged by each of the following proverbs:

(More than one choice is allowed)

- "A basket has two handles for two people to carry it" encourages:

- □ Trust
- □ Distrust
- □ Cooperation
- □ Non-cooperation
- □ Betraying

- Not Betraying
- Honesty
- Dishonesty
- Other, please specify

- “Warmth makes wellness” encourages:

- Trust
- Distrust
- Cooperation
- Non-cooperation
- Betraying
- Not Betraying
- Honesty
- Dishonesty
- Other, please specify

- “Do not assume (expect) betrayal but beware” encourages:

- Trust
- Distrust
- Cooperation
- Non-cooperation
- Betraying
- Not Betraying
- Honesty
- Dishonesty
- Other, please specify

- “Lies have no legs” encourages:

- Trust
- Distrust
- Cooperation
- Non-cooperation
- Betraying
- Not Betraying
- Honesty
- Dishonesty
- Other, please specify

- “Do not betray whoever puts trust in you even if you are a betrayer” encourages:

- Trust
- Distrust
- Cooperation
- Non-cooperation
- Betraying
- Not Betraying
- Honesty
- Dishonesty
- Other, please specify

- “Walk straight, your enemies will have nothing against you” encourages:

- Trust
- Distrust
- Cooperation
- Non-cooperation
- Betraying
- Not Betraying
- Honesty
- Dishonesty
- Other, please specify

- “Learning at young age is akin to craving in stone” encourages:

- Trust
- Distrust
- Cooperation
- Non-cooperation
- Betraying
- Not Betraying
- Honesty
- Dishonesty
- Other, please specify

- “Liars will get nothing except for a darkened face” encourages:

- Trust

- Distrust
- Cooperation
- Non-cooperation
- Betraying
- Not Betraying
- Honesty
- Dishonesty
- Other, please specify

- “One hand cannot clap” encourages:

- Trust
- Distrust
- Cooperation
- Non-cooperation
- Betraying
- Not Betraying
- Honesty
- Dishonesty
- Other, please specify

-“ Mind is a decoration” encourages:

- Trust
- Distrust
- Cooperation
- Non-cooperation
- Betraying
- Not Betraying
- Honesty
- Dishonesty
- Other, please specify

- “Don’t bite the hand that feeds you” encourages:

- Trust
- Distrust
- Cooperation
- Non-cooperation
- Betraying
- Not Betraying

- Honesty
- Dishonesty
- Other, please specify

-"Honesty is a savior" encourages:

- Trust
- Distrust
- Cooperation
- Non-cooperation
- Betraying
- Not Betraying
- Honesty
- Dishonesty
- Other, please specify

2- Please specify which of these proverbs you are already familiar with:

(More than one choice is allowed)

- A basket has two handles for two people to carry it
- Don't bite the hand that feeds you
- One hand cannot clap
- Do not betray whoever puts trust in you even if you are a betrayer
- Do not assume (expect) betrayal but beware
- Lies have no legs
- Walk straight, your enemies will have nothing against you
- Honesty is a savior
- Liars will get nothing except for a darkened face
- Learning at young age is akin to craving in stone
- Mind is a decoration
- Warmth makes wellness
- None of the above

3- Please specify which of these proverbs you use in your daily life:

(More than one choice is allowed)

- A basket has two handles for two people to carry it
- Don't bite the hand that feeds you

- One hand cannot clap
- Do not betray whoever puts trust in you even if you are a betrayer
- Do not assume (expect) betrayal but beware
- Lies have no legs
- Walk straight, your enemies will have nothing against you
- Honesty is a savior
- Liars will get nothing except for a darkened face
- Learning at young age is akin to craving in stone
- Mind is a decoration
- Warmth makes wellness
- None of the above

4- What is your nationality?

- Egypt
- Other
  Please Specify

Your answers are successfully recorded

Thank you for participating in this survey

A2- Survey's Descriptive Statistics

The sample size is 377 complete record Egyptian participants. Table A2.1 shows the percentage of respondents choosing the most encouraged norm by each cooperation-encouraging proverb while Table A2.2 displays the percentage of respondents reporting familiarity and frequent usage of each proverb.

Table A2.1 The Percentage of Respondents Choosing the Most Encouraged Norm for Cooperation Proverbs

Norm	A basket has two handles for two people to carry it	One hand cannot clap
Cooperation	94.96%	98.94%
Trust	19.63%	17.77%
Honesty	1.06%	1.59%
Not-Betraying	2.65%	1.06%
Non-cooperation	0.27%	0.27%
Distrust	1.33%	0%
Dishonesty	0.80%	0%
Betraying	1.06%	0%
Others	1.06%	0%

Table A2.2 The Percentage of Respondents Reporting Familiarity and Frequent Usage of Cooperation Proverbs

	A basket has two handles for two people to carry it	One hand cannot clap
Familiarity	83.55%	96.82%
Usage	24.40%	46.68%

From the previous tables, it's shown that the proverb "One hand cannot clap" is more chosen to reflect a norm of cooperation and more reported to be familiar and used in daily talk than the other proverb. Proportion tests are also conducted to make sure that the percentages of respondents choosing the norm of cooperation as the most encouraged norm, reporting familiarity and usage in daily talk are statistically higher for the proverb "One hand cannot clap". The results indicated that the difference between the percentages of the two proverbs are significant and positive. Thus, the percentages of subjects choosing the norm of cooperation as the

most encouraged norm, reporting familiarity and usage in daily talk are significantly higher for the proverb "One hand cannot clap".

Proportion Test for Cooperation Norm:

Ha: diff < 0	Ha: diff != 0	Ha: diff > 0
Pr(Z < z) = 0.9993	Pr(|Z| > |z|) = 0.0015	Pr(Z > z) = 0.0007

Proportion Test for Familiarity:

Ha: diff < 0	Ha: diff != 0	Ha: diff > 0
Pr(Z < z) = 1.0000	Pr(|Z| > |z|) = 0.0000	Pr(Z > z) = 0.0000

Proportion Test for Usage:

Ha: diff < 0	Ha: diff != 0	Ha: diff > 0
Pr(Z < z) = 1.0000	Pr(|Z| > |z|) = 0.0000	Pr(Z > z) = 0.0000

The proportion tests are also used to make sure that the percentage of subjects choosing the norm of cooperation for the proverb "One hand cannot clap" is statistically higher than the percentages of subjects choosing any other norm for the same proverb. The result indicates that the percentage of respondents choosing the norm of cooperation as the most encouraged norm by "One hand cannot clap" is significantly higher than the percentage of any other norm.

Proportion Test for Cooperation Norm vs. Other norms:

Ha: diff < 0	Ha: diff != 0	Ha: diff > 0
Pr(Z < z) = 1.0000	Pr(|Z| > |z|) = 0.0000	Pr(Z > z) = 0.0000

Tables A2.3 and A2.4 show the percentage of respondents choosing the most encouraged norm by each proverb that is assumed to be neutral and the percentage of respondents reporting familiarity and frequent usage of each proverb. The proverb "Learning at young age is akin to craving in stone" is more reported to be related to other norms which is education and learning. While the proverb "Mind is a decoration" is reported to be less related to the norm of cooperation, more familiar and used than "Learning at young age is akin to craving in stone", most respondents answered that it is strongly related to rational acting which might, if used in the experiment, prime more thinking in the contribution decision in PGG which has the potential to prime self-interest attitude. Since "Mind is a decoration"

might not be completely neutral, “Learning at young age is akin to craving in stone” is the chosen proverb for the Neutral Proverb treatment.

Table A2.3 The Percentage of Respondents Choosing the Most Encouraged Norm for Neutral Proverbs

Norm	Warmth makes wellness	Learning at young age is akin to craving in stone	Mind is a decoration
Cooperation	15.38%	11.94%	7.16%
Trust	25.20%	2.12%	2.92%
Honesty	11.14%	7.69%	12.73%
Not-Betraying	3.98%	1.06%	1.59%
Non-cooperation	2.12%	0.27%	0.27%
Distrust	2.12%	0%	3.18%
Dishonesty	0.53%	0.27%	0.53%
Betraying	0.53%	0.27%	0.27%
Others	49.34%	83.55%	81.17%

Table A2.4 The Percentage of Respondents Reporting Familiarity and Frequent usage of Neutral Proverbs

	Warmth makes wellness two people to carry it	Learning at young age is akin to craving in stone	Mind is a decoration
Familiarity	48.01%	88.59%	94.96%
Usage	13.79%	27.59%	47.75%

A3- Experiment Instructions and Post Experiment Survey

The First Task:

In the first task, you will be asked to make a decision about distributing points between "you" and "other". You will have to make this decisions 6 times. In each time, you will have 9 options of distributions of points between "you" and "other" and you are asked to choose the distribution that you most prefer. The computer will then choose randomly one of these 6 choices and you will get the points that you assigned to yourself in this chosen decision and it will give the points that you assigned to the "other" in this decision to another subject in this session chosen randomly which means that your decisions will affect the points that you and another subject will get. This another subject will not know your identity and you will not know the identity of this subject. Similarly, the computer will randomly choose one decision for another subject in this session and you will get the points that this subject assigned to "other" in this decision. You will not know the identity of this person and she will not know yours. This means that the total point that you will get in this part is the points that you assigned to yourself in one of your decisions chosen randomly by the computer in addition to the points that another subject assigned to the other in one decision chosen randomly by the computer. The total points that you got will be revealed at the end of the session

Please choose the distribution that you most prefer

The Second Task:

In the second task, you will find a set of sliders on your screen. You can adjust each slider to any position between 0 and 100 by pressing the slider with your mouse and dragging it to the desired position. There is one number at each end of a slider that tells you the current position of the slider. Your task is to position as many sliders as you can at 50 in 120 seconds. A counter on top of the sliders tells you how many sliders you adjusted correctly. After reaching a certain number of correctly positioned sliders that is determined before the session, you will get a fixed number of points of 20. You do not know this number so do your best to position correctly as many sliders as you can. The points you get at this task will be revealed at the end of the session.

The Third Task:

In the third task , all participants will be divided in groups of four members. No one knows the identity of his group members.

Each group member (including you) will receive an endowment of 20 points. You are asked to decide how many of the 20 points you want to contribute to a group project, and how many you would like to keep in a private account. You can choose to contribute any amount between 0 and 20 points. Each member in your group has the same choice to make.

Your income from the private account: You will earn one point for each point you put into your private account. For example, if you put 20 points into your private account (and therefore do not contribute to the project), the points you will get from the private account is 20. Each point you do not contribute to the project, will automatically remain in your private account.

Your income from the group project: you (and each of your group members) get 0.4 * the sum of your group contributions. This means that every point that you contribute to the group project will increase your own earnings by 0.4 points, and will also increase the earnings of each member of your group by 0.4 points. For example, if the sum of all contributions to the project is 60 points, then you and each member of your group each earn $60 \times 0.4 = 24$ points out of the project for each member.

None of your group members will know your contribution to the group project. Also, you will not know the contribution of any member in your group. You will only know the total points contributed to the group project and your earned points at the end of the session.

Your total points in this task is the sum of your points from your private account and your points from the project as follows (20 - your contribution to the group project) + (0.4* total contributions to the group project)

Examples:

1. Imagine that you and all your group members contribute the full endowment (i.e. 20 points); the total contributions to the group project is 20*4= 80 points. You would get 0.4 * 80 = 32 points from the group project. Hence your total points is (20 - 20) + 32 = 32 points. This is also what your group members get.

2. Imagine that you and all your group members contribute nothing to the group project (i.e. 0 points); the total contributions to the group project is 0. You get 0.4 * 0 = 0 points from the group project. Hence your total points is (20 - 0) + 0 = 20 points. This is also what your group members get.

Before making your actual contribution decision, you will be asked few questions on the computer. You will not get points from these questions and they are just to

ensure that you have fully understood these instructions. You need to answer these questions correctly to proceed to the decision. There is a calculator on the computer screen that you can use.

Please answer the following questions

If each group member has 20 points and the other 3 members contribute a total of 30 points to the project.

a) What will your total points be, if you contributed 0 points into the project

b) What will your total income be, if you contributed 8 points into the project

c) What will your total income be, if you contributed 15 points into the project

- Please enter the number of points (0-20) that you would like to contribute to the group project

- How many points (from 0-20) did you expect any member in your group to contribute to the group project?

Final Part: Survey

This is the final part of the experiment. Please answer this questionnaire. There are no right or wrong answers.

1- In your opinion, what the researcher expect in this experiment?

2- Please choose the statement that appeared on your screen before making the decision in the third task.

- No statement appeared
- One hand Cannot clap
- Learning at young age is akin to craving in stone
- In a previous, similar study, the majority of participants indicated that the most socially appropriate action is to contribute substantially to the group project
- Other statement
- I do not remember

3- Are you already familiar with the proverb “One Hand Cannot Clap”?

- Yes
- No

4- What is your gender?

- male
- female

5- What is your age in years?

6- What is your major?

- Economics
- Political Science
- Statistics
- Not chosen yet

7- Have you spent most of your life in rural or urban area?

- Urban
- Rural

8- Which of the following best describes your household's financial status?

- We can buy all we need and there is left for saving
- We can buy most of what we need but no saving
- We cannot buy what we need

9- What is the highest level of education that your mother has completed?

- Does not read and write
- Learned only to read and write
- Primary school degree
- Preparatory school degree
- High School degree or equivalent

- University student
- University degree or equivalent
- Above university degree
- I do not know

10- What is the highest level of education that your father has completed?

- Does not read and write
- Learned only to read and write
- Primary school degree
- Preparatory school degree
- High School degree or equivalent
- University student
- University degree or equivalent
- Above university degree
- I do not know

11- What is your religion?

- Muslim
- Christian
- Other

12- To what extent you consider yourself religious?

- Not religious
- Slightly religious
- Moderately religious
- Very religious

A4- Analysis

a- Two-way ANOVA Test with Interaction

Number of obs =	561	R-squared =	0.0176
Root MSE =	6.69713	Adj R-squared =	0.0124

Source	Partial SS	df	MS	F	Prob>F
Model	448.68044	3	149.56015	3.33	0.0192
injunctive	401.26965	1	401.26965	8.95	0.0029
proverb	8.3533882	1	8.3533882	0.19	0.6662
injunctive#proverb	61.085694	1	61.085694	1.36	0.2437
Residual	24982.318	557	44.851558		
Total	25430.998	560	45.412497		

Effect sizes for linear models

Source	Eta-Squared	df	[95% Conf.	Interval]
Model	.0176431	3	.0003409	.0406409
injunctive	.0158082	1	.0018628	.0421153
proverb	.0003343	1	.	.0097553
injunctive#proverb	.0024392	1	.	.017197

Notes: injunctive =1 if the treatment is Injunctive proverb or Injunctive statement and 0 if the treatment is Control or Neutral proverb. Prover=1 if the treatment is Injunctive proverb or Neutral proverb and 0 if the treatment is Control or Injunctive statement.

b- Diagnostic Tests

Heteroskedasticity Test for Model (3)in Table (3):

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of Contribution

         chi2(1)      =     1.26
         Prob > chi2  =   0.2625
```

Heteroskedasticity Test for Model (4) in Table (3):

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of Contribution

         chi2(1)      =     0.62
         Prob > chi2  =   0.4323
```

Heteroskedasticity Test for Model (2)) in Table (4):

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of Expectation

         chi2(1)      =     0.30
         Prob > chi2  =   0.5845
```

Heteroskedasticity Test for Model (3) in Table (4):

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of Expectation

         chi2(1)      =     0.01
         Prob > chi2  =   0.9234
```

Heteroskedasticity Test for Model (4) in Table (4):

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of Expectation

         chi2(1)      =     2.19
         Prob > chi2  =   0.1391
```

Heteroskedasticity Test for Model (5) in Table (4):

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of Expectation

         chi2(1)      =     1.28
         Prob > chi2  =   0.2584
```

Model Misspecification Tests for Model (3) in Table(3):

1- Ramsey RESET Test:

P-value indicates not rejecting the null hypothesis that Model (3) is not mis-specified.

```
Ramsey RESET test using powers of the fitted values of Contribution
       Ho:  model has no omitted variables
                 F(3, 540) =      1.59
                  Prob > F =      0.1900
```

2- Link Test:

Hatsq which is the squared prediction regressor is not significant which indicates that Model (3) *in Table(3)* is not mis-specified.

```
. linktest
```

Source	SS	df	MS	Number of obs	=	561
				F(2, 558)	=	52.72
Model	4041.41583	2	2020.70791	Prob > F	=	0.0000
Residual	21389.5824	558	38.3325849	R-squared	=	0.1589
				Adj R-squared	=	0.1559
Total	25430.9982	560	45.4124968	Root MSE	=	6.1913

Contribution	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
_hat	1.586148	.6927977	2.29	0.022	.2253373	2.946958
_hatsq	-.0307222	.035949	-0.85	0.393	-.1013341	.0398897
_cons	-2.567102	3.14092	-0.82	0.414	-8.736574	3.60237

Model Misspecification tests for Model (4) in Table(3):

1- Ramsey RESET Test:

P-value indicates rejecting the null hypothesis that Model (4) is not mis-specified.

```
Ramsey RESET test using powers of the fitted values of Contribution
       Ho:  model has no omitted variables
                 F(3, 539) =      3.77
                  Prob > F =      0.0106
```

2- Link Test:

Hatsq which is the squared prediction regressor is significant which indicates that Model (4) is mis-specified.

```
. linktest
```

Source	SS	df	MS	Number of obs	=	561
				F(2, 558)	=	199.02
Model	10588.0143	2	5294.00716	Prob > F	=	0.0000
Residual	14842.9839	558	26.6003296	R-squared	=	0.4163
				Adj R-squared	=	0.4143
Total	25430.9982	560	45.4124968	Root MSE	=	5.1576

Contribution	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
_hat	.4524352	.1978974	2.29	0.023	.0637203	.8411502
_hatsq	.0296518	.0103597	2.86	0.004	.0093031	.0500005
_cons	1.9782	.8561213	2.31	0.021	.2965855	3.659814

c- Robustness Check: Tobit Estimates

Table A4.1 Tobit Estimates of Treatments Effects on Contribution

VARIABLES	(1)	(2)	(3)	(4)
Treatments:				
Injunctive Proverb	2.218*	2.096*	2.087*	0.817
	(1.170)	(1.097)	(1.107)	(0.921)
Injunctive Statement	3.247***	3.374***	3.422***	1.555
	(1.211)	(1.136)	(1.138)	(0.952)
Neutral Proverb	0.701	0.965	0.834	0.176
	(1.156)	(1.083)	(1.084)	(0.898)
Individualistic		-6.689***	-6.685***	-4.894***
		(0.792)	(0.789)	(0.660)
Female			2.124***	1.186*
			(0.820)	(0.684)
Urban			0.668	0.462
			(0.974)	(0.812)
Religion:				
Christian			0.253	0.784
			(1.515)	(1.257)
Other			5.924	6.649*
			(4.664)	(3.878)
Religiosity:				
Slightly religious			2.140	4.003*
			(2.849)	(2.404)

Moderately religious			2.601	3.652
			(2.700)	(2.278)
Very religious			5.498*	4.836*
			(3.286)	(2.746)
Age			0.274	0.0571
			(0.382)	(0.318)
Major:				
Political Science			-1.400	-1.144
			(0.997)	(0.830)
Statistics			-1.330	-0.0948
			(1.402)	(1.177)
Not decided yet			0.600	0.0900
			(1.285)	(1.067)
Financial Status:				
We can buy most of what we need but no saving			-0.637	0.0415
			(0.790)	(0.660)
We cannot buy what we need			1.704	1.956
			(2.092)	(1.728)
Expectations				0.824***
				(0.0577)
Constant	7.201***	11.29***	1.673	-2.729
	(0.866)	(0.938)	(8.097)	(6.726)
Observations	561	561	561	561

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A4.2 Tobit Estimates of Treatments Effects on Expectations

VARIABLES	(1)	(2)	(3)	(4)	(5)
Contribution				0.644***	0.634***
				(0.0442)	(0.0444)
Treatments:					
Injunctive Proverb	1.741*	1.676*	1.863**	0.826	1.026
	(0.937)	(0.923)	(0.932)	(0.768)	(0.779)
Injunctive Statement	2.413**	2.458**	2.662***	0.866	1.057

	(0.969)	(0.954)	(0.955)	(0.799)	(0.804)
Neutral Proverb	0.509	0.607	0.650	0.213	0.320
	(0.929)	(0.915)	(0.915)	(0.759)	(0.763)
Individualistic		-2.601***	-2.577***	0.500	0.460
		(0.666)	(0.662)	(0.589)	(0.589)
Constant	8.784***	10.38***	4.752	3.392***	2.973
	(0.691)	(0.794)	(6.818)	(0.811)	(5.691)
Controls	No	No	Yes	No	Yes
Observations	561	561	561	561	561

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

d-Two-Sample T-Test

Two-sample t test with unequal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
Inj_Stat	131	10.30534	.6338368	7.254593	9.051373	11.55931
Inj_Prov	151	9.397351	.57452	7.05982	8.262154	10.53255
combined	282	9.819149	.4259297	7.152576	8.980731	10.65757
diff		.9079925	.8554661		-.7761255	2.59211

diff = mean(Inj_Stat) - mean(Inj_Prov) t = 1.0614
Ho: diff = 0 Welch's degrees of freedom = 274.134

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = 0.8553 Pr(|T| > |t|) = 0.2894 Pr(T > t) = 0.1447

Two-sample t test with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
Inj_Stat	131	10.30534	.6338368	7.254593	9.051373	11.55931
Inj_Prov	151	9.397351	.57452	7.05982	8.262154	10.53255
combined	282	9.819149	.4259297	7.152576	8.980731	10.65757
diff		.9079925	.853811		-.772711	2.588696

diff = mean(**Inj_Stat**) - mean(**Inj_Prov**) t = **1.0635**
Ho: diff = 0 degrees of freedom = **280**

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = **0.8558** Pr(|T| > |t|) = **0.2885** Pr(T > t) = **0.1442**

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