Dark Triad, Impulsivity And Honesty-Humility And Intended Behavior In A Prisoner's Dilemma Game: A Simulation Study

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Abstract

Objective: The aim of the study was to investigate if the Dark Triad personality traits, Impulsivity and Honesty-Humility can predict individuals' intended behavior in one-shot Prisoner's Dilemma Games (PDG).

Method: A cross-sectional correlational design was followed, examining multiple linear regression models. A total sample of 197 Greek adults (64% women, $M=35.13$ years old) completed a one-shot simulated PDGs, the Dirty Dozen scale, the Barratt Impulsivity Scale and the Honesty-Humility subscale from the HEXACO NEO-PI.

Results: Significant correlations between Dirty Dozen scores and Impulsivity, and Dirty Dozen scores and Honesty-Humility ($p<.01$) were identified. Honesty-Humility predicted Dark Triad scores ($p<.01$). Dark Triad scores predicted the classification of participants in groups, according to their decision in the first PDG simulation ($p<.01$), while Honesty/Humility and Impulsivity were not significant predictors.

Conclusions: Simulated social situations can serve as situational judgment tests in an effort to develop new measures of personality and a better understanding in the underpinning mechanisms between personality traits and intended behavior in ethical dilemmas and moral judgment.

Introduction

Mathematical game theory has offered models for studying ethical decision making and intended moral behavior in in-vitro social situations (Luce & Raiffa, 1957). In such a framework, one individual is asked to choose among a range of options based on the known or expected behavior of another individuals. The outcomes and the consequences of the choices depend on the decisions of the other individuals and are represented with prefixed and clear numerical values. Competition and cooperation are two concepts that occupy a large place in the field of the human sciences. Among the presentations concerning them found in studies, the prisoner's dilemma is a well-known game title. It is a modern fable, a way of setting a scene to bring the reader to think about the difficulties that two parties face in a negotiation in a climate of uncertainty (Kreps et al., 1982). The prisoner's dilemma game (PDG) is based upon the mathematical game theory. It is a two-person non-zero-sum game, where a graded pattern of rewards is offered based on the constellation of decisions taken by the two players (Rasmusen, 2006). In the PDG, there is a temptation for the player to trick the other player, as a successful defection will lead to the highest reward possible, whilst there is a smaller reward for mutual cooperation, as there would be no reason for defection if the reward for mutual cooperation was higher. In the meanwhile, the lowest reward is offered when the individual is defected by the opponent (Johnson et al., 2002).

The interest in the relationship between personality, moral judgment and intended behavior in ethical dilemmas is deeply rooted in the history of philosophy and psychology. In this study, we examine the potential role of normal range personality traits (Honesty/Humility and Impulsivity) and dark personality traits (The Dark Triad) in intended behavior in the ethical dilemma of the PDG. The "dark triad of

personality" or "dark triad" as stated in the vast majority of the literature is a structure of three theoretically distinct (though empirically overlapping) personality types characteristics that are interpreted as interpersonal maladaptations. These three types of personality traits are: Psychopathy, Machiavellianism and Narcissism (Fehr & Samson, 2013). It is worth noting that the "dark triad" is the middle ground between normal personality and clinical mental illness (Spain et al., 2014). Psychopathy as part of the dark triad is characterized by certain personality traits that can be encountered in the general population. The main feature of a psychopathic personality is the lack of conscience and guilt (Hare & Neumann, 2008). A main behavioral characteristic of psychopathy is uncooperative behavior in a variety of social situations (Babiak & Hare, 2006). A suggested explanation to investigate is that lower levels of cooperativeness pay off higher rewards for psychopaths (Harris & Rice, 2006).

Machiavellianism, as a psychological notion, was developed approximately during 1954–1955. Machiavellianism has been suggested to be the core of manipulation with four main characteristics: lack of emotional affection within interpersonal relationships, lack of interest in conventional morality, lack of psychopathology awareness and lack of ideological commitment (Stenason & Vernon, 2016). Individuals high in Machiavellianism are disposed to engage into any action in order to promote profitable results for themselves, while they tend to be highly manipulative in interpersonal relationships (Geis & Moon, 1981; Christie & Geis, 1970), low or no interest in the morality of one's actions, low ideological commitment.

The third traits of the Triad is narcissism, a term first used by Havelock Ellis (1898) to describe a clinical condition of auto-eroticism. Freud (1931/1950) defined the narcissistic personality as a behavior of the person with outward force, confidence and arrogance. Narcissism is a relatively constant differentiation of human personality, characterized mainly by a sense of magnificence, overrated sensation of beauty, and falsified views of each narcissist's self, extending into three dimensions: the individual, interpersonal relationships, and self-regulation strategies (Campbell et al., 2010). The dimension of self-regulation strategies relates to the actions of the narcissist to essentially retain his great self-concept through the search for admiration, adoration, and boasting (Campbell et al., 2010). Thus, we hypothesize that the three traits combined potentially have a negative effect on the persons' moral judgment and ethical decision making.

Apart from the Dark traits, impulsivity is also considered to be a traits related ethical behaviors. Generally, impulsivity is a concept measured by externalized behaviors that seem to have not been well thought-through (Whiteside & Lynam, 2001). Barratt (1959) conceptualizes impulsivity into three components: motor impulsivity, cognitive impulsivity, and the difficulty of planning over time or anticipation. Motivational impulsivity includes behavioral impulsivity. Cognitive impulsivity refers to passing thoughts, and the impulsivity of non-planning involves taking actions or making decisions without prior reflection (Patton et al., 1995). We hypothesize that moral judgement and ethical behaviors are negatively associated with impulsivity, as higher impulsivity scores are more probable to lead to poorest ethical decision making without prior reflection.

Honesty-Humility, as a personality trait, gained significant interest after it was presented as a core personality trait in the HEXACO personality model. It is the first dimension of the acronym dimension, and it is the new factor added to the HEXACO model of personality structure. The Honesty-Humility trait, through vocabulary research, has been found to be associated with adjectives such as fair, generous, and modest while being opposed to adjectives such as dishonest, unfair, greedy, and boastful (Ashton, et al., 2007). The research findings suggest that this dimension has four aspects: Honesty, Justice, Avoidance of Greed, and Humility. Consequently, this dimension seems to be about individual differences in the tendency of individuals to be authentic at the interpersonal level, to avoid deception and corruption, not to care about social status and wealth, to be humble and modest (de Vries, & van Kampen, 2010). In addition, this dimension has been found to be positively related to 'morality' (Cohen et al. 2014). Thus, we hypothesize that HH can have a positive effect on the persons' moral judgment and ethical decision making.

Research has previously examined the potential role of the aforementioned variables in similar ethical dilemmas. Rilling et al. (2007) identified a pattern, indicating that men who had higher levels of psychopathy acted less cooperatively in the PDG. Mokros et al., (2008) found in their study that individuals who scored highly in psychopathy engaged more in noncooperative behavior, while the number of defections was associated with the psychopathy measurement scores. Machiavellianism, as subscale of the measure was also positively correlated with the number of defective choices. Curry and colleagues (2011) in their study showed that individuals high in Machiavellianism were less likely to cooperate as a response or to initiate cooperation, while Deutchman & Sullivan (2018) identified an effect of the Dark triad on the prediction of selfish behaviors in one-shot PDG.

Existing research has also investigated the links between impulsiveness and cooperation in social dilemmas. Malesza (2018) examined the effect of impulsivity along with the dimensions of the Dark triad in the PDG and the findings showed that impulsivity and psychopathy better predicted the repeated efforts to defect the opponent. Impulsivity was not significantly correlated with Machiavellianism, as the latter is associated with strategic and long-term planning.

The limited existing research has suggested that the Honesty-Humility (HH) dimension of the HEXACO model of personality is a stable predictor of cooperative behavior. In particular, Hilbig and colleagues (2018) in their study found that HH was a significant predictor of cooperation in the cooperation games, and it was a stronger predictor in cases where temptation was a possible motivational factor of defection. These findings suggest that individuals with high levels of HH have more potential to resist a temptation that motivates them to defect the opponent compared to those with lower levels of HH. Hilbig et al., (2011) also explored the role of HH in social dilemmas decision making. In particular, the researchers hypothesized that individuals with low HH would change their behavior depending on whether a punishment is present or absent, while individuals with high HH would strategically employ cooperation. The results of the study indeed showed that the changes in participants' decisions when punishment was introduced highly depended on the dispositional level of HH.

Based on the existing research and theoretical literature, the aim of the study is to incorporate the three constructs that have been previously investigated in separate studies and investigate how Dark Triad, Impulsivity and Honesty-Humility are associated with individuals' intender behavior in a one-shot PDG. The existing literature has suggested that total Dark Triad scores are more associated with a tendency to defect, while impulsivity seems to be a buffering factor, particularly when combined with high psychopathy scores. Honesty-humility on the other hand – both according to the existing research and to the content of the theoretical construct – is more associated with cooperation and negatively correlated with the Dark Triad personality traits. According to these assumptions, the hypotheses of the study were formulated as follows:

- H1. There will be a significant correlation between Honesty/Humility, Impulsivity and Dark Triad total scores.
- H2. Honesty-Humility and Impulsivity will be significant predictors of Dirty Dozen scores.
- H3. Dark Triad scores, Honesty/Humility and Impulsivity can significantly predict the behavior of the participants in the PDG (those who cooperated and defected).

Materials & Methods

Design

The research followed a quantitative, cross-sectional correlational design. In particular, participants' behavior in the PDG was the dependent variable in the predictive models, with two levels, Defect and Cooperate. The Dark Triad score, Impulsivity and Honesty-Humility were the independent variables – predictors.

Participants

A total sample of 197 individuals (N=197, 64% women, M=35.13 years old) participated in the study. Power analysis indicated a minimum of 128 participants in order to detect a small effect size with a statistical power of .90. Opportunity sampling was used as the interest was to investigate the behavior of a sample from the general population in the PDG. Inclusion criteria were set: participants had to be adults (>18 years old), fluent in Greek language (language of the survey). Exclusion criteria were set: individuals with visual disabilities were excluded, as the survey was only available in written form and individuals with diagnosed mental health disorders were excluded as well, due to the use of Personality Traits measures, which potentially refer to behaviors that might overlap with symptoms of mental health disorders (e.g. Dark Triad and Antisocial Personality Disorder). Further demographic information is presented in Table 1. Sample is considered generally heterogeneous, similar with relevant studies that examine the issue in the general population.

Table 1. Distribution of demographic information.

		F	%
Education	Junior high school	7	3.6
	High school	22	11.2
	Technical Education	42	21.3
	University/College	65	33.0
	Master's Degree	50	25.4
	Doctorate's Degree	11	5.6
Marital status	Unmarried	106	53.8
	Married	44	22.3
	Divorced	33	16.8
	Cohabitation agreement	4	2.0
	Other	10	5.1
Employment status	Employee in private sector	101	51,3
	Employee in public sector	24	12.1
	Freelancer	50	25.4
	Other	22	11.2

Measures

The participants completed an online questionnaire that consisted of a one-shot PDG adapted items, three standardized scales and one improvised demographics questionnaire. The measures administered to the participants were the Dirty Dozen scale for measuring Dark Triad, the Barratt Impulsiveness Scale and the Honesty-Humility subscale from the HEXACO NEO-PI personality inventory.

Adaptation of the PDG

PDG was adapted as a one-shot item for the purposes of the study. In particular, the participants were informed about the fictional situation in which they were required to imagine themselves prior to pointing their desired behavior. They were presented with a short text explaining the scenario of the PDG and they were invited to play in real time. The participants are informed that each one of them is one of two criminals who were arrested due to the alleged commitment of a burglary, and they are given the following options:

In the light of the above, they were asked to choose their behavior in a one-shot game, and after the participant chose their behavior, they were informed that the other participant (predefined option) in fact made the same decision with them.

Dirty Dozen

For the measurement of the Dark Triad Personality Traits. The Dirty Dozen scale was used (Jonason & Webster, 2010), back-translated in Greek. The Dirty Dozen scale consists of 12 items measured on Likert scales, divided into three quadrants, each referring to a different aspect of the dark personality – Psychopathy, Machiavellianism and Narcissism. Despite its division into three dimensions, Dirty Dozen remains a single scale, yielding a total score as well (Jonason & Webster, 2010). The Dirty Dozen scale

shows high internal consistency levels for the total scale ($\alpha=.83$) as well as for the subscales: Psychopathy ($\alpha=.69$), Machiavellianism ($\alpha=.77$) and Narcissism ($\alpha=.85$).

Barratt's Impulsiveness Scale

Barratt's Impulsiveness Scale (BIS, Barratt, 1959) is a self-reporting scale with 30 items. The items are scored on a 4-point scale (1 rarely/never, 2 occasionally, 3 often, 4 almost always/ always). Published reliability coefficients for the BIS-11 total score (Cronbach's) range from 0.72 to 0.83. After the complete pass, a global score, sum of all the items, is attributed. Each of the sub-scales (Barratt factors) receives a score according to the items that compose it: Motor Impulsiveness, measuring the behavioral dimension of impulsiveness; Cognitive Impulsiveness, related to the potential difficulties experienced in intellectual tasks and their own ability to evaluate their mode of cognitive functioning; Planning Difficulty, related to a more general dimension of impulsivity, and in particular to the overall mode of operation of the subject in relation to the notion of the future and Self-Control (Barratt, 1959). The scale has reported high internal consistency ($\alpha=.78$ - $\alpha=.85$).

HH HEXACO factor

The Honesty-Humility trait was measured with the relevant subscale for the HEXACO Personality Inventory (Ashton & Lee, 2004). The subscale consists of 10 items answered on 5-point Likert scales (1=totally disagree, 5=totally agree). The subscale has high internal consistency ($\alpha=.72$).

Procedure

The research was approved by the Ethics Committee of the University of Central Lancashire. Surveys were administered online via the Google Forms platform. Eligible participants received the link so that they could respond online. The participants were informed about the purposes and the context of the study so that they would give their informed consent in order to be able to proceed to further completing the questionnaire. After the consent formed, the participants were presented with the PDG scenario in detail and the outcome for each of their choices. The participants completed the one-shot PDG items and after each item were informed about the outcome. After the PDG adaptation, the participants were asked to complete the Dirty Dozen scale, which was followed by the Barratt's Impulsivity Scale and afterwards the Honesty-Humility subscale. The improvised demographics questionnaire was the last part of the form. Participants also were offered the option to submit their email account, in case they wanted to be informed about the summative results of the study. Data was confidential and all ethical requirements were followed. Pearson r correlations were used to test the first hypothesis. about the significant correlations between Dark Triad, Honesty/Humility and Impulsiveness. A multiple linear regression was performed to examine Honesty/Humility and Impulsivity as predictors of the Dark Triad. Binary Logistic Regression was used to test whether Dark Triad, Honesty/Humility and Impulsivity can predict behavior in a PDG simulation. The three variables were tested in two separate regression models, due to the contrasting conceptual overlap between Honesty/Humility and the Dark Triad and a strong correlation coefficient, suggesting multicollinearity.

Results

In order to perform parametric correlations and regression analyzes, normal data distribution was tested with the Shapiro-Wilk test ($N < 200$). Logarithmic transformations were performed for the correction of non-normal distributions and finally all variables were normally distributed.

Table 2. Descriptive statistics for the total sample (N=197) for Machiavellianism, Psychopathy, Narcissism, Impulsiveness and Honesty-Humility.

	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>
Dirty Dozen	197	12.00	75.00	36.74	12.36
Impulsivity	197	36.00	104.00	65.36	11.37
Honesty	197	12.00	49.00	35.51	7.79

First, correlations between the variables of the study were examined using the Pearson r correlation coefficient. A significant positive mild correlation was identified between Dirty Dozen scores and Impulsivity ($r = .19$, $p = .007$, two-tailed) and a negative strong correlation between Dirty Dozen and HH ($r = -.60$, $p < .001$). Impulsivity had a significant moderate negative correlation with HH ($r = -.35$, $p < .001$).

Honesty and impulsivity were tested as predictors of the Dark Triad. As far as it concerns the overall Dirty Dozen score, the regression model showed that the two predictors explained the 36.1% ($R^2 = .361$, Adjusted $R^2 = .354$). The ANOVA showed that the model is statistically significant ($F_{(2,194)} = 54.689$, $p < .001$, $MS = 34.639$) and according to the regression coefficients, honesty was a significant predictor of dirty dozen ($B = -.608$, $SE = .061$, $\beta = -.607$) ($t = -9.909$, $p < .001$, 95% CI $[-.73, -.49]$) while impulsivity was not ($t = -.320$, $p = .749$, CI $[-.14, .10]$).

Logistic regression was employed as the regression method for this study due to the binary response of the conditional dependent variable, the participants' behavior in the PDG. A binary logistic regression was performed to examine whether Dirty Dozen scores can predict the classification of participants in groups, according to their decision in the first PDG simulation. The overall model was statistically significant ($\chi^2_{(1)} = 5.025$, $p = .025$). The explained variation in the dependent variable based on our model ranges from 2.5–3.4%, for the Cox & Snell R^2 or Nagelkerke R^2 methods, respectively. The Hosmer and Lemeshow Test indicated that the model fits the data ($\chi^2_{(8)} = 8.617$, $p = .376$). With the independent variable added, the model now correctly classifies 56.3% of cases overall, as 70.5% of participants who cooperated in the PDG were also predicted by the model to cooperate and 40.2% of the participants who defected were also predicted by the model to defect. The results of the logistic regression showed that the Dirty Dozen was a significant predictor ($B = .330$, $SE = .150$, Wald = 4.849, $p = .028$, OR = 1.391 95%

CI[1.0337, 1.866]), thus for every unit that the Dirty Dozen scores increases, the odds that the participants will defect are 1.4 times greater.

The results of the binary logistic regression for Honesty/Humility and Impulsivity as predictors of the participants' behavior in the PDG showed that the model was not significant overall ($\chi^2_{(2)} = 1.953$, $p = .377$) (Table 3, Model 2).

Table 3. Binary logistic regression coefficients for Dirty Dozen, Honesty/Humility and Impulsivity.

		B	S.E.	Wald	df	p	OR	95% C.I.(for OR)	
								Lower	Upper
Model 1	Dirty Dozen	.330	.150	4.849	1	.028	1.391	1.037	1.866
	Constant	-.136	.145	.879	1	.348	.873		
Model 2	Honesty/Humility	-.138	.156	.783	1	.376	.871	.642	1.182
	Impulsivity	.110	.156	.496	1	.481	1.116	.822	1.514
	Constant	-.133	.144	.865	1	.352	.875		

Discussion

The purpose of this study was to examine the relationship between the Dark Triad, impulsivity, Honesty-Humility and individuals' behavior in one-shot PDG. Based on the existing literature, we examined whether these personality traits and individual characteristics can predict individuals' choice of behavior in ethical dilemmas, through two series of computer simulated one-shot games. As a result, we hypothesized that Honesty/Humility, Impulsivity and Dark Triad total scores will be significantly correlated (H1), Honesty-Humility and Impulsivity will be significant predictors of Dirty Dozen scores (H2) and that Dark Triad, Honesty/Humility and Impulsivity can significantly predict behavior in one-shot PDG simulations (H3).

The statistical analyses performed indicated that there is indeed a significant positive correlation between Dirty Dozen scores and Impulsiveness and a significant negative correlation between Dirty Dozen and Honesty-Humility, thus confirming our first hypothesis. As far as it concerns the second hypothesis, the regression model showed that honesty-humility and not impulsivity significantly predicted the Dark Triad score. For Hypothesis 3, the binary logistic regressions showed that only the Dirty Dozen could predict significantly the participants behavior according to their decision in the first PDG simulation, whilst supporting the potential role of the Dark Triad in individuals' moral decision making and behavior in one-shot ethical dilemmas such as the PDG.

Based on their contextual constructs, it would be absolutely reasonable to expect a negative correlation between Honesty-Humility and Dark Triad, however, only a few studies have concretely examined the relationship between these variables. In particular, the negative correlation found also in this study has been explained to emerge due to the common low pole that Honesty-Humility shares with the Dark Triad variables (Lee & Ashton, 2014). In particular, the study conducted by Lee and Ashton (2014) explained that there is a part of variance shared between Honesty-Humility and the Dark Triad, with strong correlations (-.80 to -.94). The correlation coefficients of our study were lower and not supportive of the overlapping hypothesis between the two variables, but still suggesting strong correlations. Apart from being significantly correlated, Honesty-Humility was found to be a significant and strong predictor of the Dark Triad scores, supporting the previous literature that views honesty-humility a trait opposite to the Dark Triad personality traits, the increase of which leads to the significant decrease of the three dark traits (Lee & Ashton, 2014).

Apart for the correlations, interesting findings emerged concerning the role of the Dark Triad personality traits in individuals' behavior in the PDG. The study found that Dark Triad scores significantly predicted the participants' behavior, in those who defected and those who cooperated in the simulated PDG. The results of the study showed that an increase in the Dark Triad score can significantly increase the odds of an individual defecting in the PDG. Malesza (2018) in a study that examined the effects of the Dark Triad in iterated PDG also found that the triad could significantly predict the likelihood of defection in the PDG, explaining that when psychopathy was coupled with high levels of impulsivity, individuals tended to repeatedly attempt defection. Apart from psychopathy, Malesza (2018) also attributed part of the Dark Triad effect towards defection to the Machiavellian trait, which is associated with a long-term strategy, which however cannot be tested in one-shot PDG games, like those implemented in our study. In line with our findings, Deutchman & Sullivan (2018) who tested the role of the Dark Triad in a one-shot PDG found that higher Dark Triad scores predicted a more selfish (defective) behavior, which was independent of the context (gain/loss and social/nonsocial context).

Although we did not find a direct effect of Honesty-Humility in participants' behavior in the PDG, the predicting validity of the HH factor on the Dark Triad criterion should be taken into consideration, particularly when previous research has shown that individuals high in Honesty-Humility are more likely to cooperate and those low in the HH factor are more likely to defect (Zettler et al., 2013). The HH factor is one of the HEXACO personality traits, a latent-variable personality model while the Dark Triad consist of three constructs related to personality pathology. A potential explanation for the current findings could be rooted in the idea that pathological personality traits seem to be more indicative of intended behavior in situation where moral judgement is required, compared to "healthy" personality traits, including models with well-established validity, such as the Big Five and the HEXACO. For example, in a recent study conducted by Blagov (2020) regarding the role of personality in embracing protective public health measures in the face of the COVID-19 pandemic, both normal-range personality and dark personality could predict endorsement and deviance respectively, however, dark personality also predicted endorsement of behavior that puts others at risk of infection.

The contributing findings of the current study are susceptible to certain limitations. In particular, the convenience sampling strategy limits the generalizability of the findings and the representativeness of the studied population, thus affecting the validity of the research. Moreover, all personality variables were measures with self-report measures, which have been suggested to be susceptible to intrapersonal bias, especially in cases of socially non-desirable traits such as the Dark Triad personality traits (Paulhus & Vazire, 2007). Also, the one-shot PDG have limited insight to the individuals' behavior patterns compared to the iterated dilemma games, while also it is possible that the automated outcome of the first PDG shot affected the participants' behavior in the second shot. In addition, it should be taken into account that the participants knew they are playing against a computer and that there is no real-life outcome or consequences resulting from their decision in the PDG.

Nonetheless, the study has significant implications associated to personality assessment, behavior prediction and clinical contexts. In particular, simulated social and ethical conditions can serve as situational judgment tests in an effort to develop new, more valid and reliable measures of personality, and in particular to develop a better understanding in the underpinning mechanisms between personality traits and exhibited behavior in ethical dilemmas. Moreover, such methodological criterions might contribute to the continuous effort to achieve a better assessment approach to clinical traits, such as psychopathy, which are very difficult to access with validity and reliability with the existing measures. Computer-simulated real-life situations associated with personality measures might be an effective and promising method for personality assessment and behavior prediction.

In conclusion, based on the above, there is a need for further investigation on the behavioral phenotypes of the Dark Personality Traits as well the examination of possible mediating and moderating effects of the normal-range Personality Traits, like Honesty-Humility. Moreover, future research should examine the use of Virtual Reality technologies in decoding real life social dilemmas, which, combined with personality measures will allow a more thorough understanding of the complex mechanisms that explain the relations between personality, moral judgment and behavior. Such studies will allow a deeper insight in the study of human personality development and behavior, generating information that can have applications and implications both in theory and in practice.

Declarations

Conflict of Interest: On behalf of all authors, the corresponding author states that there is no conflict of interest.

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Figures

Player 1	Player 2	
	Cooperate (Confess)	Defect (Betray)
Cooperate (Confess)	5 years in prison for each	Pl.1: released/ Pl.2: 20 years in prison
Defect (Betray)	Pl.1:20 years in prison	1 year in prison for each /Pl.2: released

Figure 1

Cross-tabulation of the outcome for each player in the PDG.

Supplementary Files

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