



Cooperation with characters: How a partner's personality disorder decreases cooperation in two economic games

Lawrence Ian Reed^{a,b,*}, Cheryl K. Best^c, Jill M. Hooley^d

^a Department of Psychology, New York University, United States

^b Department of Psychiatry, McLean Hospital, Harvard Medical School, United States

^c Department of Psychology, University of Albany, United States

^d Department of Psychology, Harvard University, United States

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ABSTRACT

How does your personality affect how others treat you? Previous research suggests the characteristic patterns of social behavior in personality disorders can be captured using economic games. Here we test the opposite: whether personality disorders elicit characteristic patterns of social behavior from others. Participants read vignettes portraying individuals with one of eight DSM-5 personality disorders (plus a control vignette) then played either a Prisoner's Dilemma (Experiment 1) or Chicken (Experiment 2) game with a confederate said to have been interviewed and portrayed by each vignette. Experiment 1 found higher cooperation rates in response to the control vignette in comparison to all personality disorder vignettes. Experiment 2, found similar results, apart from the vignette depicting schizoid personality disorder. Findings suggest that people use information about personality to guide how they interact with others. They also illuminate the role others play in the difficult social situations those with personality disorders frequently experience.

1. Introduction

Perhaps the most salient piece of information we can glean from learning about someone's personality characteristics is how they are likely to treat us. This notion is reflected within current conceptualizations of personality disorders, where diagnostic criteria place a large emphasis on social behavior. For example, five of the seven diagnostic criteria for antisocial personality disorder (ASPD) are primarily social (i.e. failure to conform to social norms, deceitfulness, irritability and aggressiveness, disregard for the safety of others, and lack of remorse) (American Psychiatric Association, 2013). Furthermore, several personality disorders have characteristic interpersonal styles. In borderline personality disorder (BPD), for example, relationships are intense and unstable, the individual is burdened by fears of abandonment, and others are alternately idealized or devalued (Gunderson, 2007). The manifestation of many of these characteristics is behavioral. However, they are often assessed using self-report inventories, ratings scales or checklists, clinical interviews, or projective techniques (Millon, Millon, Meagher, Grossman, & Ramnath, 2012).

An important development in understanding the social behaviors characteristic of personality disorders has come from the use of economic games in clinical science. Economic games allow for the

behavioral assessment of social characteristics by using formalized models of specific social situations. They also provide an objective measure of social behavior without relying on recollection or clinical judgement.

Several studies have used these methods to test how individuals with personality disorders behave when faced with a social dilemma. King-Cases et al. (2008) examined the cooperative behavior of a group of individuals diagnosed with BPD using an iterated trust game (Berg, Dickhaut, & McCabe, 1995; Weigelt & Camerer, 1988). In comparison to a group of control participants (i.e. without psychopathology), those with BPD showed a failure to cooperate across iterated exchanges. A similar study using a single trust game conducted by Unoka, Seres, Aspan, Bodi, and Keri (2009) found that individuals with BPD gave smaller investments to trustees in comparison to control participants. Taken together, these findings suggest an increased difficulty among patients with BPD to attain and maintain cooperative relationships and are consistent with conceptualizations of BPD that focus on unstable interpersonal relationships.

Whereas cooperation in BPD has been examined using the trust game, researchers have used the Prisoner's Dilemma game (Luce & Raiffa, 1957) to model ASPD. Mokros et al. (2008) found that criminal psychopaths from psychiatric hospitals were > 7 times more likely to

* Corresponding author at: Department of Psychology, New York University, New York, NY 10012, United States.
E-mail address: lr113@nyu.edu (L.I. Reed).

defect (as opposed to cooperate) in comparison to men chosen from the general population. Similarly, it has been found that participants who scored highly on measures of psychopathy are less likely to begin and continue to cooperate over time in an iterated Prisoner's Dilemma game (Rilling et al., 2007).

These studies suggest that game theoretic models capture some of the social characteristics of personality disorders. However, a person's social interactions are not solely determined by the individual themselves, but also by how they are treated by others. To our knowledge, there exists no systematic research examining how people behave towards others when provided with information pertaining only to a partner's personality disorder.

The aim of the current investigation was to assess how participants play economic games with individuals when given only information regarding a partner's personality disorder. Here, participants learned one of two economic games: The Prisoner's Dilemma game (Experiment 1) and the Chicken game (Experiment 2). Participants were then presented with vignettes portraying individuals with several criteria of a single DSM-V personality disorder (and a control vignette) and asked to cooperate or defect with each. Based on previous research showing that the social characteristics of personality disorders are captured within economic games, we hypothesized that cooperation rates would be lower in response to each personality disorder vignette when compared with the control vignette. Although we expected variation in cooperation rates among the personality vignettes, we did not have any specific hypotheses regarding how these rates might vary.

2. Experiment 1

2.1. Method

2.1.1. Participants

One-hundred and ninety-nine participants (117 male, 81 female, and 1 other) were recruited using Amazon's Mechanical Turk (MTurk) service. MTurk is an online crowd-sourcing web service in which individuals participate in Human Interaction Tasks (HITs). MTurk has a large and diverse subject pool (Burmester, Kwang, & Gosling, 2011; Horton, Rand, & Zeckhauser, 2011) and has been used in previous research in psychology and economics. Participants' age ranges were between: 18–24 (10.1%), 25–34 (57.8%), 35–44 (15.1%), 45–54 (9.5%), 55–64 (7.0%) and 65–74, (0.5%). Participant's races were Caucasian (74.9%), Asian (14.6%), African-American (6.5%), American Indian (0.5%), and other (3.5%). All participants who completed the study were included in the analyses.

2.1.2. Procedure

Participants first read a description of payoff outcomes based on the Prisoner's Dilemma game. The Prisoner's Dilemma is a symmetrical 2-person, 2-choice game where the outcome is jointly dependent upon the choice each player makes (either to cooperate or defect). If both players cooperate, both earn the Reward (R). If both players defect, both players earn the Punishment (P). However, if one player cooperates and the other defects, the player who cooperates will earn the Sucker's Payoff (S) while the player who defects will earn the Temptation to Defect (T). See Table 1 for the payoff structure. The formal Prisoner's Dilemma is defined by the relationship between these outcomes, where $T > R > P > S$.

The dominant strategy (i.e. Nash equilibrium) in the Prisoner's Dilemma is defection. That is, regardless of their partner's choice, each player will gain a greater individual payoff by choosing to defect rather than cooperate. The dilemma is that if both players act on this temptation to defect, neither will reap the benefits of mutual cooperation.

In the face of this dilemma, and dependent upon factors such as communication, group identity, anonymity, repetition, and the relative values of T, R, P, and S (Balliet, 2010; Gallo & McClintock, 1965; Sally, 1995), cooperation can be common. Data from studies with similar

Table 1
Payoff structures for Prisoner's Dilemma and Chicken games.

		Column	
		Cooperate	Defect
Row	Cooperate	Reward, Reward	Temptation to defect, Sucker's payoff
	Defect	Sucker's payoff, Temptation to defect	Punishment, Punishment

Note: Column payoffs presented first within each cell.

characteristics and where knowledge of a partner's personality characteristics might play a role (Frank, Gilovich, & Regan, 1993; Reed, Zeglen, & Schmidt, 2012) suggest cooperation rates of 73.7% and 77.8%, respectively. As such, we predicted a cooperation rate of around 70% to 80% in response to our control vignette (see below).

Participants were presented with a table describing the monetary payoffs contingent upon each player's choice. We set $T = 50$ cents, $R = 30$ cents, $P = 10$ cents, and $S = 0$ cents. Participants then had to correctly answer two comprehension questions before continuing with the study (e.g. "If you decide to defect and your partner also decides to defect, how much money will you earn?"). Each comprehension question had 3 potential responses (e.g. "0 cents," "10 cents," and "30 cents"). Participants were given as many opportunities as necessary to correctly answer these questions.

After learning the game, participants were shown nine vignettes (8 personality vignettes and 1 control vignette) presented in a randomized order across participants (see Appendix). Each personality vignette was intended to portray an individual with several defining features of a single DSM-5 personality disorder functioning outside of a hospital setting. Vignettes representing antisocial, avoidant, dependent, histrionic, narcissistic, schizoid, and schizotypal personality disorders were taken from *Mental Illness at Work: A Manager's Guide to Identifying, Managing, and Preventing Psychological Problems in the Workplace* (Race & Furnham, 2014). The vignette representing borderline personality disorder was adapted from *Personality Disorders in Modern Life* (Millon et al., 2012) and read as follows:

Most people think that Kaci, who is 28 years old, lives a life analogous to a soap opera. She is often wrought with emotional ups and downs and is known to be unstable and frequently angry. What fuels the chaos are intense interpersonal needs and sudden shifts of opinion about others, who may be regarded as loving, sensitive, and intelligent one minute and accused of neglect and betrayal the next. When she is alone, even for a short time, Kaci feels intolerably lonely and empty. Her past relationships have typically been stormy and intense and she spends a lot of her time either making up or breaking up. Kaci often makes frantic attempts to avoid feeling abandoned; on several occasions, she has made superficial cuts to her wrists. Kaci lacks a mature sense of self-identity. She often flip-flops on goals and values, suddenly changing jobs on impulse and reversing previous opinions with indifference.

We also created a control vignette intended to portray an individual without features of any DSM-5 disorder:

Ben is 42 and has been married to his wife Jane for 14 years. They have two children together, Luke who is 5 years old and Penny who is 3 years old. They live in a suburb right outside of town fairly close to where they both grew up. Ben went to a small liberal arts college and majored in psychology. He works as a retail salesperson. In his free time, he likes to play tennis and golf. He played both in high school, but never tried out for the teams while he was in college. He's always had an interest in photography and likes to spend time with his friends hiking, biking, and playing tennis.

After reading each vignette, participants were required to correctly

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