LEBS
Vol. 15 No. 2 (2024) 41–46
Letters on Evolutionary Behavioral Science

Cooperative Tendency in Psychopathy: Moderating Effects of Social Value Orientation

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Individuals with high psychopathic traits tend to use short-term reproductive strategies, such as having many short-term relationships and committing sexual offenses. These strategies are maladaptive in the long term, but a certain number of individuals with high psychopathic tendencies exist in modern societies. This study focuses on the effects of social value orientation (SVO) on the enhancement of cooperative tendencies in highly psychopathic individuals. We hypothesized that highly psychopathic individuals with pro-social orientation would cooperate more than those with pro-self orientation. The results showed that individuals with high psychopathic traits behaved uncooperatively regardless of the different types of SVO. In addition, they were most cooperative with family members, followed by friends, and least with strangers. This finding suggests an exaggerated kin bias in which psychopathic individuals prefer kin as a cooperation partner.

Keywords
psychopathic traits, altruistic behavior, social value orientation

Introduction

Psychopathy is a personality disorder characterized by self-centeredness, pursuit of self-interest, and extreme ruthlessness. Psychopathic traits represent a continuum in which even normal individuals exhibit a number of these traits. Specifically, these traits include affective, interpersonal, and behavioral characteristics such as egocentricity, manipulativeness, deceitfulness, lack of empathy, guilt or remorse, and a propensity to violate social and legal expectations and norms (Blair et al., 2005). Previous research has found that the behavioral principles of individuals with higher psychopathic traits are selfish, as evidenced by consistent defects in the prisoner's dilemma games (Testori, Harris, et al., 2019; Testori, Hoyle, et al., 2019). Evolutionary psychologists have argued that selfishness in interpersonal relationships is maladaptive due to the difficulty in establishing cooperative relationships, such as social isolation, which decreases reproductive success (Cacioppo et al., 2014). Individuals with higher psychopathic traits employ urgent reproductive strategies such as repeated short-term sexual intercourse (Lyons et al., 2020) and sexual offense (Rice et al., 1990). However, these strategies reduce reproductive success in the long run due to the high risk in modern societies. Nevertheless, a certain degree of individuals with higher psychopathic traits exists in modern societies (Blair et al., 2005). How do individuals with higher psychopathic traits increase reproductive success while avoiding social risk? The current study focuses on the cooperative tendency of individuals with higher psychopathic traits. Social success based on cooperative relationships with others, which employ social skills, such as the manipulation of interpersonal impressions (Babiak, 1995, 2000), may promote reproductive success. In fact, previous studies have reported cooperative behavior among individuals with higher psychopathic traits. For example, Osumi and Ohira (2017) found that these individuals exhibited cooperative behavior toward friends. Similarly, they displayed pro-social behavior in public (White, 2014) and in dating situations (Brazil et al., 2023). Thus, we propose that some individuals with higher psychopathic traits who indulge in selfishness learn cooperative behavior throughout their lives. According to social learning theory (Bandura & Walters, 1977), the learned cooperative tendency may be reflected in the social value of interpersonal cooperation even for those with higher psychopathic traits. Therefore, we examined the relationship between the cooperative tendency of individuals with psychopathic traits and social value orientation (SVO).

Ability of psychopathy to learn and cooperate

Previous studies on learning in psychopathy have shown that individuals with higher psychopathic traits exhibit a greater ability to learn to receive rewards (Mitchell et al., 2002; Oba et al., 2019) than to learn to avoid sanctions (Blair et al., 2004; Finger et al., 2011), such as passive avoidance learning (Newman & Kosson, 1986). Oba et al. (2019) also suggested that learning to use information to obtain rewards could contribute to the development of cooperative behavior. Based on these findings, learning cooperative behavior by repeatedly benefiting from one's cooperative behavior or by being encouraged to cooperate with familiar people, such as parents (Mikulincer & Shaver, 2005; Mikulincer et al., 2005), may be feasible. Social learning theory supports the hypothesis of this study. This theory is one explanation for aggressive behavior and criminality (e.g., Akers & Jensen, 2017) and argues that social behavior can be imitated by learning and observing the behavior of parents and others (Bandura & Walters, 1977). Social learning, which continues

doi: 10.5178/lebs.2024.120
Received 048 April 2024.
Accepted 19 June 2024.
Published online 20 September 2024.

throughout life (Atkisson et al., 2012), can also promote cooperative behavior during childhood by observing the cooperative behavior of parents toward others (Ali et al., 2018). Moreover, social learning theory predicts that learned cooperative behavior will be reflected in social value. The current study focuses on SVO as a social value that projects learned cooperative behavior.

Social value orientation (SVO)

SVO represents the social value related to interpersonal cooperation (Balliet et al., 2009). SVO is a widely adopted theory that explains individual differences in cooperative behavior and is supported by various studies (e.g., Murphy et al., 2011). Two tendencies are commonly used to express SVO, namely, pro-social and pro-self. Pro-social tendencies pertain to those in which the interests of the self and others are equal, and pro-self tendencies are those in which one's interests are maximized (Messick & McClintock, 1968). Previous research has revealed that individuals with a pro-social orientation tend to be more cooperative (De Cremer & Van Lange, 2001) than those with a pro-self orientation. Van Lange et al. (1997) proposed the individual learning hypothesis to explain the development of SVO, that is, pro-social orientation increases through individual learning of positive life experiences as a result of engagement in pro-social behavior. If the cooperation of individuals with higher psychopathic traits is a result of learning, then SVO plays a moderating role in the relationship between cooperation and higher psychopathic traits. Specifically, individuals with higher psychopathic traits and a pro-social orientation should be more cooperative than those with a pro-self orientation.

Hypothesis

To examine cooperative tendencies in psychopathy, we used the Japanese version of the Self-Report Altruism Scale Distinguished by the Recipient (Oda et al., 2013). This scale assesses the likelihood of cooperative behavior among respondents toward family members, friends, and strangers in similar situations. We predicted that individuals with higher psychopathic traits would cooperate most with family, followed by friends, and least with strangers. According to the findings of Osumi and Ohira (2017), individuals with higher psychopathic traits tend to cooperate more with friends than with strangers, which leads to the prediction that cooperation with friends is higher than that with strangers. Kin selection theory can explain the difference in cooperation between family and friends (Hamilton, 1964). Krupp et al. (2012) found that individuals with higher psychopathic traits were more likely to target non-kin than kin as victims of crimes. This evidence suggests that kin selection theory can explain cooperative tendencies even in individuals with higher psychopathic traits. The cooperative behavior predicted by kin selection theory is only notable in pro-social-oriented individuals with higher psychopathic traits.

Methods

Participants

The experiment was conducted on May 26, 2020, using a between-subject design and a sample size of 600 recruited through Lancers (https://www.lancers.jp/). The questionnaire was accessed through a link provided on the recruitment page on Lancers. The participants were informed of a fixed reward of 150 yen (approximately 1.4 US $) for their participation. The study was conducted in accordance with approved guidelines, and the participants completed the online experiment by clicking on the button for informed consent on the screen. As such, informed consent was obtained from the participants prior to the experiment. Duplicate groups with IDs found in the responses collected through the website were excluded from analysis. Out of the 625 responses collected, 30 and 9 were excluded from analysis due to multiple responses and nondisclosure of gender, respectively. Thus, the study used data from 586 participants (men: 319) with a mean age of 42.16 years (SD = 9.83).

Procedure

The experimental tasks were administered online using Google Forms. The tasks were presented in the following order: triple dominance SVO (Van Lange, 1999), ring measure (Liebrand, 1984), slider measure (Murphy et al., 2011), the Japanese version of Levenson Self-Report Psychopathy (LSRP; Osumi et al., 2007), and the Self-Report Altruism Scale Distinguished by the Recipient (Oda et al., 2013).

SVO

SVO was measured using the triple dominance, slider, and ring measurements.

Triple dominance

In triple dominance, the participants selected one of three reward allocations between themselves and their partner, namely, joint maximization, own maximization, and relative maximization, which are classified as pro-social or individualist (pro-self; Van Lange, 1999). The participants were asked to imagine that their partner was a stranger and then select one from a set of three choices regarding the number of points that they and their partner could earn. The triple dominance method comprised nine sets of choices. The participants who did not meet these criteria were recorded as unclassified (n = 18). Those who made six or more consistent choices were classified as pro-social (n = 384) and pro-self (n = 184).

Slider method

The slider method involves the selection of the optimal combination of the gain of the participants and their partners from nine options. Based on the angle of the vector calculated using the sum of the gains of each participant and their partner, the participants are classified as altruists, pro-social, individualist, or competitor (Murphy et al., 2011). They were instructed to imagine that their partner was a stranger and to select one of the nine options to allocate money between themselves and their partner. The slider measure comprises six primary items and nine secondary items. The primary items assessed the pro-sociality of SVO, while the secondary items assessed pro-social motivation for inequality aversion. The angle of response to the six primary items was calculated and classified as pro-social (altruists and pro-socials) or pro-self (individualists and competitors). The participants were then categorized as pro-social (n = 346) and pro-self (n = 240).

Ring measure

The ring measure defines a vector in the plane with its gain on the x-axis and the gain of other vectors on the y-axis. It then sets the allocation of its gain on the circumference and selects an option (A or B) with a set of allocations of its and others' gain. The sum of the gains of each individual and others is calculated and classified as altruistic, pro-social, individualist, or competitive based on the angle to the x-axis when the vector is calculated using the sum of the gain (Liebrand, 1984). The participants were instructed to imagine that their partner was a stranger and to select one of two options for both individuals to gain or lose. The SVO ring measurement comprises 24 items. According to the calculation of Liebrand (1984) of the responses to the 24 items, the participants were classified as pro-social (altruists and pro-socials, n = 346) or pro-self (individualists and competitors, n = 240). Yamagishi et al. (2017) demonstrated that the correlation between overall SVO, measured using three methods, and multiple game behaviors, was stronger than that between a single SVO measure and a single game. Therefore, we used the measures obtained using the three abovementioned methods in this analysis. Pro-social and pro-self orientations were classified based on consistent responses across the three methods. Responses that were not identified as pro-social or pro-self were excluded from the analysis. We used pro-social (n = 167) or pro-self (n = 142) on the three SVO measures. The analysis included 309 participants (men: 179) with a mean age of 42.41 years (SD = 9.69).

Levenson self-report psychopathy scale

Psychopathic traits were measured using the Japanese version of the LSRP (Osumi et al., 2007). This questionnaire comprises two subscales with 16 primary and 10 secondary items on psychopathy, which were rated using a four-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree).

Altruistic behavior

The study assessed altruistic behavior using the Self-Report Altruism Scale Distinguished by the Recipient, which was developed by Oda et al. (2013). The participants were asked about their daily engagement in various forms of altruistic behavior towards family, friends, and strangers, each measured using seven items. Items were rated using a five-point Likert scale ranging from 1 (never) to 5 (most of the time). The analysis focused on altruistic behavior toward family.

Results

The significance level for these analyses was set at 5%. The mean for all 26 items on the LSRP was 2.10 (SD = 0.30, α = .79). Figure 1 displays box plots of the altruistic behavior of each target. Logistic regression analysis was conducted on SVO (0 = pro-self, 1 = pro-social) with psychopathy. The results indicate a significant effect of psychopathy (b = −.37, odds ratio = 0.09, 95% CI [0.04, 0.23]). We also investigated whether or not individuals with higher psychopathic traits possess a pro-social orientation. Figure 2 shows the psychopathy score and combines the two types of SVO to identify those with higher psychopathic traits and social orientation. The chi-square test resulted in significant differences (χ^2 (2) = 26.34, V = .29). The results of residual analysis indicated that the low-psychopathy group obtained significantly higher proportions of pro-social behavior (n = 34, 11%, adjusted standardized residual (ASR) = 2.93), while the high psychopathy group displayed significantly higher proportions of pro-self behavior (n = 32, 10.36%, ASR = 4.63). Conversely, the low-psychopathy group produced significantly lower pro-self behavior (n = 12, 3.88%, ASR = 2.93) and pro-social behavior (n = 8, 2.59%, ASR = 4.63).

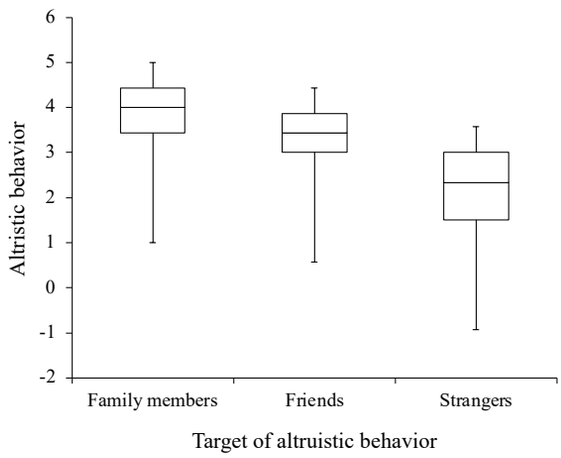

Figure 1. A boxplot of altruistic behavior for each target

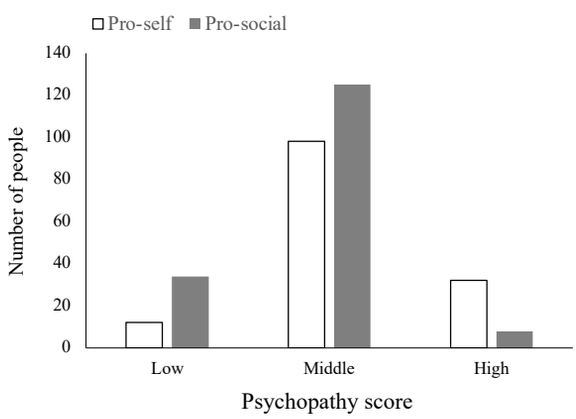

Figure 2. The frequencies of each type of SVO in each psychopathic group

Note. The low group represents those with psychopathic traits at the mean -1SD, while the high group represents those with psychopathic traits at the mean +1SD.

Analysis included three types of target variables for targets of cooperation: two target variables with strangers as the base category (strangers = 0, family = 1 or friends = 1) and one target variable to compare family and friends (friends = 0, family = 1). The study performed the general linear model (GLM) analysis of cooperative behavior with each target variable for targets, SVO (pro-self = 0, pro-social = 1), psychopathic traits, and all interaction effects except for interactions between target variables. The results showed that the main effect of the target variables for family (family = 1; b = .70, 95% CI [.64, .76], Figure 3) and friends (friends = 1; b = .46, 95% CI [.40, .52]) were significant. In the GLM analysis, only psychopathic traits (b = −.20, 95% CI [−.26, −.14]) and the interaction effect between the target variable for family and SVO (b = −.10, 95% CI [−.16, −.04]) were significant. The other main and

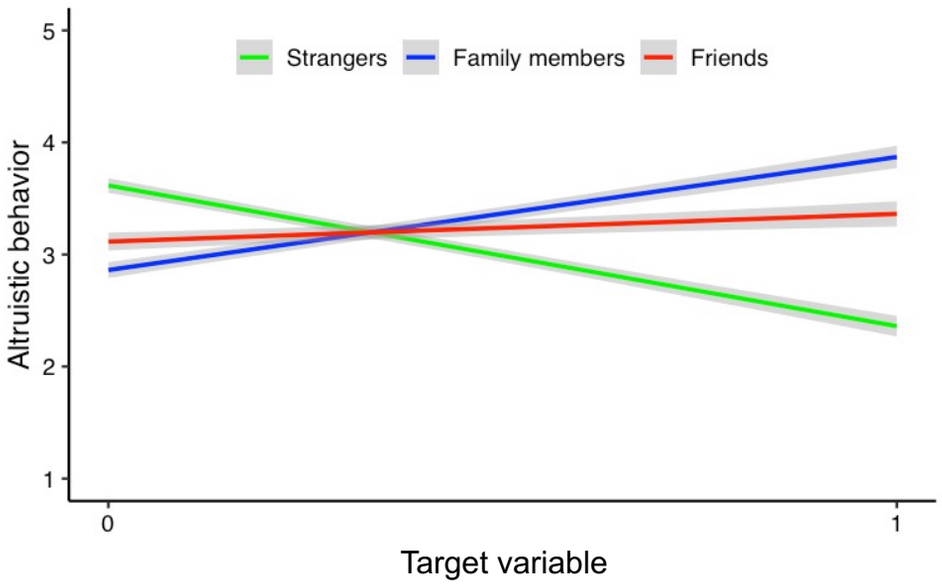

Figure 3. The means of altruistic behavior for each subject

Note. The gray color represents a 95% confidence interval. The target variable is defined as 0 for the base category and 1 for the target variable.

interaction effects were nonsignificant. The same analysis was conducted using the target variables of strangers and family. Statistical analysis revealed that the target variables for family (family = 1; b = .24, 95% CI [.18, .30]), strangers (stranger = 1; b = −.46, 95% CI [−.52, −.40], Figure 3), and psychopathic traits (b = −.20, 95% CI [−.26, −.13]) exhibited statistically significant effects. Moreover, no significant effects were observed for the other main or interaction effects. These results showed that those with higher psychopathic traits were less cooperative with all targets regardless of the type of SVO and were most cooperative with family members followed by friends and least cooperative with strangers.

Discussion

This study aimed to examine the relationships between cooperation, psychopathic traits, and SVO with a particular focus on pro-social orientation (Messick & McClintock, 1968). The online survey included a measure of cooperative tendency towards family members, friends, and strangers. First, the study found that some individuals with higher psychopathic traits possess a pro-social orientation, but their numbers were lower than expected. This finding implies that individuals with higher psychopathic traits may have learned cooperative behavior throughout their lives and acquired social value for interpersonal cooperation. For cooperative tendencies, individuals with higher psychopathic traits exhibited less cooperation across SVO, which is consistent with the behavioral principle of psychopathy (Blair et al., 2005). However, even individuals with higher psychopathic traits were most cooperative with family members and more cooperative with friends than with strangers. These findings suggest an exaggerated kin selection bias, characterized by a preference to prioritize kin to ensure reproductive success. Nevertheless, cooperation among family members is not necessarily contingent on direct reproductive success. Indeed, cooperation among family members reduces opportunities for enhancing reproductive success (Díaz-Muñoz et al., 2014; Hamilton, 1964). Consequently, relationships based on cooperation with others do not always facilitate opportunities for sexual behavior. Notably, data on sexual behavior were not collected as part of this study. As a result, the validity of the interpretation of cooperation with family members could not be confirmed. Thus, collecting data on cooperation and sexual behavior to test the relationship between the two variables would be beneficial. The study did not find any significant moderating effects of SVO on the relationship between psychopathic traits and cooperative tendencies. The results have two potential interpretations. First, the scale for assessing cooperation may have excluded perceived cues for cooperation, such as direct benefits (Brazil et al., 2023), or the publicness related to a good reputation (White, 2014). The Self-Reported Altruism Scale asked respondents about their willingness to assist in caring for sick family members, celebrating a friend's birthday, and helping others with luggage racks in trains and buses. These situations may be perceived as ambiguous in terms of whether they provide direct public or private benefits. Therefore, future studies should explore perceived cues that drive cooperation in individuals with higher psychopathic traits. In addition, there is a possibility that our assumption that lifelong learning through cooperative tendencies reflects SVO is irrelevant. Therefore, the study expects to accumulate empirical evidence demonstrating that individuals with higher psychopathic traits can learn to cooperate to obtain direct benefits or a good reputation, and that this tendency contributes to the development of a pro-social orientation.

Acknowledgments

This study was financially supported by JSPS KAKENHI 20K14135.

Author contribution

KN and KY developed the study concept and design, collected and analyzed data, and wrote the original draft. KN and KY approved the final manuscript.

Ethical statement

All experimental protocols were approved by the Ethics Committee of Kochi University of Technology (Approval 178).

Data accessibility

Data has been deposited in the Open Science Framework (https://osf.io/vjudg/).

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