Structural Barriers in the Mind:

The Effect of Individuating Information on Combatting Systemic Inequality

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In Japanese, the word *taihen* generally means tough or hard. Whenever someone learns that I am a doctoral student, they naturally exclaim, “It must be *taihen*.” However, rather than *taihen*, I would describe it more as a kind of pain. I had to summon the courage every day to step out of

my comfort zone and admit how little I truly know. This effort involved not only time and energy but also required the courage to confront my own ignorance. My journey has only just begun, and I hope I can embark on it with this courage.

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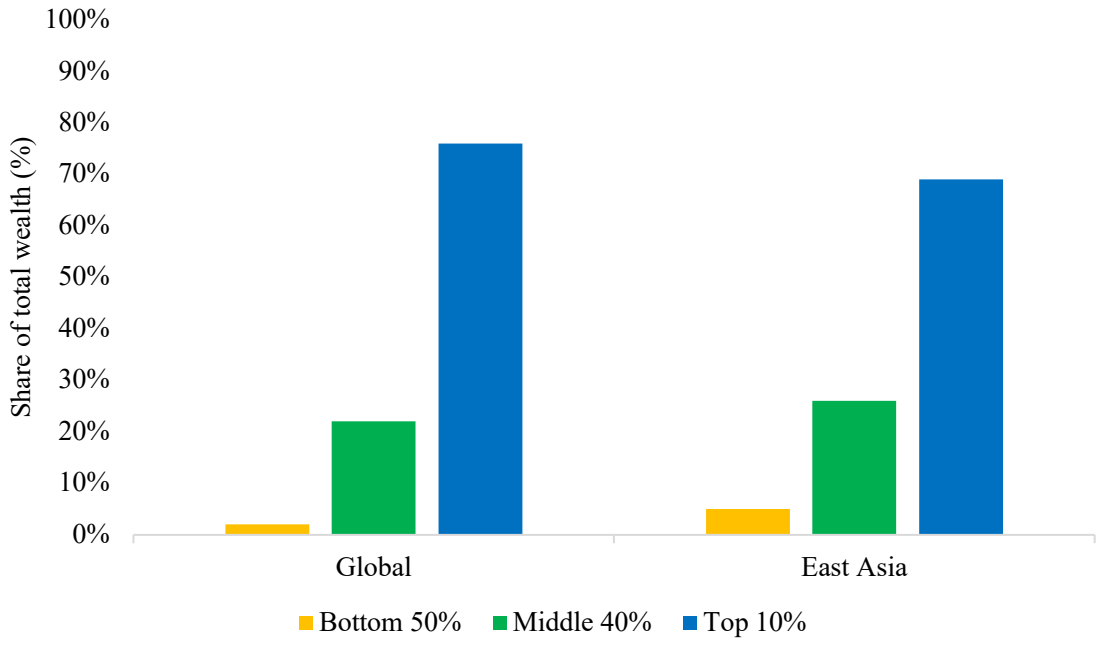
Chapter 1: Introduction

1.1 Inequality Mitigation

With the rapid development of the global economy, the predicament of resource disparity has escalated in recent decades. Social resources are concentrated within the affluent upper class, while the disadvantaged lower class possesses only a tiny portion of those resources. According to the World Inequality Lab (2022) report, the wealth gap between the resource rich and the resource poor has expanded on a global scale; the richest 10% owns 76% of wealth at purchasing power parity, whereas the wealth share of the poorest 50% amounts to merely 2% (Figure 1). Among East Asian countries, the richest 10% accounts for 69% of the total wealth share, leaving only 5% for the poorest 50% (Chancel et al., 2022).

Figure 1

Wealth inequality measured by Purchasing Power Parity in 2021



Note. From "World Inequality Report 2022," by Chancel, L., Piketty, T., Saez, E., Zucman, G. et al., 2022, *World Inequality Lab,* https://wir2022.wid.world/executive-summary/.

1.1.1 Detrimental Consequences of Inequality

Based on the amount of social resources, the divisions between the upper and lower classes are delineated along a social ladder that encompasses social issues of gender, race, poverty, and unequal opportunities for social mobility (Calnitsky, 2018; Rucker & Richeson, 2021; Salter et al., 2018). Resource disparities and unequal opportunities that are intrinsically embedded within social systems are referred to as systemic inequality (Arrow et al., 2018; Fraser, 1990; Pogge, 2001). Systemic inequality engenders detrimental consequences for all individuals. Empirical sociological surveys and international comparison studies have investigated the relationship between public health outcomes and social inequality (e.g., Lynch et al., 2004; Pickett & Wilkinson, 2015; Wilkinson & Pickett, 2006). Wilkinson and Pickett (2006) classified findings from 155 published peer reviewed paper across 30 nations and found that higher levels of inequality[1] are associated with poorer population health, including elevated rates of homicide and drug abuse. Recently, public health issues have been exacerbated by the COVID-19 pandemic (Liao & De Maio, 2021; Misir, 2021; Searight, 2023). Based on nine-month observational data from 22 OECD countries, Sepulveda and Brooker (2021) found that COVID-19 mortality rates were linked to a country's income inequality[2]. Individuals living in poverty were more susceptible to higher risks from and increased exposure to COVID-19, which

[1] Income inequality was indexed as the ratio of the top 20% to the bottom 20% of incomes (Wilkinson & Pickett, 2006).

[2] Country-level income inequality was measured by income Gini coefficient (Sepulveda & Brooker, 2021).

further entrenched them in poverty. This evidence underscores the imperative of reducing social inequality for the sake of addressing public health concerns.

Beyond public health, social inequality also impacts our social lives. High levels of social inequality contribute to elevated crime rates, diminished social trust, and reduced social welfare (Hsieh & Pugh, 1993; Nishi et al., 2015). Faced with resource disparities, individuals with fewer resources tend to engage in risky or even criminal behaviors in pursuit of better outcomes (De Courson & Nettle, 2021; Payne et al., 2017). People are less inclined to participate in civic and social life when confronted with high levels of national inequality (Lancee & Van de Werfhorst, 2012). Inequality also influences individuals' subjective well-being and happiness (Alesina et al., 2004; Buttrick et al., 2017; Cheung, 2015; Graafland & Lous, 2019; Oishi et al., 2011). A recent study revealed that inequality, manifested as concentrated disparities among individuals with lower and median incomes, negatively predicted subjective well-being among individuals with higher incomes (Tan et al., 2020).

Given these detrimental consequences brought about by resource disparities, it is imperative to narrow the gap between the resource rich and the resource poor (Haynie et al., 2021). However, despite people's willingness and efforts to combat social inequality, the elicitation of resources from the upper class to the lower class remains a formidable task, as structural barriers within the social stratification system are resistant to removal.

1.1.2 Upward Mobility Barriers Within Social Stratification

Disparities in resources across social classes impact societal economic development, public health, and the social lives of all individuals. Social mobility barriers are established along social class divisions, further reinforcing unequal distribution in resources and opportunities. For

instance, Pulitzer Prize winner Daniel Golden (2007) sheds light on the "privileges of preference" and investigated the disproportionately unequal opportunities in college admissions at American universities. As Golden elucidated, wealthy families can afford private tutors to enhance their children's SAT scores, thereby securing admission to top-ranked universities, unlike those born in middle- and lower-class families. Wealthy parents may even make substantial donations to ensure their children's acceptance into prestigious institutions such as Ivy League universities. While efforts have been made by governments to combat corruption in college admissions, it is undeniable that children from privileged backgrounds have greater access to educational resources, affording them better prospects in the college admissions process. Resource disparities, as sociologists have revealed, not only manifest in unequal opportunities during the college admissions process but also perpetuate across generations. Parental income significantly influences the lifelong earnings of their offspring (Duncan et al., 1998; Piketty, 2000). The intergenerational association between parental income, welfare, and their children's performance has been extensively documented (see Grawe, 2004; Irene, 2007).

In addition to intergenerational transmission of resource disparities, barriers also stem from institutional social structures, impeding upward social mobility. Similar to the "privileges of preference" in the American educational system, the Japanese educational system and labor market exhibit inherent structural barriers based on educational attainments and occupational privileges. In Japan, college admissions primarily rely on students' performance on entrance examinations, which determine individual merits in achieving upward social mobility. Known as *gakureki shakai*, educational attainment, such as the ranking of the college, plays a crucial role in shaping one's status in the labor market. For example, utilizing the 1995 Social Stratification Mobility National Survey (SSM), Ono (2004) revealed the effect of college quality on earnings,

independent of individual abilities (e.g., GPA scores), in the Japanese labor market. Graduates from top-tier universities had access to better employment opportunities, while those graduating from lower-ranked universities encounter a dearth of employment prospects (Ono, 2004). This effect of college quality also influenced mobility within the Japanese labor market. Non-regular (temporary) workers who had graduated from junior colleges struggled to enter the regular (tenured) employment market and find stable jobs. Conversely, well-educated individuals were more likely to secure long-term regular (tenured) employment with better salaries (Sato, 2010). Arita (2009) posited that in the Japanese labor market, extrinsic factors such as employment type contribute more to an individuals' remuneration than their abilities. Concerning the issue of non-regular employment, the well-known phenomenon of the "Lost Generation," which occurred during the 1990s and 2000s in Japan, has revealed the harsh reality that institutional and systemic factors shape an individual's position on the social ladder, regardless of individual merits. In the 1990s, Japan's bubble economy burst, resulting in a reduction in job opportunities for new graduates. Numerous new graduates lost regular (tenured) employment opportunities and fell into poverty, leading to longstanding concerns regarding public welfare for decades.

The aforementioned evidence highlights the inherent disparities present in various social systems, resulting in a gap between wealthy and impoverished families, the emergence of segregation within the educational stratification system, and the formation of employment barriers between non-regular (temporary) and regular (tenured) employees in labor markets. These barriers lie beyond individual and personal determinants, making them difficult to remove from societal systems and yielding detrimental consequences for both societies and individuals. In the next section, I focus on the sociological perspective regarding the origins of social inequality and social class barriers. Subsequently, I discuss the limitations inherent in the

sociological perspective while emphasizing the necessity of exploring avenues to resolve inequality from a psychological standpoint.

1.2 The Sociological Perspective of Social Inequality

Social inequality has been conceptualized as the asymmetric allocation of resources and opportunities in human societies (Haynie et al., 2021; Mattison et al., 2016). Classical sociological theories provide a comprehensive framework for understanding social stratification as the hierarchical arrangement of individuals and groups based on their access to social resources (Davis, 1942). This arrangement constitutes a system of institutionalized social inequality (Weber, 1968). Unlike the economic perspective, which primarily focuses on wealth and income as indicators of inequality, Weber (1978) emphasized the social relational aspects of inequality. Social stratification is defined by dimensions such as social class, status, and political power (Weber, 1968, 2009). Among these dimensions, Weber (1968) posited that class pertains to one's relationship to the labor market and production units, which in turn influences the distribution of wealth and opportunities. Status, on the other hand, is primarily determined by factors such as education and occupational prestige (Fujihara, 2020; Weber, 1968). The asymmetric distribution of social resources and opportunities may result in segregations in social interactions between high-status and low-status individuals. High-status people are more likely to access greater resources and engage in social relationship with high-status counterparts, while low-status individuals have few opportunities to access greater resources.

Davis (1942; see also Davis & Moore, 1945) unveiled the determinants of an individual's position within the stratification system, with a particular focus on the impact of ascribed and achieved characteristics on social class. Ascription refers to assignments based on uncontrollable

inborn factors such as gender, race, and kinship. Achievement, in contrast, pertains to individual merits and accomplishments (Davis & Moore, 1945). Ascription is considered a structural cause of inequality that is deeply embedded in cultural norms and institutionalized within social institutions (Amemiya et al., 2023; Haslanger, 2016; Hatzenbuehler, 2016). However, achievement is typically attributed to intrinsic factors, such as ability and effort (Cimpian & Salomon, 2014). Both ascription and achievement contribute to the mechanisms that generate aristocratic and meritocratic inequality.

1.2.1 Institutional Origins of Systemic Inequality

Aristocratic inequality is characterized by unequal distributions of social resources and opportunities stemming from inheritances. In India, for instance, a caste-based system determines an individual's social class, with people being divided in into five castes: Brahmins, Kshatriyas, Vaishyas, Shudras, and Dalits (Revankar, 1971). Each caste has norms that shape people's education, occupation, and even marriage. The Dalits, situated at the bottom of the caste hierarchy, face barriers accessing social resources (Patel, 2017). Recent research has revealed that inheritances contribute to the aggravation of wealth inequality (Nekoei & Seim, 2022; Salas-Rojo & Rodríguez, 2022).

In contrast, meritocratic inequality is linked to the attribution of individual merits and accomplishments in modern Western societies. The ideology of meritocracy emphasizes individual abilities and merit as the basis for rewards (Young, 1994). However, meritocratic beliefs often reinforce the existing social order and overlook the unequal distribution of opportunities among individuals from disadvantaged social groups (Friedman & Laurison, 2019). Consequently, extrinsic and structural factors contributing to meritocratic inequality have gained

attention in recent years in Western democratic societies (Markovits, 2019). The rich work hard to protect their social status, while the poor have limited opportunities to improve their social standing. Intergenerational upward social mobility has declined, trapping more individuals from lower classes in poverty due to inherent disparities in opportunities. In East Asian societies, the meritocratic ideology has long been influenced by Confucian hierarchical principles, where social inequality is more strongly influenced by societal institutions rather than individual merit. An individual's social background, including family, education, and occupation, carries more weight than their individual abilities (Zhang et al., 2020).

Taken together, regardless of whether systemic inequality has aristocratic or meritocratic origins, social resources and opportunities have long been segregated among different social classes. The key to mitigating systemic inequality lies in removing barriers across social classes, which can facilitate the fluidity of resources and opportunities. To address the cross-class segregation, I review the literature regarding how barriers are formed and maintained across various social classes.

1.2.2 Socioeconomic Homophily and Social Capital

New economic sociologists offer an interpretation of the exacerbation of inequality and the emergence of class segregation through a social network approach (Granovetter, 1985, 2005; Pena-López et al., 2021). Granovetter (1985) asserted that social relations and networks play a pivotal role in shaping individual behavior and outcomes. Embedded within various social structures, social contexts influence individuals' opportunities and access to different kinds of social resources and upward social mobility. Lin (1999) developed the idea of social embeddedness and defined social capital as the social resources embedded in social relations.

Social capital, as an investment in social relations, contains individuals' expectations of cost and benefits through social resource exchange (Lin, 2002). People who have similar resources (e.g., wealth, status, or power) are more likely to connect with each other and engage in resource exchange.

As for social preferences in investing in social relationships, Lazarsfeld and Merton (1954) first documented the homophilous preference in social relationship construction, known as the status homophily principle, positing that people who possess a similar ascribed status (e.g., age, race, or gender) and achieved status (e.g., education or occupation) are more likely to connect with each other. The origin of status homophily can be attributed to common norms and value as well as similar structure location within social stratification (Kadushin, 2012). Status homophily also drives people's preference in resource exchange. Ibarra (1992) asserted that homophily can increase the predictability of another person's behavior, thereby fostering reciprocity and the formation of instrumental relationships. The resource rich have a tendency to utilize wealth categories as information to distinguish social partners, and they have an inclination to choose social partners with similar amounts of resources (Johnson & Smirnov, 2018). This finding suggests that, if the upper class needs to select potential interaction partners based only on their resources, it would be reasonable to nominate one who is relatively rich; thus, the upper class is often privileged in the allocation of resources.

Beyond these homophilous preference, it is notable that individuals' preferences and behaviors are shaped by their social and cultural environments. Bourdieu (1995) proposed the theory of habitus, positing that individuals acquire an internalized set of dispositions, beliefs, and practices through socialization processes under specific social contexts. Habitus serves as a structural system that guides individuals' perceptions and behaviors, and it highlights the

intricate relationship between individuals and societal structures, which is also associated with the perpetuation of social inequalities. Given this habitus perspective, it is notable that social preferences and behavioral patterns among the upper and lower classes are distinguishable from each other. Thus, it is necessary to examine the upper and lower classes separately.

The upper class has been allocated the majority of social resources, and it would be beneficial to society if the upper class actively shared its resources and opportunities with the lower class. Accordingly, in this dissertation, I argue that the key to removing the barrier between the "haves" and "have nots" lies in inducing the upper class to overcome status homophily and proactively share their resources with the favorable lower class. The focus of this dissertation is on the upper class's social preferences and behavioral patterns.

1.2.3 The Interplay of the Sociological and Psychological Views

Sociologists have shed light on the social relational aspect of social stratification formation and presented ample evidence addressing the impacts of resource disparities—which are ingrained in societal structures and prevalent across diverse social classes—on societies and individuals. These theories can provide valuable insight for policymakers to adopt strategies to reduce social inequality. Nevertheless, systemic inequality remains pervasive in our daily lives, shaping individuals' thoughts and behaviors. Although difficult, it is crucial to unveil how individuals' minds and social inequality shape each other.

Systemic inequality is inherent and intrinsic to a society, and people tend to overlook the inherent aspect of inequality as a social issue. Banaji (2021) used the fable of "this is water," which describes how two fish swimming in the water have no idea what water is, to posit the challenges and paradoxes encountered by social scientists. One such paradox is that while plenty

of evidence has revealed the detrimental consequences of systemic inequality, people often ignore and rarely combat this systemic inequality embedded in social structures (Banaji et al., 2021).

The ignorance of systemic inequality may stem from people's unconsciousness of the bias in their minds. Due to the subjective psychological experience of social inequality, biases may exist regarding how people perceive their own and other social classes and statuses, how they define the social groups around them, and their awareness of the social inequality they experience in daily life. People often insist that they hold no prejudices when confronted with social issues such as race, religion, gender, and poverty. However, subtle prejudices and biases persist despite their consciousness. Tackling these biases could be helpful for reducing social inequality in daily life. In line with this idea, Gobel and García (2023) suggested a socioecological perspective to study social inequality in human societies, highlighting the interplay between the societal level as the social environment of inequality and the individual level as the psychological experience of inequality. From a social psychological standpoint, it is possible to connect individuals' thoughts and behavioral patterns with social interactions in the context of inequality. Psychological science also provides insightful tools, such as psychological and behavioral experiments, to unveil human preferences and behavioral patterns under inequality, thereby contributing to mitigating inequality. Thus, this dissertation focuses on individual minds under systemic inequality.

In the following section, I review the origins and perpetuation of systemic inequality from a social psychological perspective. First, I examine the societal level to determine how people perceive and maintain an unequal societal system. Second, I investigate why individuals with similar levels of resources tend to associate with one another for social resource exchange.

Third, I address inequality mitigation from an individual-level perspective, exploring how individuals select their social partners within an unequal social system. Through these analyses, I propose the potential solutions for mitigating systemic inequality by modifying individuals' social preferences, emphasizing the crucial role of individuating information to modify homophilous social preferences.

1.3 Structural Barriers in Individual Minds

As reviewed above, unequal distributions of social resources and opportunities have resulted in detrimental social consequences to human societies; however, social class disparities have always existed. This section initially reviews the generation of disparities from a psychological perspective, and further explores the impact of the subjective experience of social inequality in shaping individuals' minds.

1.3.1 Power Disparities and Hierarchical Social Relationships

Consider the resource and opportunity disparities within a social system, French and Raven (1959) initially posited the base of social power, demonstrating that people endowed with greater available resources possess the potential to change others' states or behavior. With the emergence of such potential influence, hierarchical relationships ensue within a social system and exert influence on people's social cognitions and behaviors. For instance, Fiske (1993) underscored the mutual reinforcement relationship between power and stereotyping, elucidating that people who are powerful tend to be less likely to pay attention to those who are powerless, which may result in the perpetuation of stereotypes. Other research has revealed that people who are powerful tend to be more oriented toward rewards, while those with less power are more

likely to respond to punishments (Keltner et al., 2003). A series of social psychological experiments manipulated power and found that people primed in the high-power condition were inclined towards agentic goals and behaviors, while low-power participants were prompted towards communal orientations (i.e., Galinsky et al., 2003). The agentic–communal model (Rucker et al., 2018) framed various behavioral patterns among people who are endowed with social advantages and disadvantages. Focusing on the interplay between the person and the situation, these findings suggest the role of social power in shaping individuals' behaviors, attitudes, as well as forming hierarchical social relationships, which in turn, is further associated with the perpetuation of systemic inequality. In the following section, I review how people justify and legitimate social systems with power disparities and how they perceive diverse social groups under hierarchical social structures.

1.3.2 A Just World Belief and System Justification

Social psychologists have provided insights in interpreting the self-perpetuation of social inequality and class divisions. Lerner and Simmons (1966) found that in an innocent victim experiment, people had a tendency to devalue and reject the victim when they were unable to stop the victim's suffering. This evidence supports the belief in a just world (BJW), which states that individuals have a need to believe in a just world in which "people get what they deserve and deserve what they acquire" (Lerner & Miller, 1978). On the basis of the BJW, Jost et al. (1994) proposed the system justification theory (SJT). According to the SJT, people have a motivation to justify and legitimate the status quo and tend to hold positive attitudes toward the social system for a sense of stability (Jost, 2019; Jost & Banaji, 1994). The SJT was initially rooted in American social systems, and it has recently been examined in other countries. For

instance, a study from Japan did not find significant evidence supporting the status-legitimacy hypothesis among low-status social groups (Nakagoshi & Inamasu, 2023). Conversely, people with a lower subjective socioeconomic status (subjective SES) in China show a greater propensity to justify the social system, which positively supports the status-legitimacy hypothesis (e.g., Li et al., 2020; Valdes et al., 2023).

1.3.3 Social Perceptions Toward the Resource Rich and Resource Poor

The just world hypothesis and SJT reveal people's motivations to legitimate and rationalize the status quo, even if the existing social system is harmful to them. Such a motivation is an example of an individual difference variable, which addresses individual-level perceptions of the social system. On the basis of these motivations, intergroup perception and interpersonal impression formation are also related to such beliefs. Kay and Jost (2003) revealed a complementary representation in impression formation toward the poor and rich. "Poor but happy" and "rich but miserable" are complementary stereotypes explaining why people have a tendency to justify the disadvantageous status quo. Perceived social structures create stereotypes of diverse social groups, which may further shape intergroup and interpersonal interactions. For instance, Fiske et al. (2002) posited the stereotype content model (SCM), in which stereotypes of social groups are divided into warmth-by-competence dimensions.

Investigating socioeconomic discrimination in various social groups, the agency-beliefs-communion (ABC) model focuses on how people evaluate their groups and construct group similarities (Koch et al., 2020). The ABC model posits that people spontaneously construe group similarity from three dimensions: agency/socioeconomic success, beliefs (conservative vs. progressive), and communion. These three dimensions also relate to the warmth-by-competence

dimension in SCM; status and competence reconcile agency, and communion relates to how people perceive others' warmth.

In the real world, social status (e.g., occupational and educational prestige) and resources (e.g., wealth) serve as social class signals, inducing cross-class prejudices and stereotypes (Connor et al., 2021). Perceived socioeconomic inequality influences the negative intertwinement of social class stereotypes with cross-class interactions (Durante & Fiske, 2017). For instance, the poor (low socioeconomic status) are generally perceived as parasitic (e.g., opportunistic and exploitative) and incompetent (Cuddy et al., 2008). People tend to spontaneously categorize themselves as relatively rich or poor in comparison with others (Kraus et al., 2010, 2012). These social class stereotypes further affect people's judgments regarding social partner choices (Martin et al., 2019).

1.3.4 Allocating Attention to Individuating Information

The above research suggests that there is a fundamental stereotype regarding various social groups along with warmth and competence dimensions. Still, how this stereotypical knowledge is utilized in interpersonal interactions needs to be elucidated. When encountering potential social partners, how do people engage in the interpersonal information process and judge whether the potential social partner is capable or well-intentioned? Stereotypical information regarding the warmth dimension can be subjective and temporary. It is necessary to address the cognitive processes regarding perceived status and resource disparities, which are embedded in social structures and influence interpersonal perceptions.

Two types of information, social category information and individuating information, are the main information sources in person perceptions (Rubinstein et al., 2018). Social category

information refers to the knowledge individuals possess regarding different social groups and the characteristics associated with those groups (e.g., race, ethnicity, and gender; Billig & Tajfel, 1973; Tajfel & Turner, 1979). Social category information is associated with the cognitive processing of stereotypes (Ashmore & Del Boca, 1981). Research has shown that social category information can shape individuals' person perceptions and further drive people's decision-making regarding partner choice. Individuating information—which is the information related to one's personal characteristics, experiences, and behaviors other than their categorical group memberships (Kunda & Sherman-Williams, 1993)—also exert effects on person perceptions (Giorgashvili, 2021; Krueger & Rothbart, 1988; Navon et al., 2021). Classical social psychological theories have addressed the reliance on category-based information and individuating information in person perceptions. The dual process model of impression formation distinguishes the two cognitive processes, the automatic process and the controlled process, in interpersonal impression formation (Brewer, 1988). The automatic process refers to the spontaneous evaluation of others, which is mostly based on category-based information processing, while the controlled process involves more deliberate and conscious evaluation of others that requires available individuating information. Category-based and individuating-based information are distinct from each other, with category-based information playing a significant role in person perception, whereas engaging in individuating information requires more deliberation and motivation.

Neuberg and Fiske (1987) proposed the continuum model (CM) of impression formation process, suggesting that people spontaneously form impressions by categorizing themselves and others into existing social categories (category-based process). As individualized contacts

emerge, people then take into account more attributes of the target, despite their existing social categories.

Beyond the interpersonal information process, Gaertner and Dovidio (2000) posited the common ingroup identity model in relation to the mitigation of intergroup bias across diverse social categorical groups, underscoring the occurrence of recategorization and decategorization during the piecemeal-based process. Decategorization generally emerges from cooperative contacts with outgroup members, and as a result of this, people evaluate these outgroups as heterogeneous and focus more on their personal aspects than on ingroup–outgroup boundaries (Dovidio et al., 1993; Ensari & Miller, 2001; Vasquez et al., 2007).

Recent research has found that revealing individuating information, such as GPA score, can significantly modify White participants' evaluations of Black students and thus reduce racial bias (Rubinstein et al., 2018). Additionally, in a resource exchange system, it has been well-documented that individuating information regarding cooperativeness shapes social preferences in social selection (Melamed et al., 2018; Rand et al., 2011) and drives people's preferences in terms of rewards and punishments (Hauser et al., 2021). However, most research on the effect of individuating information exposure has focused on social categories related to ascription and inheritance characteristics (e.g., race and gender). Little is known about whether individuating information can override the influence of social category information, which based on an individual's changeable socioeconomic background. Thus, this research focus on the situation that individuals' positions in social stratification are changeable.

1.4 Cross-Class Interactions Under Systemic Inequality

The presence of individuating information may modify interpersonal perceptions, specifically in cross-class interactions. However, the modification of an individual's social preferences can be temporary. When examining a one-shot partner selection and evaluation, it is difficult to determine people's real intentions behind their partner selections. For instance, a good-natured person can easily be selected as a partner but is also easily exploited. Therefore, it is necessary to investigate individuals' social preferences in partner selection as well as their behavioral strategies under repeated cross-class interactions.

1.4.1 Choosing Whom to Interact With

Past research has revealed that people are more likely to form social ties with the resource rich compared to the resource poor (see Johnson & Smirnov, 2018; Raihani & Barclay, 2016). Potential social partners' *ability* to confer benefits and *willingness* to exchange resources serve as two essential cues in partner choice (Barclay, 2013). Individuating information influences people's perceptions of other individuals' abilities (to confer benefits) and willingness (to exchange resources). When deciding in whom to invest social resources, people prefer to select competitive upper classes in order to earn more benefits (Hackel et al., 2015; Raihani & Barclay, 2016). Meanwhile, the poor show strong implicit evaluative preference toward rich people (Rudman et al., 2002). Recent literature on social selection theory has indicated that aspiration serves as an essential mechanism for explaining people's tendency to connect with high-status targets (Snijders & Lomi, 2019). Compared with the rich, the poor, being driven by aspiration, may show a stronger willingness to cooperate with the rich. Furthermore, as aforementioned, neither cross-class segregation nor wealth homophily always holds true. People

tend to show a greater preference for others with a relatively low ability to confer benefits but who are willing to help others over those with a relatively high ability who are ungenerous (Dhaliwal et al., 2022). These findings imply that the rich–poor resource boundary in real society is not universally impermeable. Willingness to exchange resources may play a more influential role when choosing social partners.

1.4.2 Behavior Strategies in Cross-Class Interactions

Social category information and individuating information exert notable effects on interpersonal perceptions, which may further shape individuals' behavioral patterns in interpersonal interactions. Concerning strategies adopted in cross-class interactions, empirical research has shed light on the status homophily principle (Lazarsfeld & Merton, 1954) and ingroup favoritism (see Balliet et al., 2014 for review), revealing a category-based preference among individuals with shared categorical group memberships. As previously mentioned, the key to removing barriers between social classes may lie in inducing the upper class to overcome their category-based preference.

Social identity theory (SIT) provides insightful interpretations on this category-based preference. SIT posits that people tend to establish their social identities through the cognitive categorization of social groups and similarity or homogeneity between themselves and other group members (Tajfel et al., 1971; Tajfel & Turner, 1979). Past research has shown that ingroup favoritism, which is the tendency to favor others with shared group identities, indicates that a similarity in social identities shapes people's preferences for allocating resources (Tajfel et al., 1971). In terms of social categorization under inequality, the social identity perspective posits that people incline to categorize "us" versus "them" based on similarity in wealth (Jetten et al.,

2017). Situated in a highly unequal social system, people are likely to describe themselves and others using wealth-related words (Peters et al., 2022). These findings suggest that the social categorization process occurs when people are exposed to disparities. Exposed to resource disparities, the relatively rich are likely to share more resources with other ingroup (rich) members than with outgroup (poor) members (Martinangeli & Martinsson, 2020).

Meanwhile, the nature of ingroup favoritism can be interpreted as a consequence of cooperative interactions with others pursuing mutual benefits, stemming from a cooperativeness-based preference in which individuating information plays a crucial role in shaping individuals' behavioral patterns. This view is theorized from the perspective of the bounded generalized reciprocity (BGR) (Yamagishi et al., 1999), which argues that mutual outcome interdependence, rather than mere category commonalities, triggers resource sharing with other members. In other words, a group boundary only emerges when people decide whether to cooperate with others through the expectation of mutual cooperation (Yamagishi & Kiyonari, 2000). In line with this argument, people embedded in dynamic social networks in a repeated PDG tended to selectively form social ties with partners who had good reputations (Rand et al., 2011; Wang et al., 2012). These findings suggest that cooperativeness-based preferences can override group boundaries and promote resource exchange among cooperators regardless of their social categories.

Taken together, whether category-based preference or cooperativeness-based preference is more appropriate in explaining dominant strategies for cross-class partner selection has not yet been determined. How people construct groups in their mind is essential to predicting whether individuals' behavioral strategies are driven by category-based preferences or cooperativeness-based preferences. Therefore, in this dissertation, the selective play paradigm (Hayashi & Yamagishi, 1998) was applied to test whether people would make category-based partner

selections (rooted in SIT) or cooperativeness-based partner selections (rooted in BGR) in a situation in which relatively rich and poor group categories were manipulated as salient. In the selective play paradigm, players employ both selection (regarding whom to interact with) and action (cooperation or defection) strategies in repeated interactions. The paradigm incorporates the cost–benefit structure in real-world resource exchanges and highlights the importance of cooperativeness for players when finding better partners to achieve mutual benefits.

1.5 Overview of the Current Research

1.5.1 Purpose of the Research

The main purpose of this dissertation is to explore strategies for reducing systemic inequality by modifying the social preferences and behavioral patterns of the upper class (e.g., wealthy, high-status people). The focus is on investigating the impact of allocating attention to individuating information to overcome status homophily when choosing social partners and sharing resources.

Conceptualizing Social Class. Consistent with Weber's (1968) conceptualizations of social class, this dissertation primarily examines individuals' subjective psychological experiences of systemic inequality from two aspects: disparities in social prestige (Study 1) and resource (Studies 2 and 3). Disparity in social prestige mainly contains an individuals' educational and occupational prestige within a social system. Resource disparities consist of wealth and opportunities for upward social mobility.

Conceptualizing Individuating Information. For the purposes of this dissertation, the effect of individuating information is conceptualized as information regarding a potential social partner's characteristics, experience, or behavior, which are independent of social categorical

group affiliations. Given that the focus of this research lies in scrutinizing the effects of individuating information within the context of social partner selection, interdependence (serving as a manifestation of an individual's personality) and cooperative strategy (mirroring an individual's behavioral strategies) were employed as distinct individuating information in conjunction with previous research (e.g., Martin et al., 2019).

The Upper Class's Behavioral Patterns. Previous research has demonstrated the differences in cultures and norms between the upper and lower classes (Kadushin & Jones, 1992; Payne et al., 2017; Piff et al., 2010), making it imperative to discern the behavioral patterns exhibited by both the upper and lower classes separately. Furthermore, given that the majority of social resources are concentrated within the wealthy upper class, it is crucial to concentrate efforts on modifying the social preferences and behavioral patterns of the upper class by encouraging them to share more resources with favorable individuals from lower-class backgrounds. Such endeavors can result in increasing collective welfare in a social system. Thus, this dissertation focuses on the modification of the behavior of the upper class.

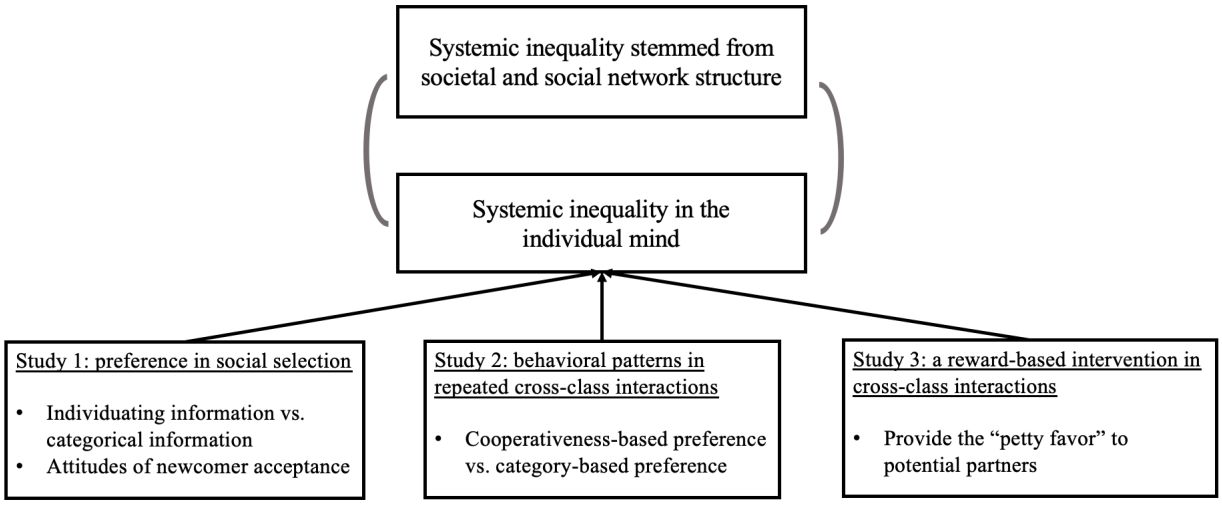
Behavioral Experimental Approach. In Studies 2 and 3, an experimental economic game framework was employed to elucidate people's social preferences in resource exchange. Experimental economic games such as the PDG and public goods game (PGG) are powerful tools for observing people's social preferences for selecting partners and investing resources for future outcomes, especially when participants are allowed to update their partners in repeated interactions (Van Dijk & De Dreu, 2021).

1.5.2 Research Overview

The three studies in this dissertation primarily focused on the effect of individuating information on reducing resource and opportunity disparities that are systematically embedded in social structures (Figure 2).

Figure 2

Overview of this dissertation



This dissertation explores possible solutions to reducing inequality by encouraging people to override categorical information which may induce stereotypical judgement and allocate their attention to individuating information in interpersonal interactions. Specifically, this dissertation mainly adopts a psychological experimental approach to examine the effect of shifting attention to individuating information to modify people's behavioral patterns. This research reveals the importance of individuating information in building bridges between the upper and lower classes in a hierarchical social system, which cultivates a new boundary for cooperation beyond the resource-rich and resource-poor categories. The three studies in this dissertation are organized as follows.

Chapter 2 presents three scenario experiments examining if status and interdependence predict selection decisions. Using samples of crowdsourced workers in Japan, Studies 1a and 1b aimed to investigate the effect of individuating information over category-based information of social status. The categorical information of regular (tenured) employee and non-regular (temporary) employee were used as the cue for differentiating social prestige. Study 1c attempted to replicate the results in Studies 1a and 1b by using university affiliations as a cue to present social status. According to these three studies, social preference reflected in newcomer acceptance revealed that individuating information may take primacy over category-based information in social selections.

Chapter 3 primarily focused on the effect of allocating attention to individuating information to modify individuals' behavioral patterns in resource exchange. Studies 2a and 2b discusses how individuating information affected repeated resource exchange among individuals embedded in a selective play paradigm with unequal resource distributions.

Based on the cooperativeness preferences observed in Study 2, Chapter 4 introduced a reward-based intervention, referred to as a "petty favor," to further facilitate cross-class resource exchange from an evolutionary perspective. Specifically, Study 3 investigated whether a reward-based option could induce a positive motivation among the resource rich to share more resources with the cooperative resource poor with the presence of reputational information.

In Chapter 5, the key findings from the previous three chapters are summarized, and the theoretical and practical implications of this dissertation are addressed. Additionally, Chapter 5 presents the limitations and future directions of this research.

This dissertation has been comprised of the following research:

Chapter 2

陳佳玉・五十嵐祐（2022 年 9 月）. 社会的地位と協調性が集団への新規参入者の受容に与える影響　日本社会心理学会第 63 回大会, 京都橘大学

Chapter 3

Chen, J., & Igarashi, T. (in press). Unequal but not separate: Emergence of rich–poor cooperation in resource exchange. *Asian Journal of Social Psychology,* https://doi.org/10.1111/ajsp.12569

Chen, J. & Igarashi, T. (2020, June). *Do well and have well: Favorable behavior breeds rich-poor. cooperation.* Paper presented at the 32nd APS Annual Convention, Online.

Chen, J. & Igarashi, T. (2020, February). *Pearls are everywhere but not the same as the eyes? Wealthy people can be altruistic towards the poor who are well-disposed.* Paper presented at the 21st Annual Meeting of the Society for Personality and Social Psychology, New Orleans, USA.

陳佳玉・五十嵐祐 (2019 年 11 月). The socioeconomic gap and cooperative behavior: A repeated Prisoner's Dilemma game　日本社会心理学会第 60 回大会, 立正大学

Chen, J. & Igarashi, T. (2019, July). *All that is gold does not glitter: An experiment for investigating effects of cognitive resource disparity on acceptance of outgroup members.* Paper presented at the 13th Biennial Asian Association of Social Psychology, Taipei.

Chapter 4

Chen, J., & Igarashi, T. (2023). Implementing petty favor in facilitating rich-poor resource exchange. *Letters on Evolutionary Behavioral Science, 14*(1), 1–7. https://doi.org/10.5178/lebs.2023.100

陳佳玉・五十嵐祐 (2022 年 12 月).「ささやかな好意」が集団間の資源共有に与える影響 日本人間行動進化学会第 15 回大会, オンライン

Chen, J. & Igarashi, T. (2021, July). *Birds of a different feather reciprocate each other: Cooperativeness visibility, costly favor, and the reduction of rich-poor segregation.* Paper presented at the 14th Biennial Asian Association of Social Psychology, Online.

Chen, J. & Igarashi, T. (2020, November). *Overcoming choice homophily under wealth disparities in dynamic social networks.* Paper presented at the 5th annual Australian Social Network Analysis Conference, Online.

Chapter 2: Categorical and Individuating Information in Social Selection

As discussed in Chapter 1, individuals tend to utilize categorical information as an essential cue when evaluating the social standing of others within a social stratification system. The processing of category-based information is associated with the formation of stereotypical perceptions toward various social groups (Fiske et al., 2002). Fiske and Bai (2019) introduced a vertical and horizontal perspective on inequality to elucidate the application of SCM in understanding unequal societal structures within individuals' cognitive frameworks. Vertical inequality pertains to disparities in status and competence, while horizontal inequality elucidates interdependence, presumed cooperativeness, and warmth.

The traditional definition of inequality primarily focuses on the vertical dimension, which addresses discrepancies in an individual's status, prestige, and agency. High-prestige individuals are commonly perceived as more competent and capable (Fiske et al., 2007). Regarding social preferences in partner selection, people generally exhibit a tendency to choose individuals who can provide and confer greater benefits (Johnson & Smirnov, 2018; Raihani & Barclay, 2016). Conversely, the horizontal dimension of inequality emphasizes interdependence, which is distinct from social status and prestige. Positive interdependence gives rise to reciprocal relationships with others and is predicted by one's warmth, cooperativeness, and morality. Previous research has explored the influence of this dimension on shaping individuals' attitudes in social selection. For instance, when accepting newcomers into a group, individuals place greater importance on the moral attributes of the target rather than their competence (van der Lee et al., 2017). Luttrell et al. (2022) identified a similar trend in an experimental recruitment task, where evaluations of a target's morality carried more weight than evaluations of their competence in shaping people's hiring attitudes. Other studies have underscored the role of

reputation-based preferences for cooperativeness in driving the formation of social connections (e.g., Dhaliwal et al., 2022; Sylwester & Roberts, 2010).

Despite these social preferences based on the positive interdependence, other researchers have presented evidence suggesting that high-prestige individuals are preferred in the social selection. For instance, job seekers from prestigious universities or in affluence are more likely to be hired in the labor market (e.g., Araki et al., 2016; Gonzalez-Sauri & Rossello, 2019; Sarkar et al., 2022). When faced with simultaneous information regarding prestige and interdependence, which criterion is more likely to be employed for accepting newcomers? In light of this question, Study 1 aims to examine the impact of prestige and interdependence information on attitudes toward accepting newcomers. The target's prestige was presented through categorical information pertaining to their occupational and educational prestige within a labor market. Individuating information was used to describe the target's interdependence. The hypothesis is presented below.

H1: Targets with higher prestige and greater interdependence are more likely to be accepted compared to those with lower prestige and less interdependence.

2.1 Study 1a

2.1.1 Method

Participants

A total of 125 Japanese were recruited from the crowdsourcing platform (Lancers). Data from four participants who withdrew their consent for analysis and 11 participants who did not pass the attention check were excluded from the analysis. Thus, data from 114 participants (M_{age}

= 43.29, *SD* = 8.36; 64 males, 50 females) were analyzed. Each participant received 150 yen of remuneration.

Experimental design

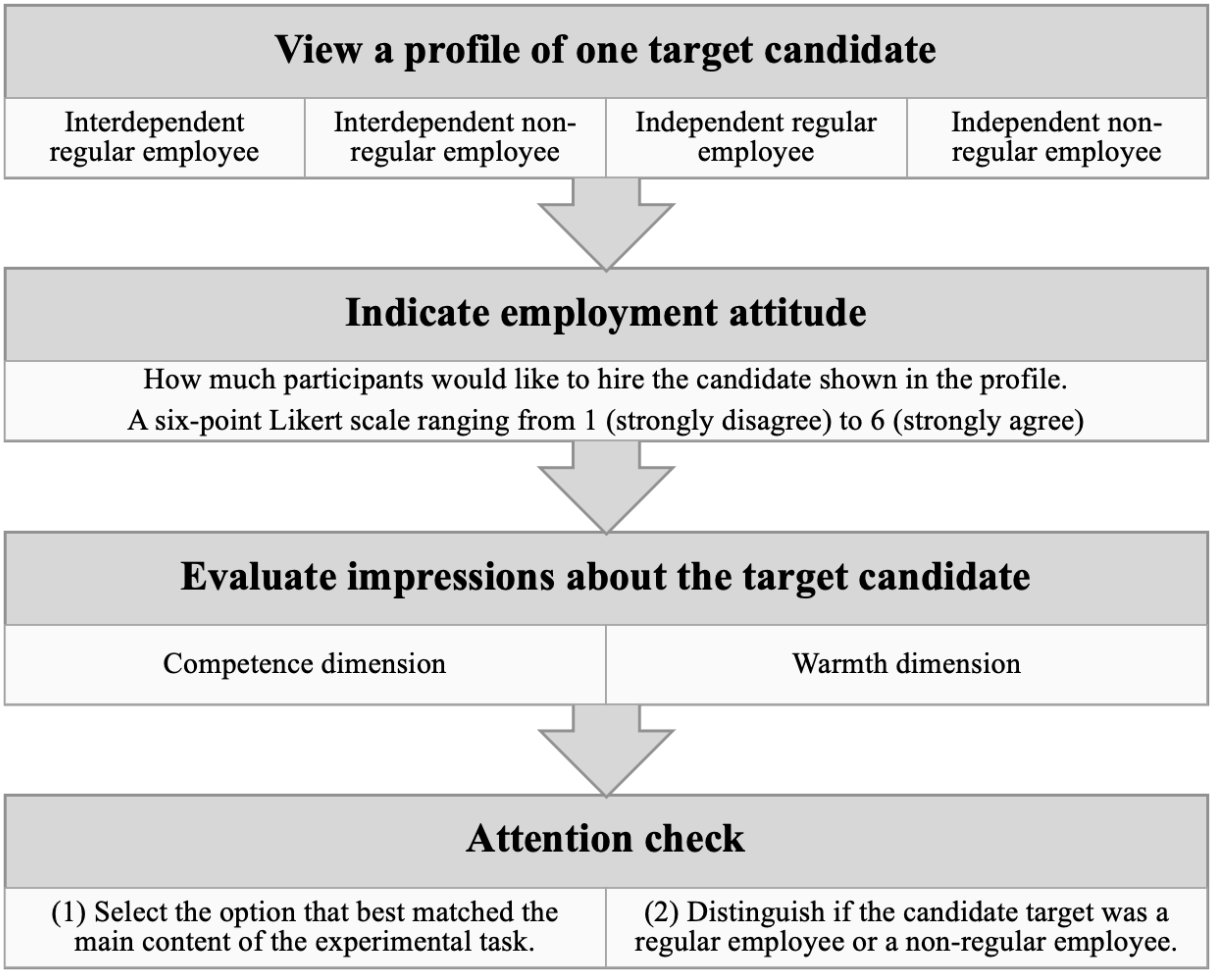
This study used a 2 (target's prestige: high, low) × 2 (target's interdependence: interdependent, independent) between-participant design.

Procedure

Study 1 adopted a vignette experiment. Participants were instructed to imagine themselves working as a human resource manager for a company's software development team. The company made the decision to hire a full-time project manager for the software development team. Currently, the team was comprised of both regular (tenured) and non-regular (temporary) employees. Participants, as regular (tenured) employees, were assigned to participate in the recruitment process. A candidate (the target) was then introduced to the participants through their resume profile. Information regarding the candidate's prestige and interdependence were experimentally manipulated. The procedure of Study 1a is shown in Figure 3.

Figure 3

Experimental procedure of Study 1a



Regarding prestige, high-prestige candidates were portrayed as former regular (tenured) employees in their previous workplace (high-prestige condition), while low-prestige candidates were depicted as former non-regular (temporary) employees in the previous workplace (low-prestige condition). The candidates' profiles also included their aptitude test results, describing the target as either an interdependent individual or an independent individual (Figure 4). As shown in Table 1, all descriptions pertaining to the interdependence of the fictional candidates were derived from the scale of independent and interdependent construal of self (Takata, 1999).

Table 1

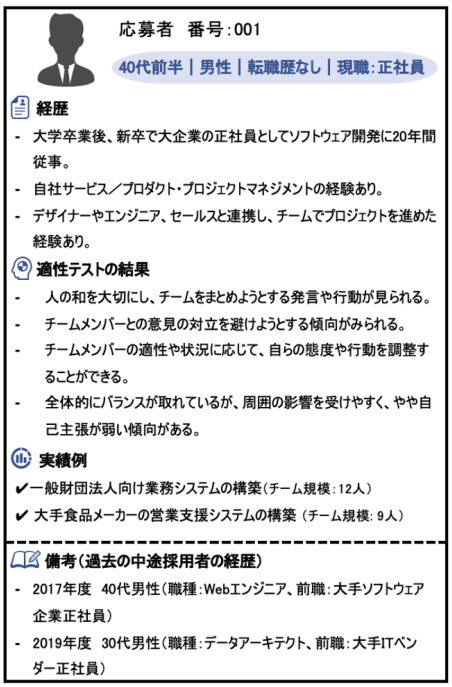
Scenarios used in Study 1a

Interdependent Targets	Independent Targets
• Prioritize harmony among people and attempt to unite the team • Avoid conflicts of opinion with team members • Positively adjust their attitudes and behaviors depending on the suitability and circumstances of the team members • Have a slight tendency to be influenced by the surroundings and have a somewhat weak assertiveness	• Always have their own opinions; speak and act confidently • Even when their opinions differ from those of the team members, tend to stand firm in what they believe • Understand what they need to do • Prefer to go at their own pace and do not like to synchronize with others, showing slight inflexibility

Each participant was randomly allocated in one of the four conditions and evaluated one candidate: the interdependent regular (tenured) employee target (n = 32), the interdependent non-regular (temporary) employee target (n = 27), the independent regular (tenured) employee target (n = 27), and the independent non-regular (temporary) employee target (n = 28). Profiles of the four target candidates are shown in Figure 4.

Figure 4 (a)

Profiles of interdependent regular (tenured) (n = 32) and interdependent non-regular (temporary) (n = 27) employees



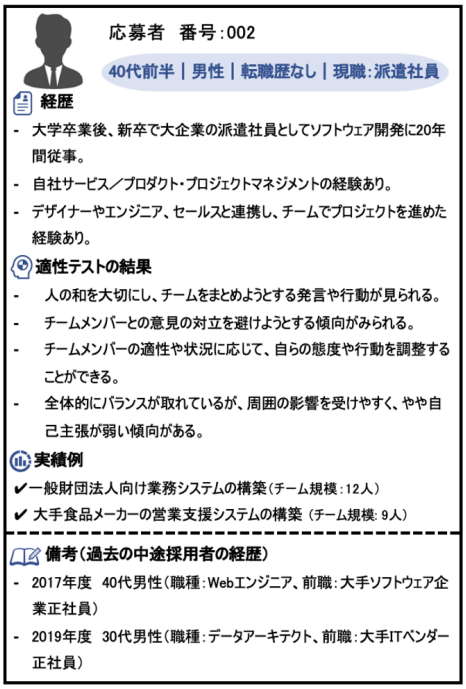
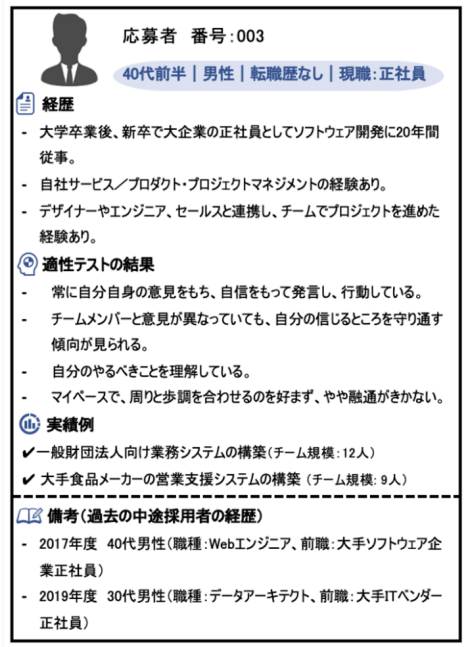
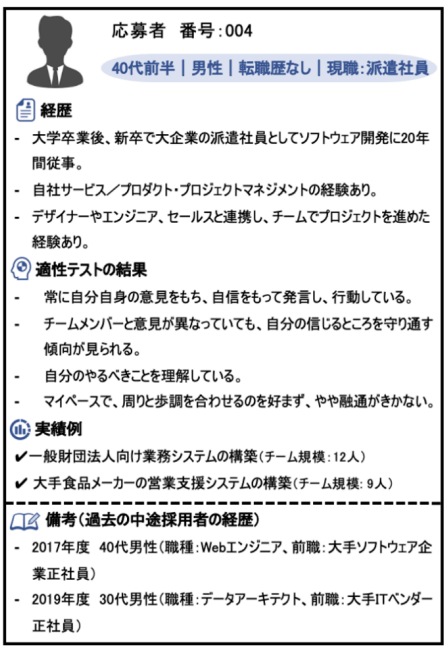


Figure 4 (b)

Profiles of independent regular (tenured) (n = 27) and independent non-regular (temporary) (n = 28) employees





Willingness to Hire the Target

Upon reading the potential employee's profile, participants proceeded to evaluate the candidate and indicate their willingness to accept the candidate as a newcomer to their software development team using a six-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). Subsequently, participants were presented with two attention check questions to verify their careful reading of the scenario (see Appendix A, Study 1a). At the end of the experiment, participants answered demographic questions (age, gender, and occupation) followed by a debriefing.

Impression Evaluation

Participants indicated their impressions of the candidate in terms of the dimensions of competence and warmth (Fiske et al., 2002) utilizing a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The competence dimension items were competent, confident, capable, intelligent, and skillful. Cronbach's α was .73. The warmth dimension items were friendly, well-intentioned, trustworthy, warm, and sincere. Cronbach's α was .89.

Attention Check

Following the completion of all items, there was an attention check item consisting of two questions. One question required participants to select the option that best matched the main content of the experimental task from among four options: evaluate job candidates as a recruiter, meet with managers of other departments, promote the company's management philosophy, and write self-evaluations. Four participants provided an incorrect response to this question and were thus excluded from the data analysis. The other question aimed to ascertain whether participants correctly distinguished if the candidate target was a regular (tenured) employee or a non-regular

(temporary) employee. Eight participants did not correctly answer this attention check question and were thus excluded from the data analysis.

2.1.2 Results

Hiring Attitudes

Participants showed a greater inclination to hire interdependent candidates ($M = 4.58$, $SD = 0.88$) compared to independent candidates ($M = 3.60$, $SD = 0.89$). The results of the two-way ANOVAs indicated that the targets' willingness to hire the candidate did not differ significantly in terms of prestige, $F\ (1, 110) = 0.52$, $p = .471$, $\eta^2 = .004$, or the interaction between prestige and interdependence, $F\ (1, 110) = 0.25$, $p = .621$, $\eta^2 = .002$. However, a significant difference was found between the interdependent targets and the independent targets, $F\ (1, 110) = 33.93$, $p < .001$, $\eta^2 = .235$. The mean scores by interdependence and prestige are summarized in Figure 5.

Figure 5

Means by prestige and interdependence in Study 1a

Note. Error bars denote the 5% standard error in each condition.

Impression Evaluation and Hiring Attitudes

The correlational analysis (Table 2) revealed that both evaluations of competence and warmth exhibited positive correlations with participants' hiring attitudes (competence: $r = 0.246$, $p = .01$; warmth: $r = 0.662$, $p < .001$). Additionally, the target's interdependence displayed positive correlations with hiring attitudes ($r = 0.486$, $p < .001$) and warmth evaluation ($r = 0.718$, $p < .001$) while exhibiting a negative correlation with competence evaluations ($r = -0.243$, $p = .01$). Conversely, the target's prestige displayed only a positive correlation with competence evaluations ($r = 0.248$, $p = .01$). These findings suggest that the prestige of the target's prestige and their interdependence may be linked to evaluations of their competence and warmth. Despite the association between impression evaluations and hiring attitudes, interdependence appeared to show a greater impact than prestige. That is, a potential partner's individuating characteristics (e.g., interdependence) could override the influence of categorical group affiliations.

Table 2

Correlation analysis in Study 1a

Variable	*M*	*SD*	1	2	3	4	5	6
1. Prestige	52%	—	—					
2. Interdependence	52%	—	0.051	—				
3. Gender	44%	—	0.004	-0.208*	—			
4. Age	43.29	8.36	0.021	-0.055	0.097	—		
5. Hiring attitude	4.11	1.01	0.084	0.486***	-0.146	0.080	—	
6. Competence	19.04	2.58	0.248**	-0.243**	0.184*	0.032	0.246**	—
7. Warmth	17.23	3.75	-0.012	0.718***	-0.082	-0.013	0.662***	0.014

Note. $N = 114$. Prestige was coded as regular = 1 and non-regular = 0. Interdependence was coded as interdependent = 1 and independent = 0. Hiring attitude was scored on a six-point Likert scale from 1 (strongly disagree) to 6 (strongly agree). $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Two-way ANOVAs were conducted to compare the evaluations of competence and warmth toward the four types of candidates respectively. Concerning competence evaluation, a significant interaction effect was shown between prestige and interdependence, F (1, 110) = 2.83, p = .095, η^2 = .022. The results revealed significant main effects of both prestige, F (1, 110) = 9.13, p = .003, η^2 = .070, and interdependence, F (1, 110) = 8.15, p = .005, η^2 = .063. Significant simple main effect of prestige was found among independent targets (F (1, 110) = 10.73, p = .001, η^2 = .083), and the simple main effect of interdependence was found among high-prestige targets (F (1, 110) = 10.63, p = .002, η^2 = .082). Post-hoc Tukey's HSD test (Table 3) showed that independent high-prestige targets (M = 20.78, SD = 2.08) were rated as more competent than both the independent low-prestige targets (M = 18.64, SD = 2.16, p = .008) and the interdependent high-prestige targets (M = 18.72, SD = 2.82, p = .008).

However, no significant interaction effect was found between prestige and interdependence pertaining to the warmth evaluation, F (1, 110) = 1.56, p = .214, η^2 = .007. The results only revealed a significant main effect of interdependence, F (1, 110) = 120.50, p < .001, η^2 = .518, with interdependent targets (M = 19.81, SD = 2.76) being more likely to be evaluated as warmer than independent targets (M = 14.45, SD = 2.46, p < .001). Conversely, as for the main effect of prestige, the results found no significant differences in warmth evaluation between the high-prestige targets and the low-prestige targets, F (1, 110) = 0.49, p = .486, η^2 = .002).

An exploratory regression analysis was conducted to elucidate the effects of competence and warmth evaluation on individuals' willingness to hire target members. It was found that targets evaluated as having greater competence (β = 0.25, 95% CI [0.06, 0.43], p = .008) or warmth (β = 0.66, 95% CI [0.52, 0.80], p < .001) were more likely to be hired. However, no

significant interaction effect was discerned between competence and warmth evaluations on hiring attitudes (β = 0.05, 95% CI [-0.09, 0.18], p = .487).

Table 3

Tukey's Honestly Significant Difference (HSD) Post Hoc Test results in Study 1a

	Competence			Warmth		
Group Comparison	**Difference**	**95% CI**	***p***	**Difference**	**95% CI**	***p***
Interdependent high-prestige vs. Interdependent low-prestige	0.61	(-1.04, 2.25)	0.771	-0.96	(-2.74, 0.83)	0.502
Independent low-prestige vs. Interdependent low-prestige	0.53	(-1.17, 2.23)	0.847	-6.01	(-7.85, -4.17)	< .001
Independent high-prestige vs. Interdependent low-prestige	2.67	(0.95, 4.38)	0.001	-5.74	(-7.6, -3.88)	< .001
Independent low-prestige vs. Interdependent high-prestige	-0.08	(-1.71, 1.56)	0.999	-5.05	(-6.82, -3.29)	< .001
Independent high-prestige vs. Interdependent high-prestige	2.06	(0.41, 3.71)	0.008	-4.78	(-6.57, -3.00)	< .001
Independent high-prestige vs. Independent low-prestige	2.13	(0.43, 3.84)	0.008	0.27	(-1.57, 2.11)	0.981

2.1.3 Discussion

Study 1a examined individuals' preferences in terms of partner selection, specifically focusing on the attitudes of high-prestige individuals toward accepting newcomers. In Study 1a, the interdependence of potential partners emerged as a crucial cue in shaping individuals' preferences for selecting partners, while the influence of prestige—an impactful cue in person perception and partner selection—did not significantly shape participants' attitudes in a hiring task. The findings were partially consistent with Hashimoto et al.'s (2011) research emphasizing the role of interdependence in shaping preferences for partner selection. It is possible that participants recognized the fictitious nature of the target and realized that their responses would not have any actual consequences due to the experimental manipulation. Moreover, expressing negative evaluations toward non-regular (temporary) employees could adversely affect their reputation, despite assuring anonymity at the beginning of the experiments. Therefore, it was necessary to conduct Study 1b to strengthen the impact of prestige within the experimental setting and compare its influence with individual interdependence on shaping preferences in social selection. Dhaliwal et al. (2022) elucidated the impact of group norms on individuals' social preference in partner selection, revealing that individuals tend to conform to the majority's choice when choosing social partners. Therefore, in Study 1b, a group norm of preferring high-prestige targets was utilized to bolster the impact of prestige on partner selection.

2.2 Study 1b

2.2.1 Method

Participants

A total of 124 Japanese were recruited from the crowdsourcing site Lancers. Four participants withdrew their consent for analysis, and 34 participants failed to pass the attention check. Finally, data from 86 participants (M_{age} = 44.17, SD = 9.3; 40 males, 46 females) were analyzed. Each participant received 50 yen as remuneration.

Experimental design

This study used a 2 (target's prestige: high, low) × 2 (target's interdependence: interdependent, independent) between-participant design.

Procedure

Similar to Study 1a, participants were instructed to participate in a recruitment task as a human resource manager for a company's software development team. The following additional instructions were included in the cover story to indicate that most of employees in this company are regular (tenured) employees (see Appendix A, Study 1b). Profiles of four target candidates are shown in Figure 6.

> The previous recruitment processes involved individuals who were actively engaged in large-scale system developments at other companies and possessed practical experience as project managers. Among them, 76% were employed as regular (tenured) employees, while 21% held non-regular (temporary) employee positions. 3% were not employed as either regular (tenured) or non-regular (temporary) employees (e.g., employees who have worked overseas).

The recruitment process comprises two stages: preliminary selection and secondary selection. You will be responsible for the secondary selection phase. During the preliminary selection, the applicant's expertise, accomplishments, and personality were assessed. In the secondary selection, recruiters will determine whether the applicant is suitable for the position.

Figure 6 (a)

Profiles of interdependent regular (tenured) (n = 23) and interdependent non-regular (temporary) (n = 18) employees

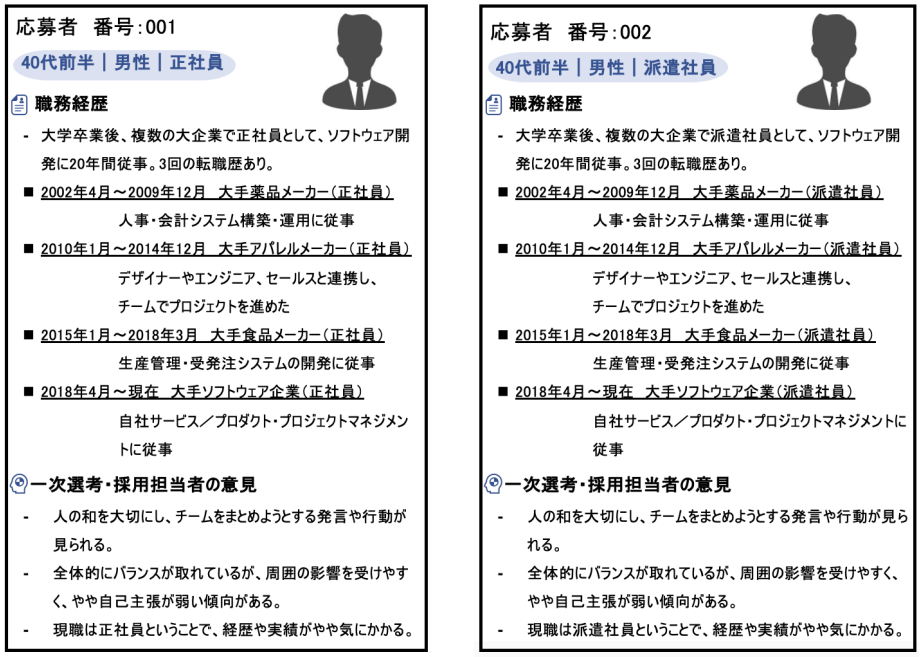
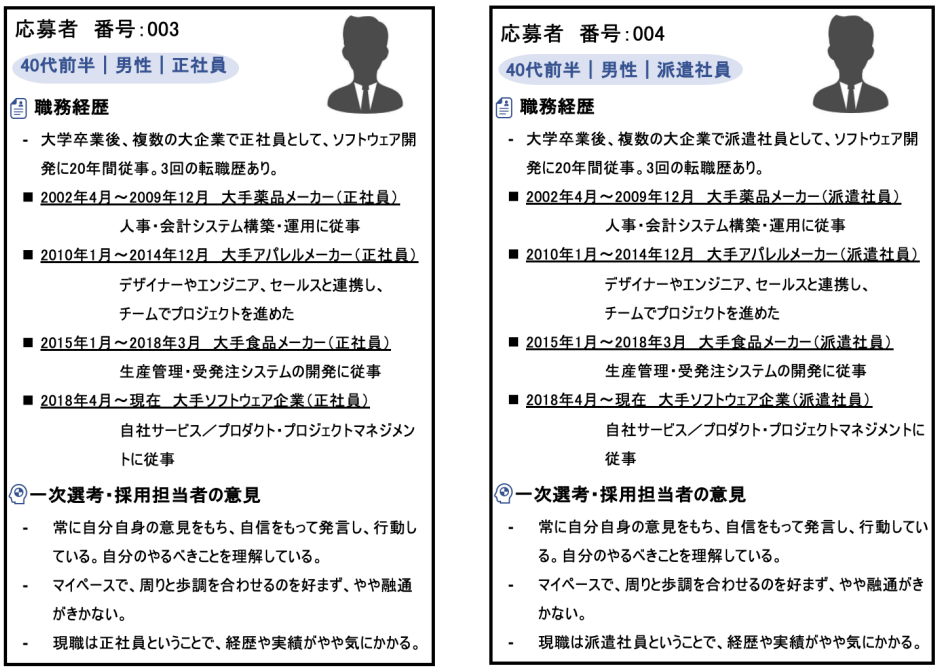


Figure 6 (b)

Profiles of independent regular (tenured) (n = 23) and independent non-regular (temporary) (n = 22) employees



In each condition, participants read the profile of one of the four targets: an interdependent regular (tenured) employee (n = 23), an interdependent non-regular (temporary) employee (n = 18), an independent regular (tenured) employee (n = 23), and an independent non-regular (temporary) employee (n = 22). All four targets shared the same employment histories, differing only in prestige and interdependence. The assessments pertaining to the targets' interdependence are shown in Table 4.

Table 4

Scenarios used in Study 1b

Interdependent Targets	Independent Targets
• Prioritize harmony among people and attempt to unite the team • Have a slight tendency to be influenced by the surroundings and have a somewhat weak assertiveness • Given the current role as a regular (tenured) employee, have somewhat concerning employment backgrounds and accomplishments	• Always have their own opinions, speak and act confidently, and understand what they need to do • Prefer to go at their own pace and do not like to synchronize with others, showing slight inflexibility • Given the current role as a non-regular (temporary) employee, have somewhat concerning employment backgrounds and accomplishments

Willingness to Hire the Target

Upon completing reading the potential employee's profile, participants assessed their impression of the candidate and subsequently indicated their willingness to recruit the candidate employing a six-point Likert scale ranging from 1 (definitely would not hire) to 6 (definitely would hire). Following that, participants were tasked with answering three attention check questions to ascertain their careful reading of the scenario.

Impression Evaluation

As in Study 1a, participants evaluated their impressions of the candidate in terms of the competence and warmth dimensions (Fiske et al., 2002) using a five-point Likert scale from 1 (completely disagree) to 5 (completely agree). The competence dimension items were competent, confident, capable, intelligent, and skillful. Cronbach's α was .76. The warmth dimension items were friendly, well-intentioned, trustworthy, warm, and sincere. Cronbach's α was .86.

Attention Check

The attention check was conducted in a manner consistent with Study 1a. The two items utilized in Study 1a were also employed in Study 1b: selecting the most suitable sentence that aligned with the task from a set of four options and discerning whether the presented target was a regular (tenured) or non-regular (temporary) employee. This was done to ensure participants' careful reading of the candidate's profile. Furthermore, participants were presented with an additional attention check question concerning the cover story to gauge their awareness of the company's inclination to hire regular (tenured) employees over non-regular (temporary) employees. The 34 participants who failed to pass all three attention check questions were consequently excluded from the analysis. In addition to these three questions, participants were requested to indicate the level of importance they attributed to the regular (tenured)/non-regular (temporary) employee prestige of the current candidate when making hiring decisions, employing a five-point Likert scale ranging from 1 (not at all important) to 5 (extremely important).

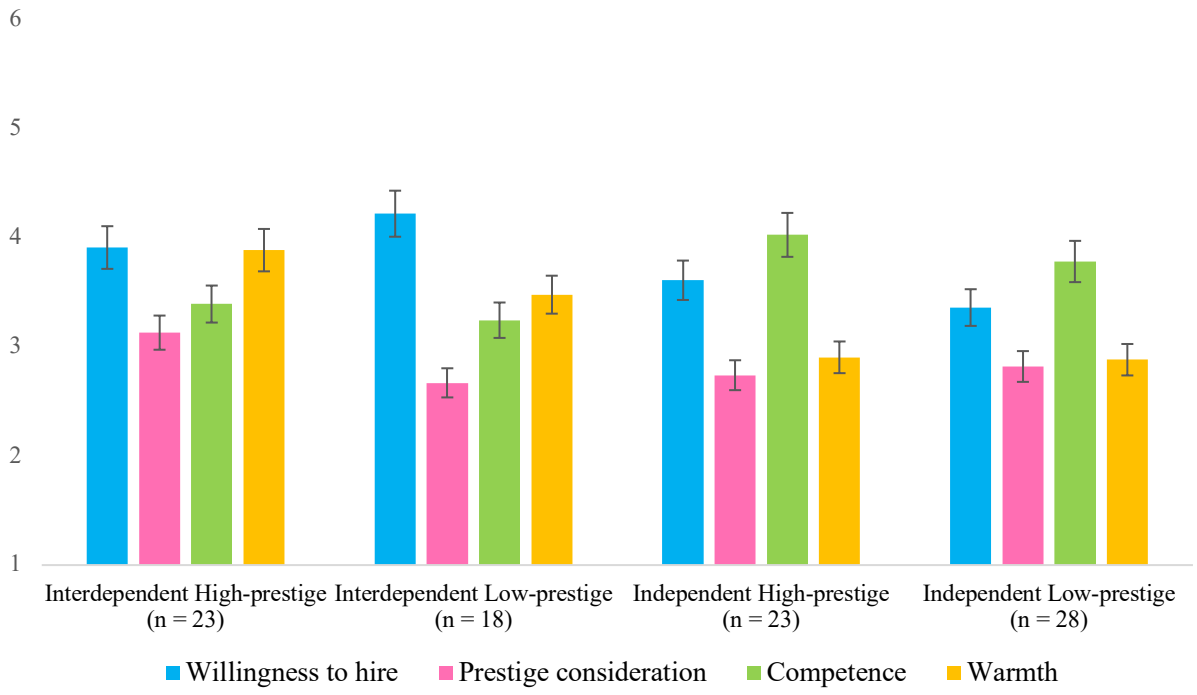
2.2.2 Results

Hiring Attitudes

The results of the two-way ANOVAs indicated that the participants' willingness to hire the target did not differ significantly depending on prestige, F (1, 82) = 0.04, p = .847, η^2 = .000, whereas there was a significant difference between the interdependent targets (M = 4.05, SD = 0.67) and the independent targets (M = 3.49, SD = 0.84), F (1, 82) = 12.42, p < .001, η^2 = .128. Participants demonstrated a greater propensity to express their willingness to hire interdependent targets. Nevertheless, there were no differences in hiring attitudes between high-prestige and low-prestige targets. The mean scores by interdependence and prestige are summarized in Figure 7.

Figure 7

Means by prestige and interdependence in Study 1b



Note. Error bars denote the 5% standard error in each condition.

Impression Evaluation and Hiring Attitudes

According to the correlational analysis (Table 5), there was a positive correlation observed between the warmth evaluation and both participants' hiring attitudes ($r = 0.454$, $p < .001$) and interdependence ($r = 0.643$, $p < .001$). Interdependent targets received higher warmth ratings compared to independent targets. Furthermore, interdependence exhibited a positive correlation with hiring attitude ($r = 0.347$, $p = .03$). These findings suggest that the preference for interdependent targets may be influenced by the evaluation of warmth. Study 1b did not yield any significant differences in either prestige or prestige consideration. Similar to Study 1a, Study 1b primarily emphasized individuals' preferences for interdependent targets and did not provide evidence regarding the impact of prestige on individuals' social preferences.

Table 5

Correlation analysis in Study 1b

Variable	*M*	*SD*	1	2	3	4	5	6	7
1. Prestige	53%	—	—						
2. Interdependence	48%	—	0.050	—					
3. Gender	53%	—	-0.028	-0.090	—				
4. Age	44.17	9.30	-0.025	0.133	-0.237*	—			
5. Prestige consideration	2.85	1.05	0.089	0.072	-0.001	-0.075	—		
6. Hiring attitude	3.76	0.81	0.007	0.347**	0.093	-0.085	-0.197	—	
7. Competence	18.15	2.73	0.155	-0.533***	0.112	-0.244*	-0.210	0.054	—
8. Warmth	16.41	3.18	0.194	0.643***	0.120	0.088	-0.077	0.454***	-0.172

Note. $N = 86$. Prestige was coded as regular = 1 and non-regular = 0. Interdependence was coded as interdependent = 1 and independent = 0. Hiring attitude was scored on a six-point Likert scale from 1 (definitely would not hire) to 6 (definitely would hire). Prestige consideration was scored on a five-point Likert scale from 1 (not at all important) to 5 (extremely important).

$^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Two-way ANOVAs were employed to compare the evaluations of competence and warmth across the four different candidate types. No significant interaction effect was observed between prestige and interdependence concerning competence evaluation, F (1, 82) = 0.24, p = .626, η^2 = .002. Nevertheless, the results unveiled a significant main effect of interdependence, F (1, 82) = 34.65, p < .001, η^2 = .287, with the independent targets (M = 19.53, SD = 2.56) receiving higher ratings in terms of competence compared to the interdependent targets (M = 16.63, SD = 2.03). Additionally, the main effect of prestige on competence evaluation was found, F (1, 82) = 3.86, p = .053, η^2 = .032, revealing that high-prestige targets (M = 18.54, SD = 2.76) were perceived as more competent than low-prestige targets (M = 17.70, SD = 2.66).

Regarding the warmth dimension, the interaction effect between prestige and interdependence was significant at the 10% significance level, F (1, 82) = 3.54, p = .064, η^2 = .024, along with the main effects of interdependence, F (1, 82) = 4.41, p = .039, η^2 = .030, and prestige, F (1, 82) = 58.95, p < .001, η^2 = .396. The simple main effect revealed that prestige exerted a significant influence on warmth evaluation when targets were interdependent, F (1, 82) = 7.52, p = .008, η^2 = .051. Interdependent high-prestige targets (M = 19.43, SD = 2.43) were evaluated as warmer compared to the interdependent low-prestige targets (M = 17.39, SD = 3.09, p = .037) (Table 6).

To clarify the impacts of competence and warmth evaluation on hiring attitude, an exploratory regression analysis was performed. The results revealed that targets evaluated as warmer were more likely to secure employment (β = 0.45, 95% CI [0.26, 0.65], p < .001), yet no statistically significant effect of competence evaluation was found (β = 0.05, 95% CI [-0.16, 0.27], p = .621). Notably, the interaction effect of competence and warmth on hiring attitude was indicated (β = 0.36, 95% CI [0.18, 0.55], p < .001). Targets characterized by both a greater level

of competence and warmth were more likely to secure employment; however, those who were evaluated as competent but with a lower level of warmth were less likely to be hired.

Table 6

Tukey's Honestly Significant Difference (HSD) Post Hoc Test results in Study 1b

	Competence			Warmth		
Group Comparison	**Difference**	**95% CI**	***p***	**Difference**	**95% CI**	***p***
Independent low-prestige vs. Independent high-prestige	-1.22	(-3.02, 0.57)	0.289	-0.11	(-1.97, 1.74)	0.999
Interdependent high-prestige vs. Independent high-prestige	-3.17	(-4.95, -1.4)	< .001	4.91	(3.08, 6.75)	< .001
Interdependent low-prestige vs. Independent high-prestige	-3.91	(-5.8, -2.01)	< .001	2.87	(0.91, 4.82)	0.001
Interdependent high-prestige vs. Independent low-prestige	-1.95	(-3.75, -0.16)	0.028	5.03	(3.17, 6.88)	< .001
Interdependent low-prestige vs. Independent low-prestige	-2.69	(-4.6, -0.77)	0.002	2.98	(1.00, 4.96)	0.001
Interdependent low-prestige vs. Interdependent high-prestige	-0.73	(-3.02, 0.57)	0.741	-2.05	(-4.00, -0.09)	0.037

2.2.3 Discussion

Study 1b indicated the same results as Study 1a (that targets' interdependence merely serves as the cue in shaping individuals' selection preferences). These findings were broadly rooted in the experimental environment, and thus, it is questionable if these results actually reflect people's social preferences in the real world. As discussed in Study 1a, individuals may avoid indicating their real attitudes and preferences toward high-prestige and low-prestige targets. Additionally, both Studies 1a and 1b were conducted among Lancers, a crowdsourcing platform where most of the crowdsourced workers were freelancers and non-regular (temporary) employees. Encountering non-regular (temporary) employee counterparts through an experimental setting, participants may have shown more favorable attitudes toward targets who were similar to themselves. Therefore, it was necessary to avoid using regular (tenured) or non-regular (temporary) employee categories to define the prestige on a crowdsourcing platform. Based on this concern, we conducted Study 1c, which primarily defined prestige in terms of educational system rather than occupational prestige.

2.3 Study 1c

2.3.1 Method

Participants

A total of 122 Japanese were recruited from the crowdsourcing platform (Lancers). Eight participants withdrew their consent for analysis, and 32 participants did not pass the attention check. Finally, data from 82 participants (M_{age} = 42.51, SD = 10.92; 45 males, 37 females) were analyzed. Each participant received 50 yen as remuneration.

Experimental design

This study used a 2 (target's prestige: high, low) × 2 (target's interdependence: interdependent, independent) between-participant design.

Procedure

In Study 1c, participants were instructed to participate in a recruitment process for new graduates as human resource managers at a consulting firm. The following instructions were provided (see Appendix A, Study 1c):

> In the past, new graduates were primarily recruited from imperial universities, particularly those located in the Tokyo metropolitan area. However, in recent years, there has been an increasing number of job offers extended to students from regional universities.
>
> The recruitment process comprises two stages: preliminary selection and secondary selection. You will be responsible for the secondary selection phase. During the preliminary selection, the applicant's expertise, accomplishments, and personality were assessed. In the secondary selection, recruiters will determine whether the applicant is suitable for the position.

Then, participants were presented with the profile of one candidate and were asked to evaluate and indicate their willingness to recruit the candidate. The manipulation of prestige was based on the candidates' university locations. High-prestige candidates were portrayed as new graduates from a highly ranked national university located in the urban area (Kanagawa Prefecture), while low-prestige candidates were from a national university situated in the regional area (Shiga Prefecture). The candidates' profiles contained their assessments in the preliminary selection and their internship experience (see Appendix A, Study 1c). Participants were asked to read one of the four targets' profiles: an interdependent new graduate from the

urban university (n = 19), an interdependent new graduate from the regional university (n = 21), an independent new graduate from the urban university (n = 19), and an independent new graduate from the regional university (n = 23). All four targets had identical internship experience and academic abilities. The assessments regarding targets' interdependence are presented in Table 7 and the profiles of four target candidates are shown in Figure 8.

Table 7

Scenarios used in Study 1c

Interdependent Targets	Independent Targets
• Prioritize harmony among people and attempt to unite the team • Have a slight tendency to be influenced by the surroundings and have a somewhat weak assertiveness	• Always have their own opinions, speak and act confidently, and understand what they need to do • Prefer to go at their own pace and do not like to synchronize with others, showing a slight inflexibility

Figure 8 (a)

Profiles of interdependent urban graduates (n = 19) and interdependent regional graduates (n = 21)

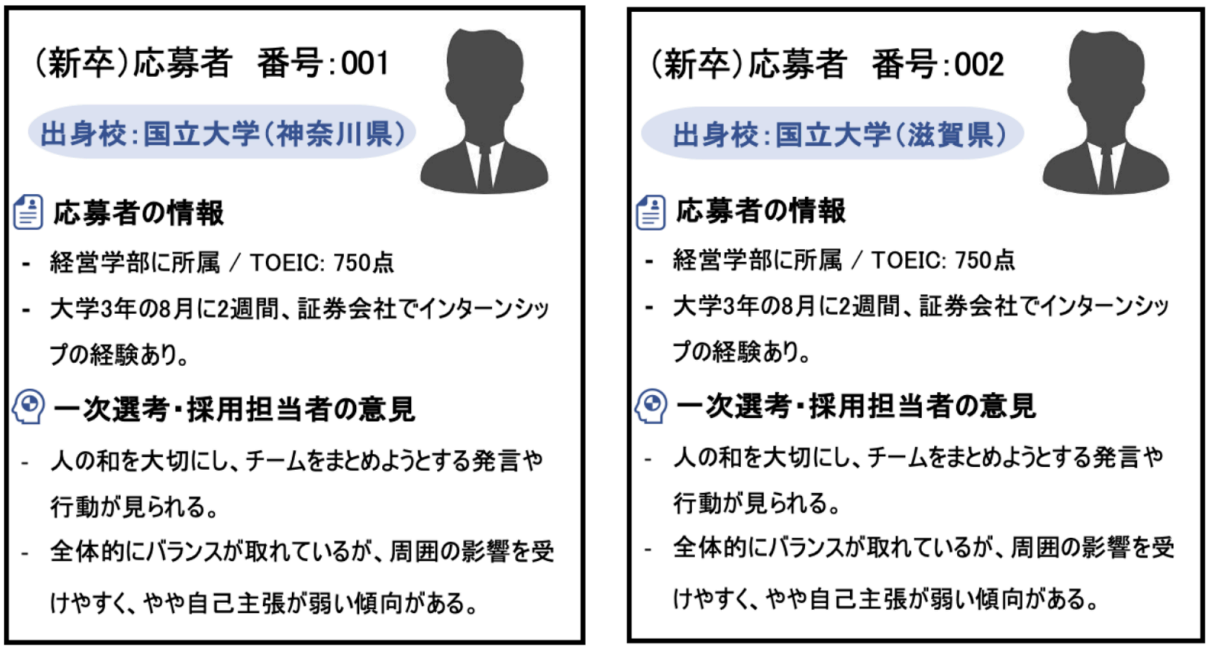
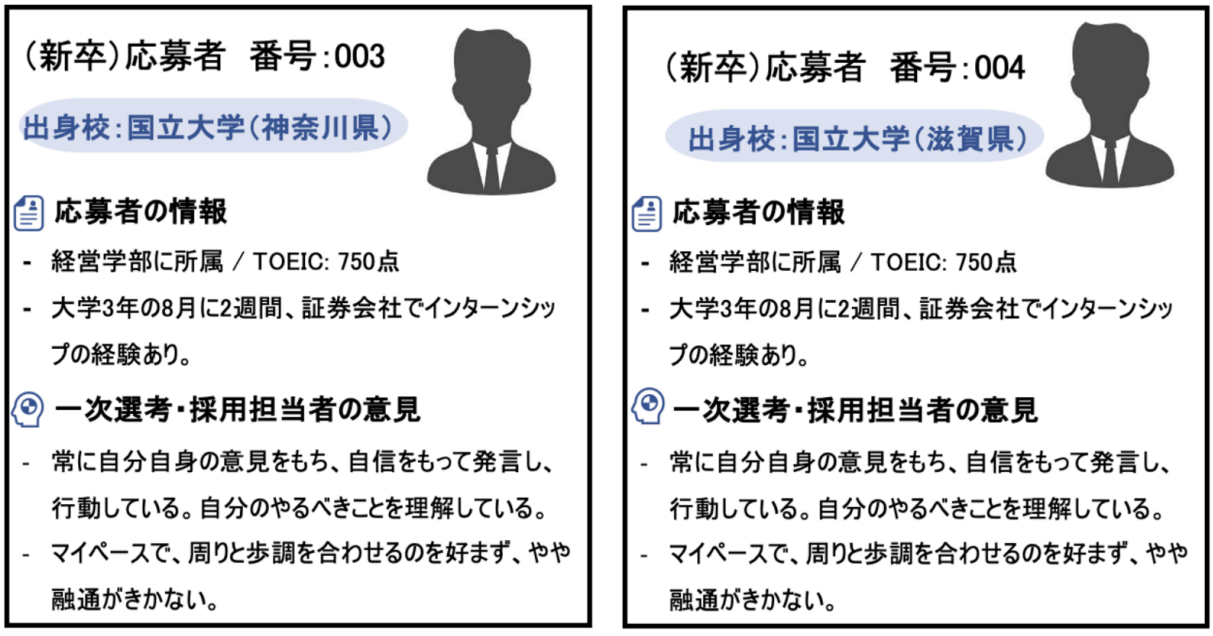


Figure 8 (b)

Profiles of independent urban graduates (n = 19) and independent regional graduates (n = 23)



Willingness to Hire the Target

After reading the profile of the potential employee, participants evaluated the candidate and indicated how likely they would be to recruit the candidate using a six-point Likert scale from 1 (definitely would not hire) to 6 (definitely would hire). Then, participants were asked to answer three attention check questions (see Appendix A, Study 1c).

Impression Evaluation

As in Studies 1a and 1b, participants indicated their impressions of the candidate in terms of the competence and warmth dimensions (Fiske et al., 2002) using a five-point Likert scale from 1 (completely disagree) to 5 (completely agree). The competence dimension items were competent, confident, capable, intelligent, and skillful. Cronbach's α was .61. The warmth dimension items were friendly, well-intentioned, trustworthy, warm, and sincere. Cronbach's α was .86.

Attention Check

The attention check was administered in a similar manner to Studies 1a and 1b, consisting of three tasks: (1) to select the most suitable sentence that aligned with the experimental task from the provided options, (2) to recall whether the presented candidate was a recent graduate affiliated with a university in the urban area or the regional area, and (3) to recall whether the majority of recent graduates hired by this consulting firm originated from upper-ranked universities situated in the urban area or regional national universities. A total of 32 participants failed to meet the criteria for all three attention check questions and were consequently excluded from the analysis. In addition to these three attention check questions, participants were requested to indicate the degree of importance they attributed to the candidate's background as a new graduate from either the urban area or the regional area when making their

hiring decision, employing a five-point Likert scale ranging from 1 (not important at all) to 5 (extremely important).

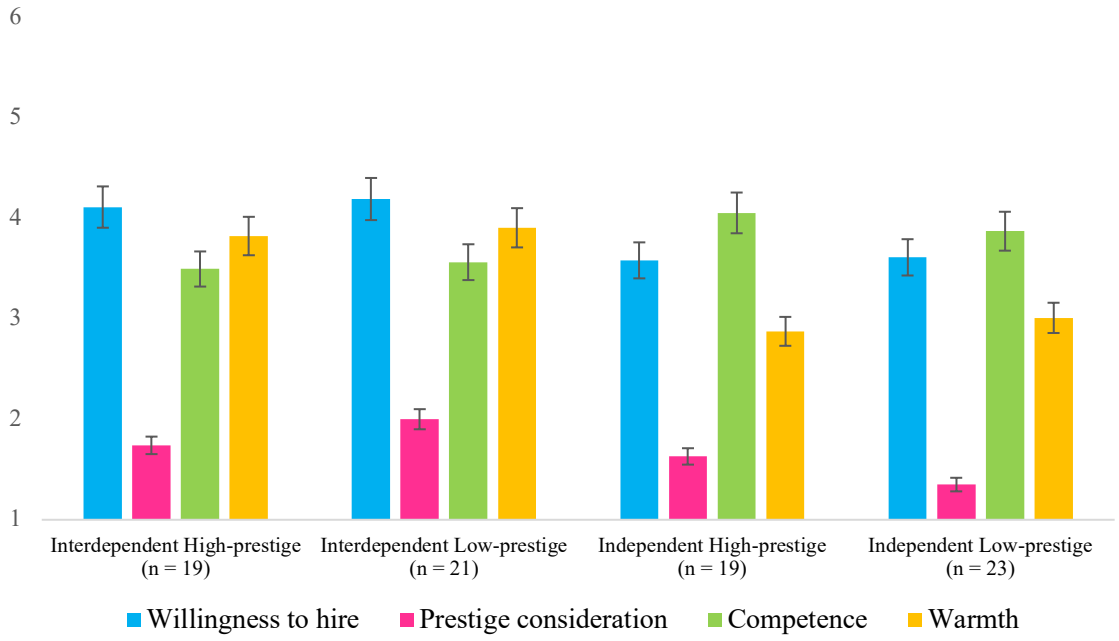
2.3.2 Results

Hiring Attitudes

The results were consistent with Studies 1a and 1b. Two-way ANOVAs indicated that the participants' willingness to hire the target did not differ significantly based on the target's prestige, F (1, 78) = 0.11, p = .745, η^2 = .001, whereas there was a significant difference based on the targets' interdependence, F (1, 78) = 9.93, p = .002, η^2 = .113. Interdependent targets (M = 4.15, SD = 0.62) were more likely to be hired compared to the independent targets (M = 3.60, SD = 0.91). There was no significant difference in hiring attitudes between high-prestige and low-prestige targets. The mean scores by interdependence and prestige are summarized in Figure 9.

Figure 9

Means by prestige and interdependence in Study 1c



Note. Error bars denote the 5% standard error in each condition.

Impression Evaluation and Hiring Attitudes

According to the correlational analysis (Table 8), there was a significant positive correlation between the warmth evaluation and participants' hiring attitudes ($r = 0.678$, $p < .001$) as well as the target's interdependence ($r = 0.641$, $p < .001$). Furthermore, interdependence exhibited a positive correlation with hiring attitude ($r = 0.337$, $p = .002$). These findings imply that interdependent targets received higher warmth evaluations compared to independent targets, and candidates who were rated more favorably in terms of warmth were more likely to be considered for hiring. In line with the findings of Study 1b, it is plausible to suggest that the preference for interdependent targets might be influenced by the evaluation of warmth. No significant difference was observed based on prestige; however, in Study 1c, prestige consideration showed a positive correlation with targets' interdependence ($r = 0.241$, $p = .03$). That is, participants who encountered an interdependent target tended to indicate a stronger prestige consideration regarding the target's' university affiliations compared to those who encountered an independent target.

Table 8

Correlation analysis in Study 1c

Variable	*M*	*SD*	1	2	3	4	5	6	7
1. Prestige	46%	—	—						
2. Interdependence	49%	—	0.023	—					
3. Gender	45%	—	-0.155	-0.051	—				
4. Age	42.51	10.92	-0.089	0.051	0.068	—			
5. Prestige consideration	1.67	0.83	0.015	0.241*	0.005	0.125	—		
6. Hiring attitude	3.87	0.83	-0.027	0.337**	0.029	0.020	0.186	—	
7. Competence	18.73	2.49	0.051	-0.427***	0.108	-0.107	-0.156	0.270*	—
8. Warmth	16.98	3.60	-0.062	0.641***	0.020	0.034	0.212	0.678***	-0.071

Note. $N = 82$. Prestige was coded as the urban university = 1 and the regional university = 0. Interdependence was coded as interdependent = 1 and independent = 0. Hiring attitude was scored on a six-point Likert scale from 1 (definitely would not hire) to 6 (definitely would hire). Prestige consideration was scored on a five-point Likert scale from 1 (not at all important) to 5 (extremely important).

$^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$

Two-way ANOVAs were conducted to compare the competence and warmth evaluations respectively. The results did not indicate a significant interaction effect between prestige and interdependence, F (1, 78) = 1.55, p = .217, η^2 = .016, nor did it reveal a significant main effect of prestige in the competence evaluation, F (1, 78) = 0.33, p = .566, η^2 = .003. However, a main effect of interdependence emerged, demonstrating a significant difference in the evaluation of competence between independent targets and interdependent targets, F (1, 78) = 18.56, p < .001, η^2 = .189. The independent targets (M = 19.76, SD = 2.50) were viewed as more competent than the interdependent targets (M = 17.65, SD = 1.99).

Regarding the evaluation of target's warmth, a significant main effect was observed solely for interdependence, F (1, 78) = 55.11, p < .001, η^2 = .411, revealing that interdependent targets (M = 19.32, SD = 2.83) were viewed as warmer than independent targets (M = 14.74, SD = 2.73). No significant effects were observed either in the interaction between prestige and interdependence, F (1, 78) = 0.04, p = .837, η^2 = .000. Also, the main effect of prestige was not found in the warmth evaluation, F (1, 78) = 0.78, p = .381, η^2 = .006.

The results of the regression analysis indicated that targets evaluated as having greater competence (β = 0.27, 95% CI [0.06, 0.48], p = .014) or warmth (β = 0.68, 95% CI [0.51, 0.84], p < .001) were more likely to be hired. No significant interaction effect was found between competence and warmth evaluations on hiring attitudes (β = -0.005, 95% CI [-0.14, 0.13], p = .943).

2.3.3 Discussion

Considering that the majority of crowdsourcing workers in the real world are freelancers and non-regular (temporary) employees, Study 1c refrained from using the categorizations of regular (tenured) and non-regular (temporary) employees to define a target's prestige in the Japanese labor market. Instead, Study 1c implemented a new graduate recruitment scenario and differentiated targets' prestige based on their university locations.

In Japanese society, which places a strong emphasis on academic background, there is a phenomenon of college discrimination in the labor market, where candidates are filtered based on their educational backgrounds (Ono, 2004). Hence, the present study utilized the urban university and the regional university as the social category to distinguish high-prestige targets from low-prestige targets. However, no significant difference was found between high-prestige and low-prestige targets. As mentioned earlier, it is plausible that participants consciously concealed their preferences based on prestige within the experimental environment. Furthermore, participants were tasked with a recruitment scenario that involved a one-shot selection process devoid of any cost and benefit structure. Consequently, participants may have devoted less effort to considering who would bring the most benefits and instead expressed their preference for interdependent candidates. Additionally, the absence of a significant difference between high-prestige and low-prestige targets may lie in a lack of validity, wherein defining the educational prestige solely based on university locations fails to discern high-prestige targets from low-prestige targets.

Although prestige showed no significant impact on shaping individuals' preferences toward newcomer acceptance, correlational analysis in Study 1c revealed a consideration for prestige only among interdependent targets. This may indicate the presence of complementary

stereotypes in partner selection, where participants would perceive an interdependent target lacking competence, resulting in a greater consideration regarding social prestige (e.g., Tao et al., 2016).

2.4 General Discussion

Study 1 revealed a consistent preference in social selection, wherein individuals are more inclined to choose a target with a high degree of interdependence regardless of their prestige. These findings provide evidence that individuating information as interdependence holds greater significance in terms of newcomer acceptance compared to the category-based information regarding status-competence dimension.

As suggested by the perspective of vertical and horizontal inequality, social status and prestige is linked to a target's evaluation in the competence dimension (as observed in Studies 1a and 1b), while interdependence shapes a target's warmth dimension (as observed in Studies 1a, 1b, and 1c). Targets categorized as high prestige, such as regular (tenured) employees, are evaluated as more competent than their low-prestige counterparts. However, this trend was not observed in Study 1c, where prestige was defined based on university locations (urban university vs. regional university). It is possible that participants are more inclined to attribute the difference between new graduates in the urban university and those in the regional university to their birthplaces rather than to individual competence. It was found that a greater proportion of high school students who were born and raised in Tokyo tended to gain admission to universities in the urban area, in contrast to their counterparts from other regional high schools. High school

graduates in the Tokyo metropolitan area account for 75-55%[3] of those who passed the entrance examinations at universities in Tokyo. Therefore, educational prestige defined in this research is more indicative of reginal difference rather than individual difference in competence. Future research should manipulate social prestige with greater ecological validity in the experimental environment.

The exploratory analysis has revealed the influence of competence and warmth evaluation on shaping participants' hiring attitudes, indicating that the evaluation of targets' warmth has exerted a more substantial impact than competence evaluation. This result replicates previous research, suggesting that warmth dimension, such as morality and cooperativeness, carries more weight in partner selection compared to competence dimension (e.g., Dhaliwal et al., 2022; Luttrell et al., 2022). Consistent with this trend, hiring attitudes are primarily predicted by the mere interdependence of targets, and no significant difference in hiring attitudes was found between high-prestige and low-prestige targets. This might also be indicative of the Japanese cultural value rooted in an interdependent self-construal (Markus & Kitayama, 1991). Recent research has revealed a phenomenon termed the "preference–expectation reversal" in Japan, indicating that the Japanese have a tendency to evaluate interdependent targets positively and anticipate interdependent behavior in others, despite their preference toward independent targets (Hashimoto, 2021; Hashimoto & Yamagishi, 2015). In light of this perspective, it is plausible that Japanese participants were more likely to accept interdependent targets as newcomers.

[3] Success in Tokyo's top five universities: Majority from metropolitan area high schools [Tokyo 5 daigaku gōkaku, taihan ga shuto-ken kō]. (2016, May 1st). *Asahi Shimbun*.

On the other hand, these findings may not always consistent with real-world situations. Study 1a and 1b employed a scenario experiment wherein prestige was manipulated using categories such as regular (tenured) and non-regular (temporary) employees in the Japanese labor market. It is dubious whether the social category information pertaining to employment status (regular (tenured) vs. non-regular (temporary) employee) sufficiently captures the essence of occupational prestige within the Japanese labor market. In Japanese society, occupational prestige is broadly defined by an individual's educational attainments, income, age and gender (e.g., Fujihara, 2020; Hara, 2000). In recent years, researchers have addressed the necessity of updating the scale of occupational prestige scores account for the growing proportion of non-regular (temporary) and female employees in Japanese society (e.g., Genji, 2016). A cross-national comparative study has revealed the segmentation between regular (tenured) and non-regular (temporary) employees in Japan, indicating an individualist mobility regime under the context of neo-liberal globalization across Asian countries (Lee & Shin, 2017). From this perspective, the employment status of regular (tenured) and non-regular (temporary) employees can be construed as an individualistic choice rather than a vertical hierarchical relationship in Japanese labor market. Given this societal background, it becomes necessary to employ more plausible social categories to define occupational prestige in Japanese labor market.

Another consideration is that this research solely utilized a sample of crowdsourced workers, which may introduce bias in the respondents' perceptions of the hiring task. In the real world, crowdsourced workers are likely to perceive similarities with some of the fictional targets presented in the scenario (e.g., non-regular (temporary) employees and new graduates from regional universities). Such perceived similarities may lead participants to exhibit a favorable

attitude toward low-prestige targets in the recruitment task. Future research should incorporate more diverse samples and conduct scenario experiments with more plausible manipulations.

Chapter 3: Individuating Information in Cross-Class Interactions

The individual's social position in a social stratification system can be decided by either the amount of resource or prestige (e.g., occupation and education attainments). Three studies presented in Chapter 2 mainly focus on the prestige. Nevertheless, it is difficult to make a consensus on what defines prestige in a one-shot scenario experiment, that participants showed significant preference in interdependent candidates whereas the impacts of occupational and educational prestige were hardly found. Therefore, Chapter 3 primarily lies a focus on resource disparities across social classes, aiming to unveil individual's preference in social partner selection and resource exchange under resource disparities.

The facilitation of resource sharing between the "haves" and "have-nots." is difficult because human social preference lies in similarity, which is well documented as the status homophily (Lazarsfeld & Merton, 1954). The social identity theory (SIT) provides an insightful perspective in explaining individuals' homophilous preference, positing that people tend to establish their social identities through the cognitive categorization of social groups and similarity or homogeneity between themselves and other group members (Tajfel & Turner, 2001; Tajfel et al., 1971). Recent psychological research has unpacked homophilous preference under inequality from the perspective of SIT (Aksoy, 2019; Jetten et al., 2021). People incline to categorize "us" versus "them" based on similarity in wealth (Jetten et al., 2017). Furthermore, they are likely to describe themselves and others by wealth-related words in a highly unequal social system (Peters et al., 2022). Wealth serves as social class signals, inducing cross-class prejudice and stereotypes (Connor et al., 2021). For instance, the poor (in low socioeconomic status) is generally perceived as parasitic (e.g., opportunistic, exploitative) and incompetent (Cuddy et al., 2008). These social class stereotypes further affect people's judgment in resource exchange (Russell & Fiske, 2008). The relatively rich are likely to share more resources with

other ingroup (rich) members than with outgroup (poor) members (Martinangeli & Martinsson, 2020); meanwhile, the poor show strong implicit evaluative preference towards rich people (Rudman et al., 2002).

On the other hand, the bounded generalized reciprocity (BGR) hypothesis (Yamagishi et al., 1999) argues that mutual outcome interdependence, rather than mere social category commonalities, triggers resource sharing with other members from an evolutionary perspective. In other words, a group boundary only emerges when people decide whether to cooperate with others through the expectation of mutual cooperation (Yamagishi & Kiyonari, 2000). In line with this argument, people embedded in dynamic social networks in repeated PDG tend to selectively form social ties with partners who have good reputations (Rand et al., 2011; Wang et al., 2012). A meta-analysis on ingroup favoritism revealed that the mechanism of benefiting ingroup over outgroup members is better explained by BGR than SIT perspectives (Balliet et al., 2014). These findings suggest that cooperativeness-based preference can override group boundaries and promote resource exchange among cooperators regardless of their social categories.

However, a conclusion on whether SIT or BGR is more appropriate in explaining dominant strategies for rich–poor partner selection has not yet been reached. In Chapter 3, the selective play paradigm (Hayashi & Yamagishi, 1998) was applied to test whether people make category-based partner selections (rooted in SIT) or cooperativeness-based partner selections (rooted in BGR), in a situation where relatively rich and poor group categories are manipulated as salient. In the selective play paradigm, players employ both selection (to select whom to interact with) and action strategies (cooperation or defection) in repeated interactions. The paradigm incorporates the cost-benefit structure in real-world resource exchanges and highlights

the importance of cooperativeness for players in finding better partners to achieve of mutual benefits.

Beyond partner selection and resource exchange strategies, Chapter 3 also discussed the relationship between generalized trust and individual's behavioral patterns since individuals' sensitivity to others' cooperativeness differs according to generalized trust. Generalized trust is a belief on human benevolence grounded in an expectation toward others' cooperativeness; it plays an essential role in obtaining resources under social uncertainty (Yamagishi et al., 1995). According to the emancipation theory of trust (Yamagishi & Yamagishi, 1994), generalized trust serves as an incentive for relationship extension. In other words, generalized trust is a sort of cognitive bias on risk-proneness when people cultivate new social relationships for better outcomes (Yamagishi, 2011). For resource exchanges, individuals with high generalized trust (high trusters) are more sensitive to opportunity costs (i.e., the value of what is lost by making a certain choice) than those with low generalized trust (low trusters). Hayashi and Yamagishi (1998) indicated the essential role of generalized trust in the selective play paradigm through the promotion of the selective tie-formation strategy for better outcomes. If the cooperativeness-based partner selection is more plausible than the category-based partner selection, generalized trust would trigger tie-formation from the resource rich to the cooperative poor beyond social class homophily.

Two studies presented in Chapter 3 examined three hypotheses. First, when cooperativeness is equal among potential partners, people (rich-group players) are more likely to choose the rich (ingroup) than the poor (outgroup) partners (Hypothesis 1a) and to cooperate with the former (Hypothesis 1b). Second, when the poor (outgroup) partners are more cooperative than the rich (ingroup), people are more likely to choose the poor (outgroup) than the

rich (ingroup) partners (Hypothesis 2a) and cooperate with the former (Hypothesis 2b). Finally, people with high generalized trust tend to choose cooperative partners regardless of their categorical memberships (Hypothesis 3).

3.1 Study 2a

3.1.1 Method

Participants

The experiment was conducted on June 15, 2019. A total of 254 Japanese participants from an online crowdsourcing service (Lancers) were recruited. Each participant received 300 yen (approximately $2) as remuneration. After the survey was completed, the top five participants were selected as the winners based on the points they earned in the game and were given another 1000 yen (approximately $8) as bonus.

Data from 30 participants who did not complete the task, three participants who withdrew their consents for analysis, and five participants whose experimental manipulation[4] failed were excluded. Consequently, data from 213 participants (M_{age} = 40.88, SD = 9.82, 132 males and 81 females) were used in the analysis.

Experimental design

A modified repeated PDG incorporating the selective play paradigm was utilized (Hayashi & Yamagishi, 1998). At the beginning of the game, participants were informed that the

[4] Due to programming errors, the five participants had a round (1) in which they had belonged to the poor group because they decreased their points and/or (2) in which they needed to select one from two poor-group partners.

experiment was a multi-player online experiment including paired activities and that all players would play the game with a unique ID to ensure anonymity. Participants were told that they would be allocated to either the rich or the poor group based on the initial points randomly given to them. The cut-off value of rich and poor groups was 1000 points. All participants were allocated to the rich group with 1530 initial points. To emphasize the rich–poor group category, a badge (rich: large money bag, poor: small money bag) was shown above their IDs and points to present their current group status. Participants were told that their group would be determined according to the points at each round.

Then, participants (rich–group players) played PDG for 30 rounds. Each round involved a two-step decision-making process: (1) selecting a partner (Figure 10a) and (2) choosing whether to cooperate or defect (Figure 10b). Participants were informed that at each round, they were privileged to choose a partner from either the rich or poor groups. The points of the potential partners varied and ranged from $P / 10 + 100$ to $P / 10 + 300$ for potential poor-group partners, and from $P - 300$ to $P + 300$ for potential rich-group partners, where P represents the participants' points at each round. The potential partners were different across the 30 rounds; they were all programmed player bots, although participants did not know about them. After choosing a partner from the rich or poor group, participants played PDG with that partner. In addition to the standard PDG, payoffs in the game were based on the mutual decisions of the pair. If both players chose to cooperate, each player received 50 points. If both chose to defect, the pair received no points. If one player chose to cooperate and the other chose to defect, the cooperator lost 50 points and the defector received 100 points. At the end of each round, the decisions and the points earned by each player were displayed.

Figure 10 (a)

Screenshot of partner selection in Study 2a

Figure 10 (b)

Screenshot of resource exchange in Study 2a

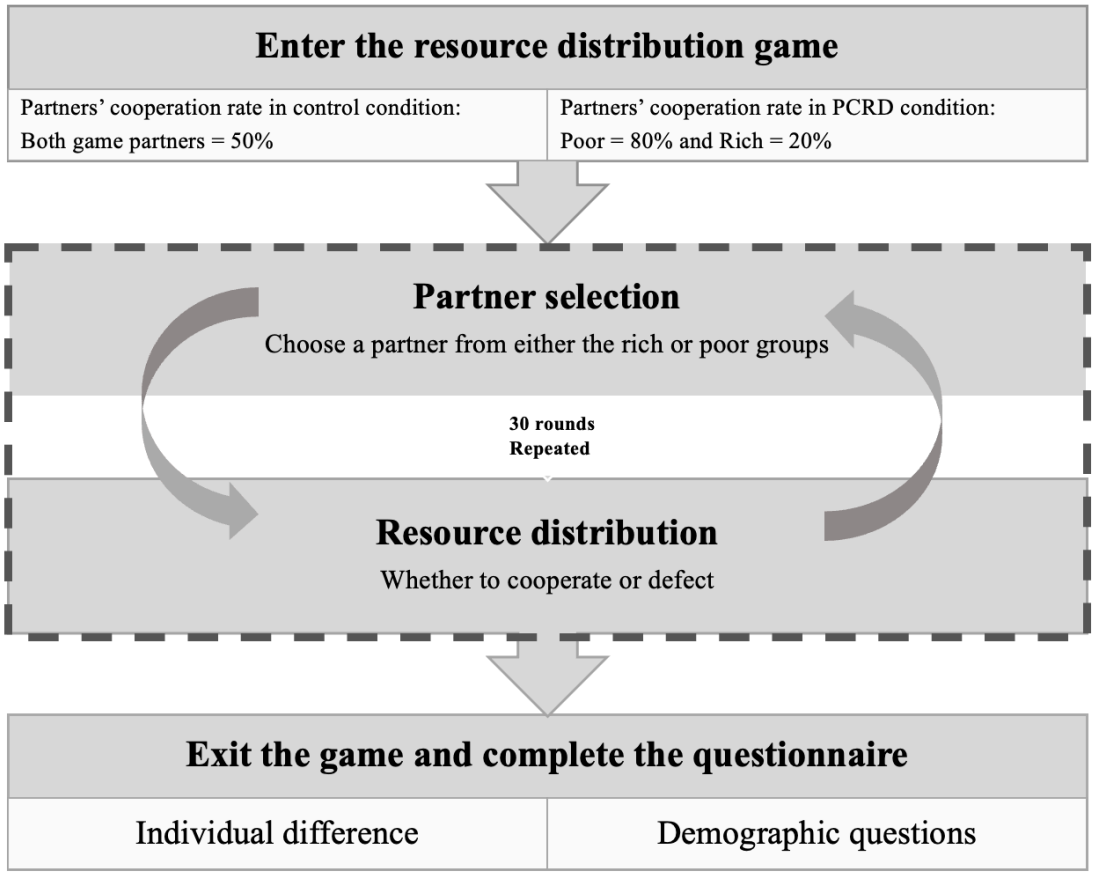
Study 2a uses a between-participant design. Participants were randomly assigned to either control or poor-cooperator-rich-defector (PCRD) condition. In the control condition (n = 107), both rich and poor partner bots cooperated with participants randomly (at a 50% probability). In the PCRD condition (n = 106), poor-group partner bots cooperated with participants with an 80% probability, whereas rich-group partner bots cooperated with a 20% probability.

Procedure

The experiment was programmed in oTree (Chen et al., 2016). At the beginning, participants were instructed to play a resource distribution game with multiple online players. After being given the instruction and completing a practice session, participants took part in the game in either the control or PCRD conditions. Participants did not know about the total number of rounds in the game. Upon completion of the 30-round game, participants answered generalized trust and demographic questions (age, gender, education, and occupation), followed by a debriefing. The procedure of Study 2a is shown in Figure 11.

Figure 11

Experimental procedure of PDG in Study 2a



Measures

Generalized trust. Generalized trust was measured by the six-item General Trust Scale (Yamagishi & Yamagishi, 1994) using a five-point Likert scale from 1 (completely disagree) to 5 (completely agree). The items are "Most people are trustworthy," "Most people will respond in kind when they are trusted by others," "Most people are trustful of others," "Most people are basically honest," "I am trustful," and "Most people are basically good and kind." Cronbach's α was .86.

3.1.2 Results

Trend in partner choice

As the game involved two-step decision-making (partner choice and cooperation/defection) at each round, participants' (rich-group players') strategic behaviors were defined as a combination of the behavior at each step and classified into four types: (1) choose a poor-group partner and cooperate (CP [cooperate with the poor] strategy); (2) choose a poor-group partner and defect (DP [defect the poor] strategy); (3) choose a rich-group partner and cooperate (CR [cooperate with the rich] strategy); and (4) choose a rich-group partner and defect (DR [defect the rich] strategy). Of those, we were more interested in the preference for CP strategy than the others. Participants' behavioral patterns, including the choice of and cooperation with poor-group partners, are presented in Figure 12.

Figure 12 shows the descriptive statistics of participants' behavioral strategies. The proportion of poor-group partner (bot) choices were positively related to the cooperation ratio in both conditions (control: $r = .32$, $p = .002$; PCRD: $r = .36$, $p < .001$; see Figure 12a). In the control condition, participants were more likely to adopt the DR (choosing a rich partner and defecting) strategy (36.9%). In the PCRD condition, participants tended to use the CP (choosing a poor partner and cooperating) strategy (39.9%) over the other strategies (see Figure 12b). Participants in the PCRD condition were more likely to choose poor-group partner bots than those in the control condition (see Figure 12c). A greater number of participants adopted the CP strategy in the PCRD condition than in the control condition (see Figure 12d).

Figure 12(a)

Scatterplots of poor-group partner (bot) choice ratio and participants' cooperation ratio in control (n = 107) and poor-cooperator-rich-defector (PCRD) condition (n = 106)

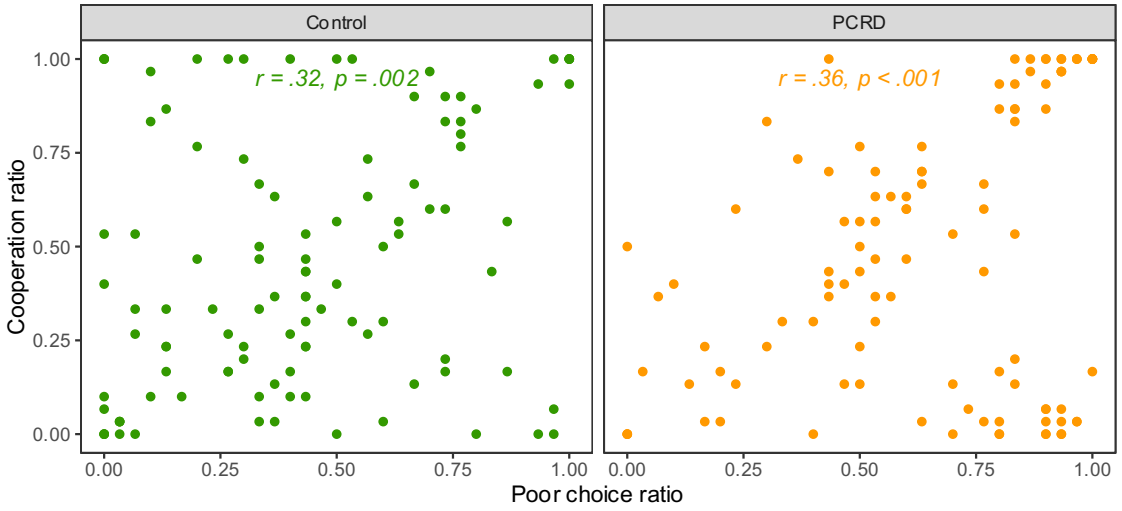
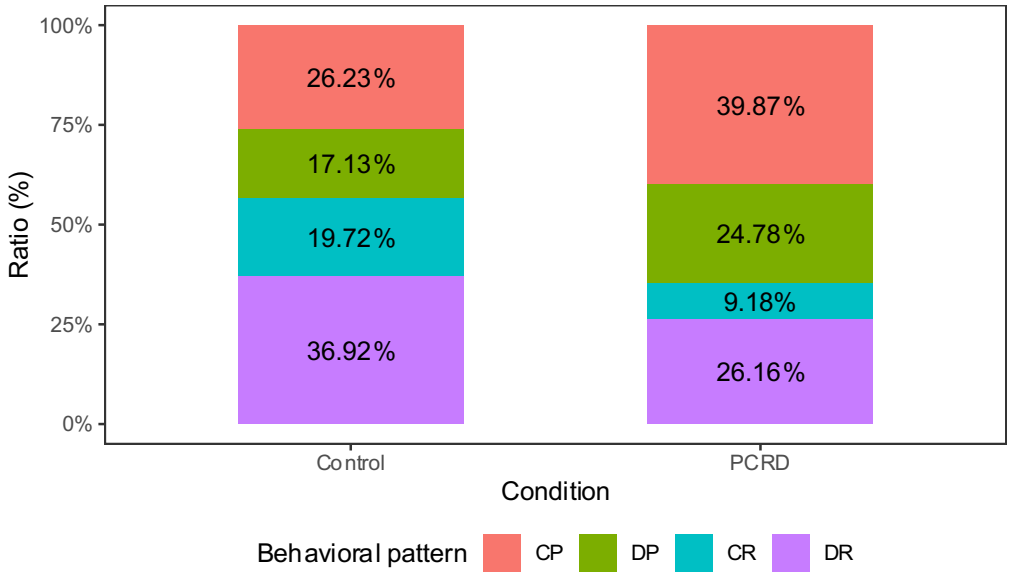


Figure 12(b)

Distribution of each behavioral strategy across 30 rounds among 213 participants



Note. CP = choose a poor-group partner and cooperate; DP = choose a poor-group partner and defect; CR = choose a rich- group partner and cooperate; and DR = choose a rich-group partner and defect.

Figure 12(c)

Proportion of participants who chose a poor-group partner in each round

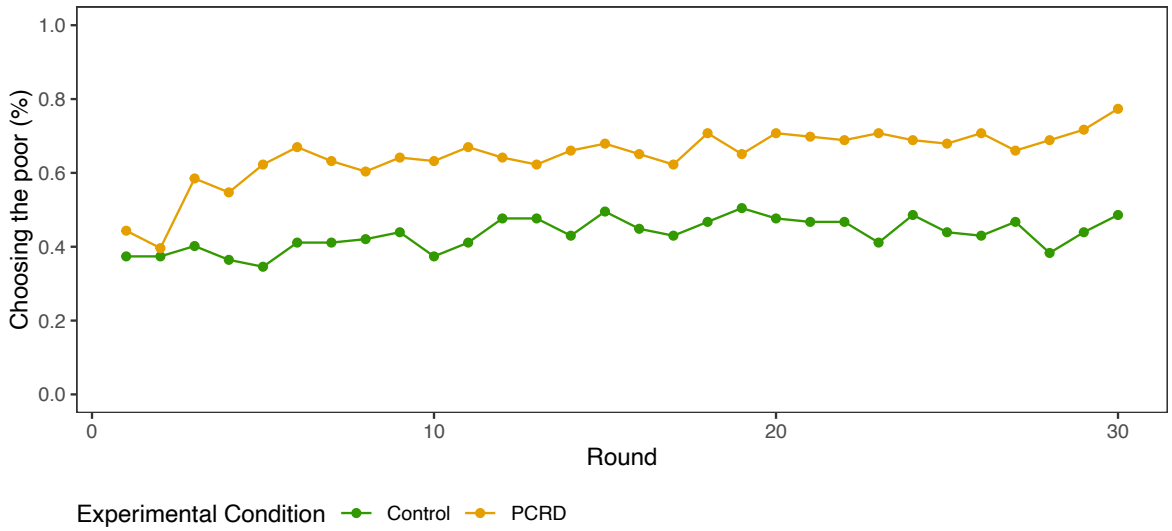


Figure 12(d)

Proportion of participants who cooperated with a poor-group partner in each round

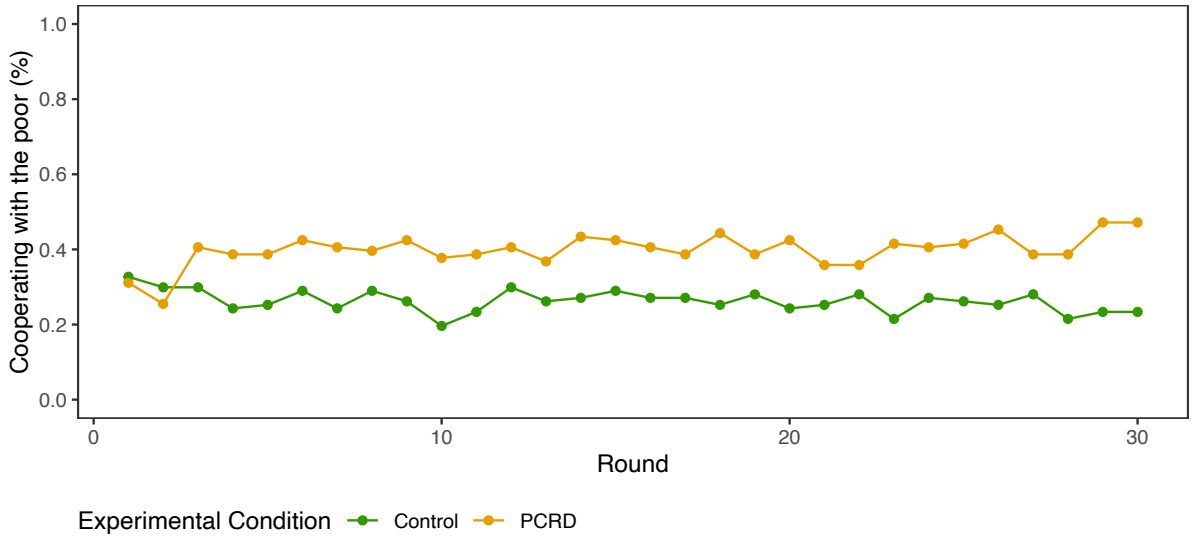
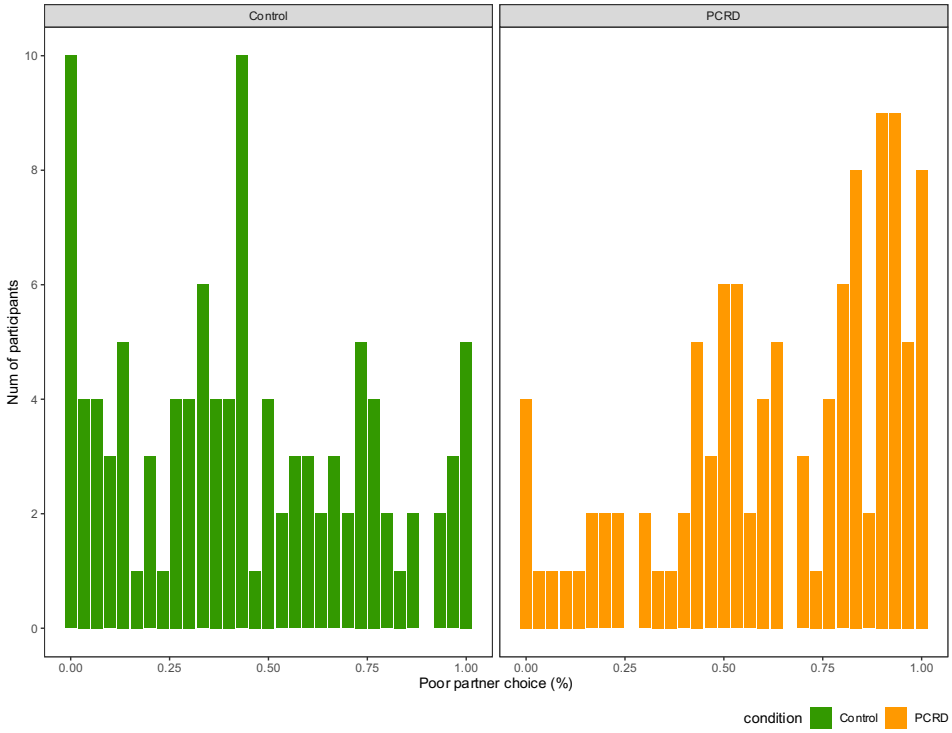


Figure 13 shows the distribution of the poor-group partner (bot) choice ratio in the control and PCRD conditions, respectively. A proportion test was used to compare the preference for poor- over rich-group partners across the 30 rounds. Participants (rich-group players) in the PCRD condition were more likely to choose the poor-group partners across the 30 rounds than those in the control condition, χ^2 (1) = 290.59, $p < .001$. One-sample proportion tests in each condition also indicated that the proportion of poor-group partners chosen was significantly lower than 50% in the control condition (43.36%), χ^2 (1) = 56.27, $p < .001$, but higher than 50% in the PCRD condition (64.65%), χ^2 (1) = 272.57, $p < .001$. These results revealed that participants preferred cooperative poor-group partners over selfish rich-group partners.

Figure 13

Distribution of the poor-group partner (bot) choice ratio in the control condition (n = 107) and the poor-cooperator-rich-defector (PCRD) condition (n = 106) in Study 2a



Two-step decision-making and the role of generalized trust

We then fitted a Bayesian multinominal regression model including the experimental condition, generalized trust (centered), and their interaction effects as explanatory variables to estimate the preferences for the four strategies (CP, DP, CR, and DR) across the 30 rounds. CP strategy was set as the baseline for comparison with other strategies.

Table 9 presents the parameter estimates. Calculated values based on the combinations of the parameter estimates in each condition are presented in Figures 14a (showing the preferences for each strategy) and 14b (showing the effect of generalized trust on the preferences for each strategy). Note that all participants were allocated to the rich group.

Table 9

Preference for partner choice and cooperation/defection strategies in the selective play paradigm (Study 2a, Japan)

	Estimate	Posterior SD	95% CI
DP strategy: Intercept (Control condition)	**-0.44**	0.06	[-0.55, -0.33]
CR strategy: Intercept (Control condition)	**-0.30**	0.05	[-0.40, -0.20]
DR strategy: Intercept (Control condition)	**0.33**	0.05	[0.24, 0.42]
DP strategy: PCRD condition	0.01	0.07	[-0.14, 0.15]
CR strategy: PCRD condition	-0.14	0.08	[-0.29, 0.01]
DR strategy: PCRD condition	**-0.67**	0.1	[-0.87, -0.47]
DP strategy: Generalized trust (Control condition)	**-1.14**	0.09	[-1.32, -0.98]
CR strategy: Generalized trust (Control condition)	**0.41**	0.08	[0.26, 0.56]
DR strategy: Generalized trust (Control condition)	**-0.52**	0.12	[-0.76, -0.29]
DP strategy: PCRD condition × Generalized trust	**-0.69**	0.07	[-0.82, -0.57]
CR strategy: PCRD condition × Generalized trust	-0.12	0.06	[-0.24, 0.01]
DR strategy: PCRD condition × Generalized trust	**-0.57**	0.09	[-0.75, -0.39]

Note. CI = credible interval. The Bayesian Multinomial regression model was estimated with a logit link including four chains (5000 warm-up and 10000 iterations in each chain). The estimation was based on 852 observations from 213 respondents, including the frequency distributions of four strategies (CP = choose a poor-group partner and cooperate (baseline); DP = choose a poor-group partner and defect; CR = choose a rich-group partner and cooperate; and DR = choose a rich-group partner and defect) across 30 rounds. Generalized trust was mean centered. Boldface indicates estimates for which the 95% CI do not overlap zero.

Figure 14(a)

Probability of occurrence of four strategies in the control (n = 107) and poor-cooperator-rich-defector (PCRD) conditions (n = 106)

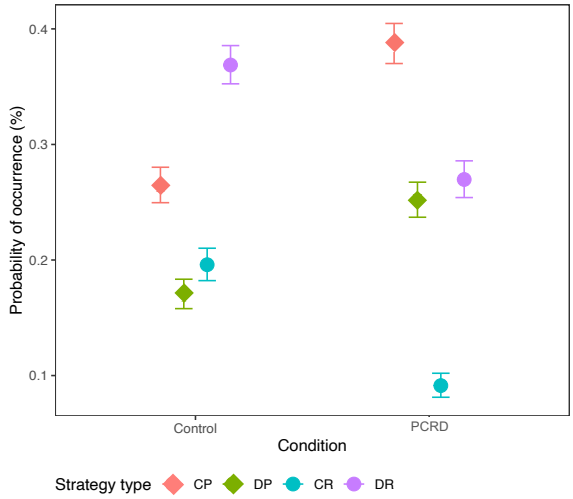
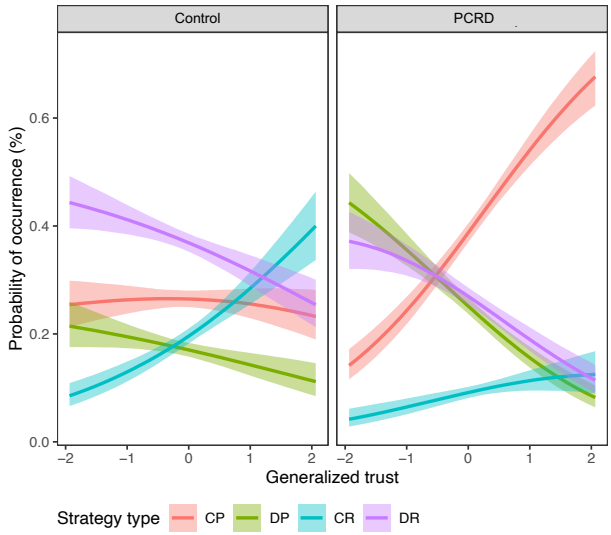


Figure 14(b)

Conditional effect of generalized trust on triggering each strategy in each condition



Note. CP = choose a poor-group partner and cooperate (baseline); DP = choose a poor-group partner and defect; CR = choose a rich-group partner and cooperate; and DR = choose a rich-group partner and defect. Generalized trust was mean centered. All participants were allocated to the rich group. The Figures are depicted based on the estimates in Table 9. Error bars and borders indicate 95% credible intervals. $N = 213$.

In the control condition, DR strategy was preferred over other strategies; participants (rich-group players) were more likely to choose and defect rich-group partners when the cooperativeness of rich- and poor-group partners was equal. Therefore, Hypothesis 1a was supported but 1b was not. In contrast, CP strategy was preferred over other strategies in the PCRD condition. Participants were more likely to choose and cooperate with poor-group partners when they were cooperative. Therefore, Hypotheses 2a and 2b were supported.

In addition, the preference for CP strategy over other strategies was boosted by generalized trust. This indicates that participants with high generalized trust were more likely to choose and cooperate with cooperative poor-group partners. Meanwhile, participants with high generalized trust also showed a tendency to choose and cooperate with rich-group partners in the control condition where partners' cooperativeness did not differ across the groups. Therefore, Hypothesis 3 was only supported in the PCRD condition.

To further elucidate how individual differences shaped people's behavior patterns, an exploratory analysis using a Bayesian multinominal regression model was performed to investigate the relationship between participants' subjective socioeconomic status (Adler et al., 2000) and four distinct behavior strategies in the game. The results revealed that participants with a higher subjective socioeconomic status tended to adopt DR strategy in the control condition. In contrast, high-status participants were inclined to adopt CR strategy in the PCRD condition. This reverse pattern suggests that high-status individuals may adopt diverse strategies based on the actions of their potential social partners.

3.1.3 Discussion

Study 2a investigated rich-group players' partner choice and cooperation strategies in the modified selective play paradigm including rich- and poor-group partner bots. Participants (rich-group players) showed a strong tendency to choose other rich-group partners but defected them when their cooperativeness was equivalent to that of poor-group partners. In contrast, participants showed a clear tendency to choose and cooperate with poor-group over rich-group partners when the former was more cooperative than the latter.

The findings suggest that cooperativeness has a stronger impact on partner selection than rich–poor group categories. Although the rich-group identification is known to induce cooperation with the same rich-group (ingroup) players (Martinangeli & Martinsson, 2020), the current findings are consistent with the theorization of groups in BGR, wherein group boundaries are not determined based on mere category membership but on cooperative interactions among members in the same social network (Yamagishi et al., 1999). Furthermore, the current findings extend the scope of this theory by stipulating that the ingroup/outgroup boundary of the generalized exchange system could spontaneously emerge through the expectations of others' cooperativeness.

Generalized trust facilitated the preference for cooperative outgroup (poor) partners. High trusters are superior in social intelligence or processing social information about potential partners' cooperativeness (Yamagishi, et al., 1999). In the current experiment, once rich-group players who had high generalized trust exchanged resources with cooperative poor-group partners, they would realize the counterparts' trustworthiness and easily achieve cross-class resource exchanges.

The relationship between poor choice ratio and cooperation rate was positive and significant in both the control and PCRD conditions. This finding indicates that participants were less likely to exploit poor partners regardless of their cooperativeness. However, the current experimental design could not distinguish strategic cooperative behavior with cooperative others from mere charity giving or pure altruism to "kind-hearted but poor" players. Another caveat is that participants were forced to choose their partner in the PCRD condition from poor cooperators or rich defectors. In this research design, the rich–poor partner selection was confounded with cooperator preference and defector aversion. Therefore, Study 2b examined the same hypotheses by adding the rich-cooperator-poor-defector (RCPD) condition, in which poor-group partners behaved selfishly while rich-group partners behaved cooperatively. We assume that players allocated to the rich-group are more likely to choose and cooperate with cooperative rich-group partners compared to selfish poor-group partners.

In Study 2a, generalized trust was related to the choice of and cooperation with ingroup (rich) partners when ingroup and outgroup partners' cooperativeness did not differ. This was not what we originally expected, so further examination is necessary to determine if the trend is robust. We also conducted the second experiment in China to test the robustness and universality of the current findings.

3.2 Study 2b

3.2.1 Method

Participant

The experiment was conducted between November 15 and 20, 2019. Two faculty members of a department of Jilin University in China asked 496 Chinese undergraduate and

graduate students to participate in the study through the department's student social networking service group. Participants took part in the online experiment by clicking a link and completing the task between 8 am and 10 pm. A total of 170 participants completed the task. Each participant received 15 Yuan (approximately $2) as remuneration. After all the experiments were completed, the top five participants were selected as the winners based on their performance and received 60 Yuan (approximately $8) as a bonus.

Data from three participants who withdrew their consent and 17 participants whose experimental manipulation failed were excluded. The final sample contained responses from 150 participants (M_{age} = 21.62, SD = 2.49, 94 males and 56 females).

Procedure

The experimental procedure was similar to that in Study 2a except for the addition of the RCPD condition. Participants played a 30-round PDG based on the modified selective play paradigm. In the control condition (n = 42), both rich- and poor-group partner bots cooperated with participants (rich-group players) at a 50% probability. In the PCRD condition (n = 49), poor-group partner bots cooperated with participants at an 80% probability, and rich-group player bots cooperated with participants at a 20% probability. In the RCPD condition (n = 59), rich-group partner bots cooperated with participants at an 80% probability and poor-group partner bots cooperated with participants at a 20% probability. Additionally, the money bag badges were presented to each player.

Measures

Generalized trust. Generalized trust was measured by the Chinese version of the 6-item General Trust Scale (Wang & Yamagishi, 1999), using a five-point Likert scale from 1 (completely disagree) to 5 (completely agree). Cronbach's α was .86.

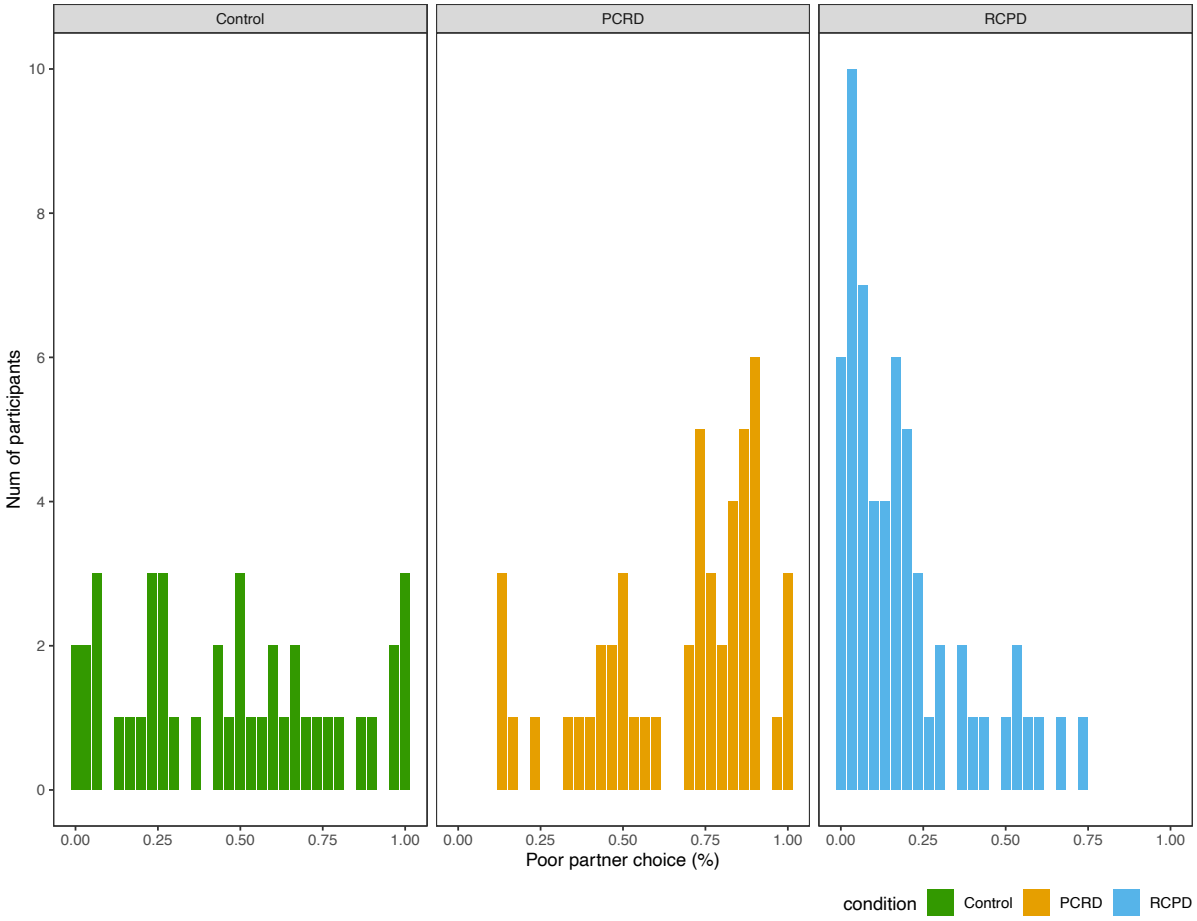
3.2.2 Results

Trend in partner choice

Figure 15 shows the distribution of the poor-group partner (bot) choice ratio in the control, PCRD, and RCPD conditions. A proportion test was used to compare the preference for poor- over rich-group players across 30 rounds among the three conditions. A significant difference was evident in the preference for poor-group players among the control condition (46.98%), the PCRD condition (67.14%), and the RCPD condition (18.64%), χ^2 (2) = 788.23, p < .001. Residual tests revealed the significant differences across the three conditions (all ps < .001); compared to the control and RCPD conditions, participants (rich-group players) in the PCRD condition were more likely to choose the poor-group over rich-group players as a partner across the 30 rounds. One-sample proportion tests also indicated that the proportion of poor-group players chosen as a partner was significantly lower than 50% in the control condition (46.98%), χ^2 (1) = 4.46, p = .035 and in the RCPD condition (18.64%), χ^2 (1) = 694.85, p < .001, but higher than 50% in the PCRD condition (67.14%), χ^2 (1) = 172.11, p < .001. These results revealed that participants preferred poor-group players as partners if they were cooperative.

Figure 15

Distributions of poor-group partner (bot) choice ratio in the control (n = 42), poor-cooperator-rich-defector (PCRD) (n = 49), and rich-cooperator-poor-defector (RCPD) (n = 59) conditions in Study 2b



Two-step decision-making and the role of generalized trust

The behavioral strategies of participants (rich-group players) are shown in Figure 16. The proportion of poor-group partner (bot) choices were positively related to participants' cooperation ratio in the PCRD condition ($r = .52$, $p < .001$; see Figure 16a). Participants were most likely to adopt the CP strategy in the control (36.7%) and PCRD (48.6%) conditions, and the CR strategy (55.1%) in the RCPD condition (see Figure 16b). Participants in the PCRD condition showed an increasing trend of selecting a poor-group partner across the rounds, compared to those in the RCPD condition who showed a decreasing trend (see Figure 16c). Participants in the RCPD condition were less likely to adopt the CP strategy compared to those in the control or PCRD conditions. A greater proportion of participants adopted the CP strategy in the PCRD condition than in the RCPD condition (see Figure 16d).

Figure 16(a)

Scatterplots of poor-group partner (bot) choice ratio and participants' cooperation ratio in the control (n = 42), poor-cooperator-rich-defector (PCRD) (n = 49), and rich-cooperator-poor-defector (RCPD) (n = 59) conditions

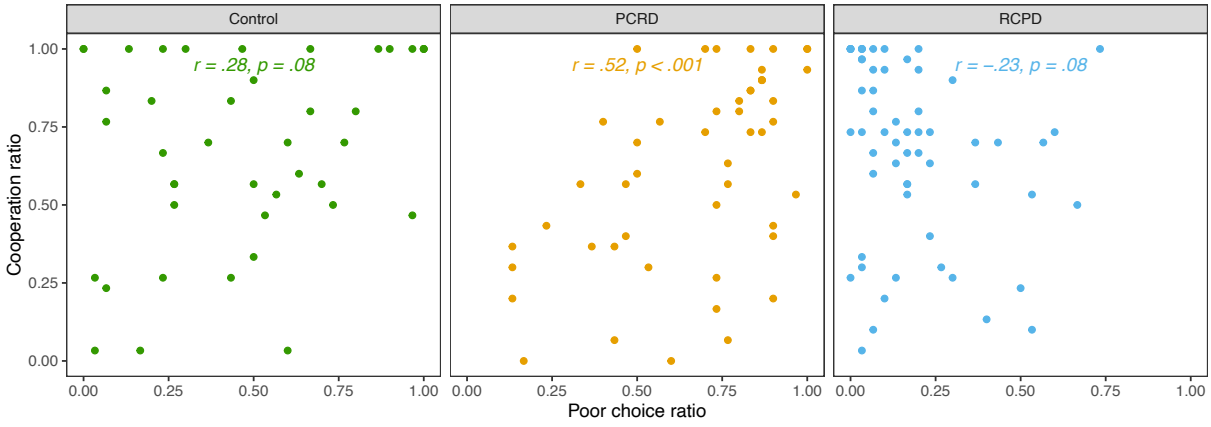
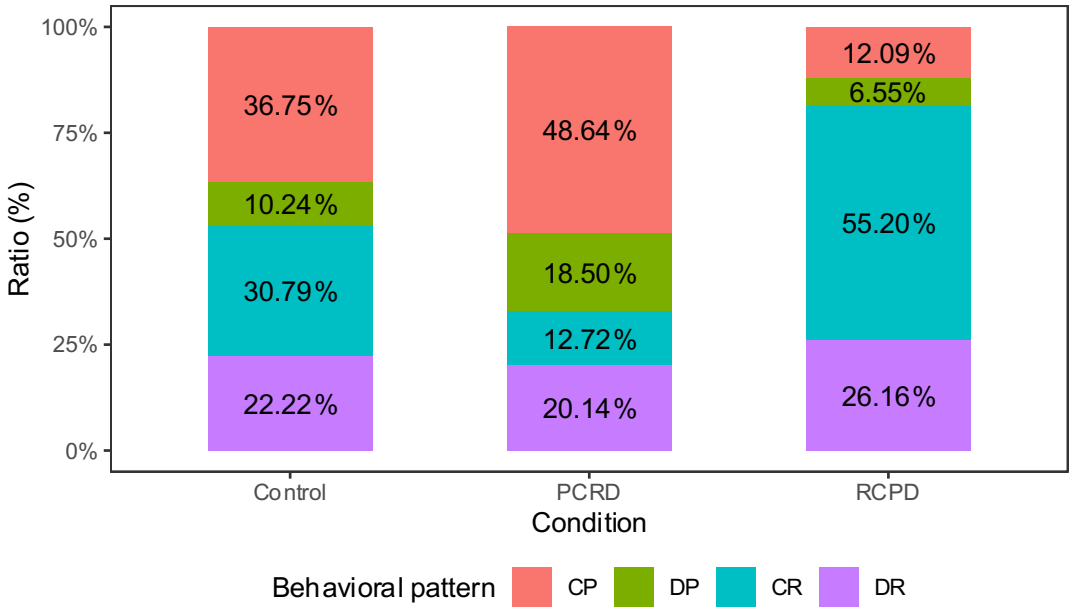


Figure 16(b)

Distribution of each behavioral strategy across 30 rounds among 150 participants.



Note. CP = choose a poor-group partner and cooperate; DP = choose a poor-group partner and defect; CR = choose a rich-group partner and cooperate; and DR = choose a rich-group partner and defect.

Figure 16(c)

Proportion of participants who chose a poor-group partner in each round

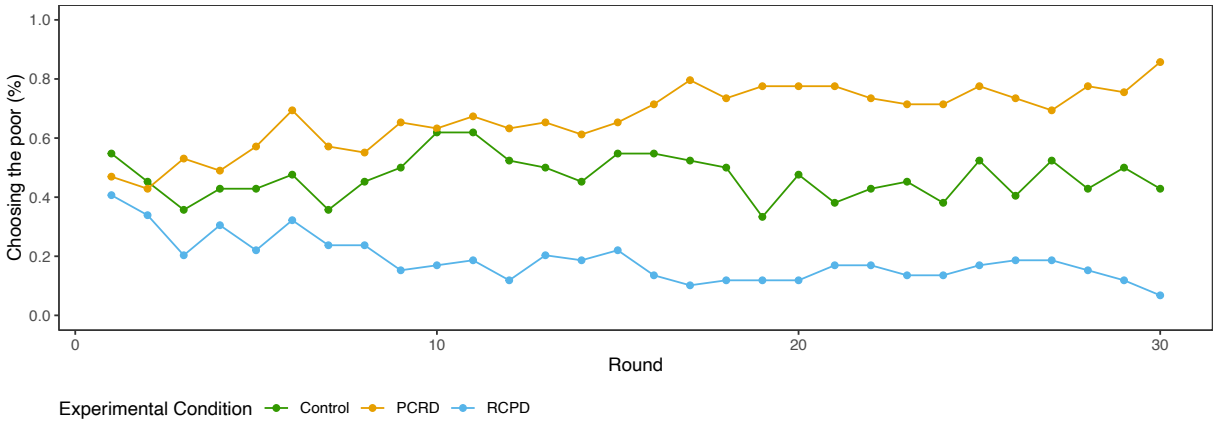
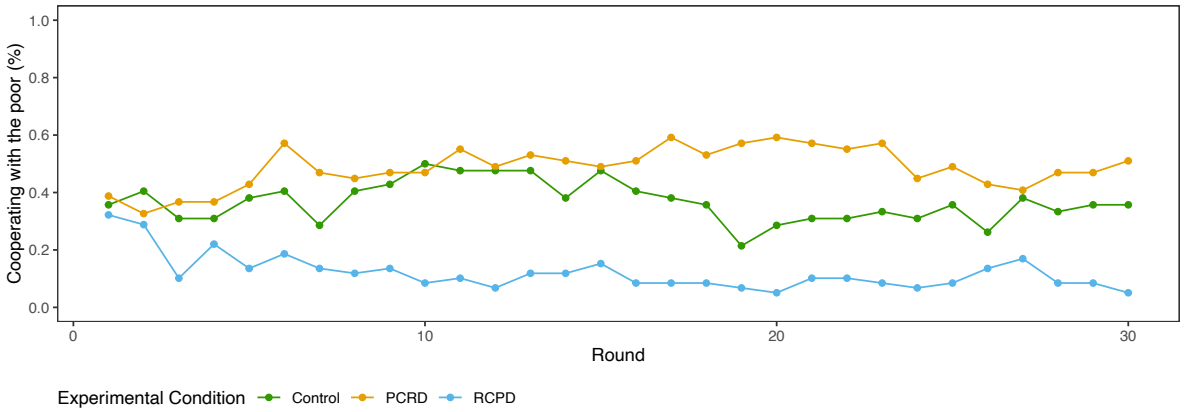


Figure 16(d)

Proportion of participants who cooperated with a poor- group partner in each round



As in Study 2a, a Bayesian multinomial regression model was used to estimate the preferences for four (CP (baseline), DP, CR, and DR) strategies across the 30 rounds. The results are shown in Table 10. Calculated values based on the combinations of the parameter estimates in each condition are presented in Figure 17a (showing the preferences for each strategy) and 17b (showing the effect of generalized trust on the preferences for each strategy).

Table 10

Preference for partner choice and cooperation/defection strategies in the selective play paradigm (Study 2b, China)

	Estimate	Posterior SD	95% CI
DP strategy: Intercept (Control condition)	**-1.38**	0.11	[-1.59, -1.17]
CR strategy: Intercept (Control condition)	**-0.18**	0.07	[-0.31, -0.04]
DR strategy: Intercept (Control condition)	**-0.55**	0.08	[-0.71, -0.4]
DP strategy: PCRD condition	**0.36**	0.13	[0.11, 0.62]
CR strategy: PCRD condition	**-1.16**	0.11	[-1.37, -0.95]
DR strategy: PCRD condition	**-0.42**	0.11	[-0.63, -0.22]
DP strategy: RCPD condition	**0.74**	0.16	[0.42, 1.05]
CR strategy: RCPD condition	**1.69**	0.10	[1.49, 1.9]
DR strategy: RCPD condition	**1.36**	0.12	[1.14, 1.59]
DP strategy: Generalized trust (Control condition)	**-0.64**	0.12	[-0.88, -0.41]
CR strategy: Generalized trust (Control condition)	**-0.20**	0.09	[-0.38, -0.02]
DR strategy: Generalized trust (Control condition)	**-0.49**	0.10	[-0.69, -0.31]
DP strategy: PCRD condition × Generalized trust	-0.11	0.16	[-0.43, 0.21]
CR strategy: PCRD condition × Generalized trust	-0.21	0.15	[-0.51, 0.1]
DR strategy: PCRD condition × Generalized trust	**-0.43**	0.14	[-0.71, -0.15]
DP strategy: RCPD condition × Generalized trust	-0.23	0.20	[-0.64, 0.18]
CR strategy: RCPD condition × Generalized trust	0.24	0.14	[-0.04, 0.53]
DR strategy: RCPD condition × Generalized trust	0.16	0.15	[-0.15, 0.47]

Note. CI = credible interval. The Bayesian Multinomial regression model was estimated with a logit link including four chains (5000 warm-up and 10000 iterations in each chain). The estimation was based on 600 observations from 150 respondents, including the frequency distributions of four strategies (CP = choose a poor-group partner and cooperate (baseline); DP = choose a poor-group partner and defect; CR = choose a rich-group partner and cooperate; and DR = choose a rich-group partner and defect) across 30 rounds. Generalized trust was mean centered. Boldface indicates estimates for which the 95% CI do not overlap zero.

No substantial difference was identified in the preference for CP and CR strategies in the control condition (see Figure 17a). Therefore, Hypotheses 1a and 1b were not supported. In the other conditions, participants (rich-group players) preferred to select and cooperate with cooperative partners. Participants in the PCRD condition were more likely to employ CP over CR strategy, while participants in the RCPD condition were more likely to employ CR over CP strategy. Therefore, Hypotheses 2a and 2b were supported.

Participants with high generalized trust were more likely to employ CP strategy in the PCRD condition and employ CR strategy in the RCPD condition (see Figure 17b). This indicated that participants (rich-group players) with high generalized trust were more likely to choose and cooperate with cooperative players. However, participants with high generalized trust also tended to employ CP strategy in the control condition where poor and rich group players did not differ in their cooperativeness. Therefore, Hypothesis 3 was partially supported.

Similar to Study 2a, an exploratory analysis pertaining to the effect of subjective socioeconomic status was conducted. In contrast with the results of Study 2a, the findings showed that individuals of higher subjective status were likely to adopt CP strategy over other strategies in the control condition, whereas CR strategy was preferred in the RCPD condition. Specifically, participants with lower subjective socioeconomic status tended to utilize CR strategies more than their high-status counterparts when rich group players behaved cooperatively.

Figure 17(a)

Probability of occurrence of four strategies in the control (n = 42), poor-cooperator-rich-defector (PCRD) (n = 49), and rich- cooperator-poor-defector (RCPD) conditions (n = 59)

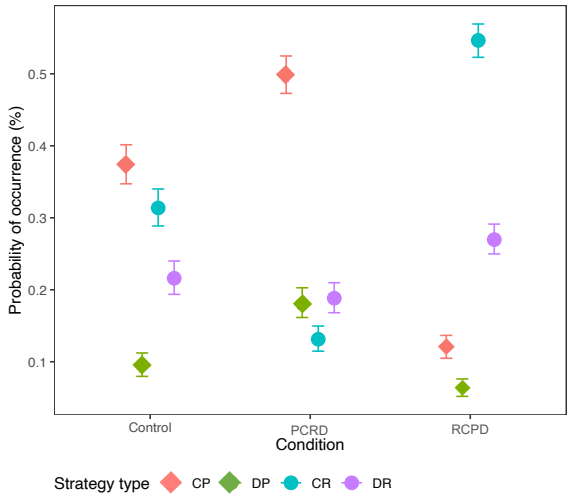
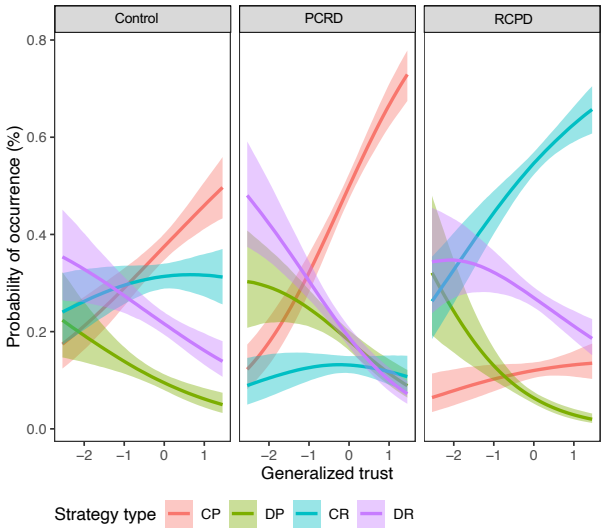


Figure 17(b)

Conditional effect of generalized trust on triggering each strategy in each condition



Note. CP = choose a poor-group partner and cooperate (baseline); DP = choose a poor-group partner and defect; CR = choose a rich-group partner and cooperate; and DR = choose a rich-group partner and defect. Generalized trust was mean centered. All participants were allocated to the rich group. Error bars and borders indicate 95% credible intervals. *N* = 150.

Cross-cultural comparison

The cooperation rates in PDG were compared across the 30 rounds between Japanese (Study 2a) and Chinese (Study 2b) participants in the control and PCRD conditions. Chinese participants were more cooperative than Japanese participants in the control condition ((Chinese: 54.05%, Japanese: 32.46%), χ^2 (1) = 168.12, $p < .001$) and in the PCRD condition ((Chinese: 50.94%, Japanese: 38.64%), χ^2 (1) = 60.59, $p < .001$). In terms of generalized trust, Chinese participants ($M = 21.26$, $SD = 4.44$) were more trustful than Japanese participants (($M = 17.62$, $SD = 4.35$), t (317.11) = 7.77, $p < .001$, *Cohen's d* = 0.83).

3.2.3 Discussion

A strong preference for cooperative partners was observed regardless of their categorical membership in the PCRD and RCPD conditions. In the RCPD condition, a significant positive relationship was observed between the cooperative-rich choice ratio and the cooperation ratio. The trend is interpreted as defector aversion by comparing selfish poor-group partners with cooperative rich-group counterparts to pursue better outcomes rather than mere charity giving or pure altruism for poor-group partners. Specifically, high trusters were more likely to select and cooperate with interaction partners based on their cooperativeness.

Participants preferred both poor- and rich-group partners and cooperated with them in the control condition. However, this finding was difficult to interpret because all participants belonged to the same department; consequently, they might have thought that they knew each other and had concerns about their reputations during the online experiment, even while being aware of their anonymity. Additionally, participants (rich-group players) might have been motivated to lend a hand to others randomly allocated to the poor group (as a savior of the

"poor" students). If this was the case, cooperative behavior should have been found indiscriminately across rich- and poor-group partner players when cooperativeness did not work as a source of normative partner selection.

3.3 General Discussion

Chapter 3 examined whether a partner's cooperativeness in PDG induced a cooperative strategy beyond the rich–poor boundary and whether generalized trust facilitated cross-class cooperation. The findings of the two online experiments in Japan (Study 2a) and China (Study 2b) showed a consistent pattern indicating that rich-group players prefer to select and cooperate with cooperative partners regardless of their rich–poor categorical membership. Generalized trust also facilitated this tendency. The cross-cultural comparison for the current sample suggests that Chinese individuals are more cooperative and trustful than Japanese individuals.

Diverse behavioral strategies manifested among Japanese and Chinese participants in a randomized context (control condition). As a rich group player in the game, Japanese participants exhibited a predilection for employing DR strategy, whereas Chinese participants had a trend of employing both CP and CR strategies. Moreover, among Chinese participants, the occurrence of CP strategy was significantly predicted by the individual's generalized trust. These findings could potentially elucidate cultural difference in terms of generalized trust. Researchers have revealed that China indicates a higher level of generalized trust compared to Japan, with the Chinese being more likely to invest in indirect relationships to expand their reciprocal networks (Ozono, 2018; Takahashi et al., 2008). The experiment conducted in China was based on an acquaintance network (classmates in the same department), which fostered investments for reciprocal relationships, consequently leading Chinese participants to predominantly exhibit

cooperative behavior even toward unfamiliar partners. Conversely, with generally low-level generalized trust, Japanese participants were exposed to strangers (unknown crowdsourcing workers), prompting greater consideration on how to maximize individual gains rather than cultivating reciprocal relationships with unfamiliar others. Consequently, Japanese participants were more likely to choose rich-group counterparts and defeat them for more benefits. Considering various behavioral strategies employed by Japanese and Chinese participants, the impact of subjective socioeconomic status also appears to be varied from each other. Japanese participants with high-level subjective socioeconomic status tended to adopt DR strategy, while high-status Chinese participants exhibited a propensity for employing CP strategy. Such difference could be contributed to within–Asia variations in people's attitude towards inequality (Oishi et al., 2022). Chinese people tend to embrace an optimistic and meritocratic belief about social mobility than other Asian countries (e.g., Japan and Korea), and thus high-status Chinese participants may exhibit a greater propensity of creating upward mobility opportunities for cooperative poor-group players. Notably, despite the distinct strategies favored by Japanese and Chinese participants, both groups exhibited a common tendency to cooperate with, rather than exploit, the poor-group players (CP strategy > DP strategy within each condition). As East Asian countries, both Japanese and Chinese societies are fundamentally rooted in Confucian ideology and manifest a relatively high level of power distance (Hofstede, 1980). As reviewed in Chapter 1, there exists an interplay between person and situation when considering the impact of social power. Grounded in the Confucian moral system, Japanese and Chinese participants, who were endowed with relative higher power, could be aware of disparities surrounding them and were more inclined to exhibit a benevolent attitude (Ren) toward the poor-group players (Luo, 2012). These cultural and social contextual attributes may explain participants' inclination of engaging

in cooperative rather than exploitative behavior toward the poor. In contrast to the agentic–communal model (Rucker et al., 2018), which was conducted in an individualistic social context, this research suggests the prosocial aspects of powerful individuals who are grounded in a collectivistic social context.

When selecting a partner and deciding whether or not to cooperate in PDG, rich-group players focused more on their partner's cooperativeness than on their rich–poor categorical memberships. These findings provide supportive evidence for cooperativeness-based partner selection rooted in BGR. Some may wonder if the results are inconsistent with previous literature (Melamed et al., 2020) that revealed ingroup favoritism as group-based homophilous partner selections in PDG. This may be due to the permeability of the group boundary. The current study determined the rich and poor groups according to the random number of resources among participants and instructed them to consider the boundary as changeable according to the points they would earn in the game. Therefore, the boundary of a generalized exchange system could emerge based on the expectation of mutual cooperation and its consequences rather than on initial group categories.

Meanwhile, the evidence that visible wealth disparities hinder rich individuals from serving social connections to poor individuals (Nishi et al., 2015) poses a question of how to shift the focus from rich–poor group categories to the cooperative nature of individuals. The current findings provide a hint for narrowing the resource gap between the rich and the poor, motivating people to focus more on others' cooperativeness than on their categorical membership to acquire better outcomes. In reality, wealthy individuals can take risks to benefit those who are cooperative but poor in resources. This is a meritocratic and prospective investment for the future to fill the skill-success gap (Sornette et al., 2019), as exemplified in

entrepreneur-venture capitalist relationships for mutual gain (Cable & Shane, 1997). Highlighting one's cooperativeness through reputation or other social systems under high social mobility could be an effective intervention to promote the cross-class resource-flow mechanism.

The current study also revealed the moderating role of generalized trust in cooperativeness-based over category-based social selection and cooperation. Aside from ingroup favoritism, the rich–poor social category serves as a cue for impression formation, particularly for negative stereotypes in the competence domain for the poor (Cuddy et al., 2008). The risk-tolerance and social-intelligence nature of generalized trust might help people overcome negative stereotypes and lead to the selection of and cooperation with cooperative poor partners. However, we measured generalized trust after PDG. The design cannot reject the possibility that the PDG experience changed the level of generalized trust. The measurement order should be reversed in future research.

Two studies presented in Chapter 3 were conducted in two Asian countries, Japan and China. Japan is relatively wealthy and ranks sixth in terms of GDP (Gross Domestic Product) per capita among Asian countries in 2019 (IMF, 2019). As Hamamura (2012) pointed out, social class and generalized trust show a positive association only in wealthy countries where the social and economic environments endorse ample resources for rich people, allowing them to be less hesitant in trusting strangers for their own benefit. The effect of generalized trust on motivating people to serve social ties and cooperate with cooperative poor partners was also found among university students in China, where GDP per capita is not very high in the mainland. This is interpreted by existing evidence that higher education is related to higher social trust (Charron & Rothstein, 2016), and that longer years of schooling predict higher generalized trust (Kim, 2021).

Chinese participants showed higher levels of generalized trust than Japanese participants. This result can be interpreted in line with previous evidence suggesting that Japanese collectivism is based on long-term social networks of assurance, whereas Chinese collectivism has its essence in building new social networks based on broader, personal connections (Takahashi et al., 2008). In the current experiment, Chinese participants also showed higher overall cooperation rates than Japanese participants (crowdsourcing workers). This pattern might be observed due to the concerns for acquaintanceship among Chinese participants who belonged to the same department, as discussed earlier. Therefore, it is premature to conclude that Japanese individuals are more uncooperative than Chinese individuals. Further investigation into the cross-cultural differences in cross-class cooperation should control for these factors.

It is also unknown if the motivation for rewarding cooperative partners exceeds that for sanctioning non-cooperative ones. Invisible wealth disparities in PGG implementing sanction systems lead people to favor the rich and punish the poor; this is because perceived generosity and reciprocal expectations may derive from sole resource amounts rather than cooperativeness (Hauser et al., 2021). Social network dynamics in the real world are often modeled based on these two opposite mechanisms.

Taken together, this study demonstrates that focusing on the cooperativeness of partners is essential in building bridges between the rich and the poor and cultivating a new boundary for mutual cooperation. For the common good, one's cooperativeness should be evaluated independently from their social category. These findings shed light on reducing socioeconomic inequality and removing the barriers to upward social mobility.

Chapter 4: Implementing Petty Favor in Facilitating Resource Exchange in Cross-Class Interactions

Chapter 3 has shown that category-based preferences for social selection are not always dominant, and people tend to select social partners with positive reputations and share resources. Recently, Hauser and colleagues (2021) reveal that rich-group players tend to be punished if their contributions are low in proportion to their endowments, regardless of the absolute amount of their contributions. As introduced above, human groups serve as containers for generalized exchange, and group categories induce a heuristic of mutual cooperation. Since resource-based group boundaries are permeable in the real world, it is possible that people prioritize potential social partners' cooperativeness over their social categories to create a new boundary for mutual cooperation if the former information is available.

In Chapter 4, I applied the selective play paradigm in a repeated PDG to expand findings in Chapter 3, elucidating the way in which people set boundaries for mutual cooperation under the division of rich-poor group categories. Here, the visibility of the cooperativeness in PDG was manipulated to examine whether cooperativeness-based preference could override category-based preference in social selection and resource exchange.

Implementation of petty favor for rich-poor cooperation

In social dilemma games, free riders decrease others' motivation for resource sharing (Yamagishi & Sato, 1986). According to the structural goal/expectation approach, using punishment as a trigger for mutual cooperation deters free riders from exploiting others and facilitates resource exchange (Yamagishi, 1986). The effect of punishment on human cooperation is often strong enough to transcend kinship and indirect reciprocity (Fehr & Gächter, 2002). Positive interactions are also effective in facilitating resource exchange (Rand et al., 2009). Voluntary punishment and rewards are driven primarily by intrinsic and strategic motives,

respectively (Choi & Ahn, 2013). Of these, strategic motives increase through expectations of future cooperation with ingroup members. These findings indicate that implementing a trigger for reward-based interventions is an effective way to facilitate resource exchange within a flexible group boundary determined by cooperativeness.

In this study, a reward-based intervention is assumed to enhance intergroup resource sharing through the norm of reciprocity. People are more likely to comply with subsequent requests from those who have provided favors for them wherein the norm of reciprocity exerts its influence on interpersonal relationships, even among strangers (Regan, 1971). Concerning cooperative behavior in resource exchanges, the norm of direct reciprocity manifests as a "tit-for-tat" strategy in which individuals engage in cooperation with the reciprocal expectation of receiving similar favors from interaction partners in subsequent resource exchanges (Axelrod, 1984). Recent studies have reviewed the reciprocity mechanism in the intergroup context, addressing that the expectation of reciprocal interactions may override categorical group memberships, thereby facilitating intergroup resource exchanges (e.g., Romano et al., 2022; Üzümçeker & Akfırat, 2023).

However, limited empirical evidence has been provided to elucidate the mechanism of direct reciprocity across social groups. Therefore, I introduced petty favor provisioning as a reward-based intervention which may induce intergroup behavioral changes through direct reciprocity mechanism in a repeated PDG. Petty favor is implemented as an option to provide a small amount of resources from one's endowment to another interaction partner *before* the PDG. Suppose that players initially plan to invest 100 out of 300 points in their wallet to a partner in PDG. Players without motivation for mutual cooperation may ignore the petty favor option because splitting the initial points for petty favor and PDG (10 and 90 points) is not meaningful

for them. Contrastingly, if players are motivated to earn benefits from mutual cooperation, they may think of a petty favor option (e.g., providing 10 points before PDG) as useful to increase the partner's cooperation in forms of reciprocity in PDG. In this case, the players would count the cost for petty favor outside the initial amount and invest the initial amount as originally planned. In other words, we expect that this option would serve as a strategy, such as "you must lose a fly to catch a trout."

4.1 Study 3

4.1.1 Method

Participants

In 2020, a total of 232 Japanese crowdsourcing workers were recruited at Lancers, who participated in this experiment. Data from 12 participants for duplicate participation and four participants who withdrew their consent for analysis were excluded. Finally, data from 216 participants (M_{age} = 42.76 years, SD = 10.63, 129 males, and 87 females) were analyzed. Each participant received 300 yen (approximately $3) as remuneration. After the survey was completed, the top six participants were selected as winners based on the points they earned in the game and were awarded another 1000 yen (approximately $10) as a bonus.

Experimental design

This study used a 2 (cooperativeness visibility [between-factor]: visible, invisible) × 2 (partner selection [within-factor]: poor, rich) × 2 (petty favor type [between-factor]: donation, signaling) × 2 (petty favor provisioning [within-factor]: provide, hold) × 3 (contribution [within-factor]: high, medium, low) mixed design.

Repeated PDG with a selective play paradigm

A modified repeated PDG incorporating a selective play paradigm was developed. At the beginning of the game, participants were shown a picture and a vignette describing rich-poor residential segregation in a virtual city (see Appendix C). Participants were informed that (1) the experiment was a multi-player online experiment, including paired activities among the inhabitants of the city using unique IDs, and (2) they would be allocated as either rich inhabitants in the upscale neighborhood or poor inhabitants in the slum district based on the initial points randomly assigned to them. The rich-poor threshold was set at 10,000 points. In fact, all participants were allocated as rich, and all other players were programmed bots whose cooperation rates were manipulated.

Participants played the game for 20 rounds. In Session 1 (Round 1–10), each round included two steps: (1) selecting a partner and (2) contributing points to the pair account. Participants had 600 points in each round and were privileged to choose a partner from rich or poor residential areas. Potential partner points were dynamically set from 500–700 points and from 250–350 points in rich and poor residential areas, respectively[5]. After pairing up, participants decided how many points they had contributed to the pair's account. Partner cooperation rates ranged from 25%–45% for rich residential partners and from 75%–95% for

[5] Prior to the experiment, a simulation was conducted to equalize participants' expected total rewards regardless of the proportion of selfish-rich partners in a 20-round PDG. Based on the calculation, the rich partner's points were originally set ranging between 600 and 800 in each round. However, due to programming errors, the points ranged between 500 and 700 in the experiment. This resulted in an increase in expected total rewards due to the avoidance of selfish-rich partners.

poor residential partners. In other words, the participants made selections between selfish-rich and cooperative poor partners. The sum of contributions was multiplied by 1.5 and divided equally for each member in the pair.

In Session 2 (Round 11–20), a petty favor provisioning system was implemented between partner selection and contribution. Participants determined whether they would provide 50 of their 600 points to the selected partner or keep the points for themselves. Partners (bots) did not have this option. Note that the partner's cooperation rates were fixed, regardless of the execution of the option, which increased the partner's total amount of contributions with petty favor provisioning. For example, if a partner had 300 points and cooperation rate was 75%, the partner would provide 263 ([300 + 50] × 0.75) points after receiving a petty favor or 225 (300 × 0.75) points without it. We manipulated the type of petty favor as a donation (giving with anonymity; n = 108) or signaling (giving with the participants' ID; n = 108) (Figure 18).

Figure 18(a)

Screenshot of petty favor provision in the donation condition

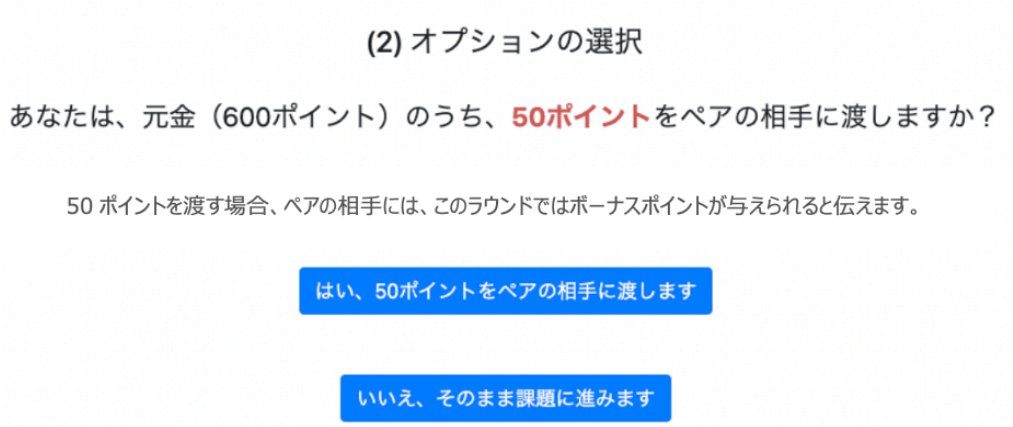
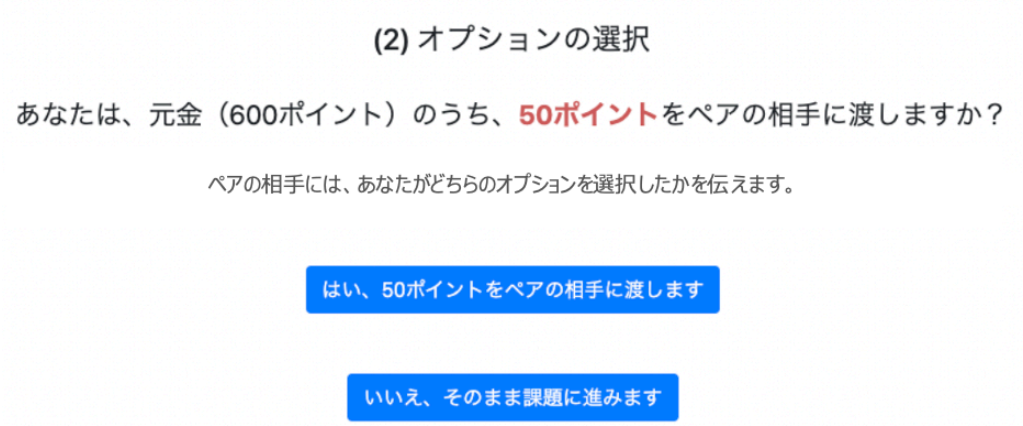


Figure 18(b)

Screenshot of petty favor provision in the signaling condition



Procedure

The experiment was programmed in oTree (Chen et al., 2016). Following the instructions, the participants completed a practice session, after which they took part in the game. They did not know the total number of rounds in the game. The visibility of potential partners' cooperativeness was manipulated as a between-participant factor. In the invisible condition (n = 104), only potential

partners' group categories (rich or poor) were presented. In the visible condition (n = 112), the last-round cooperation rate was presented with their category (Figure 19).

Figure 19(a)

Screenshot of partner selection in the invisible condition

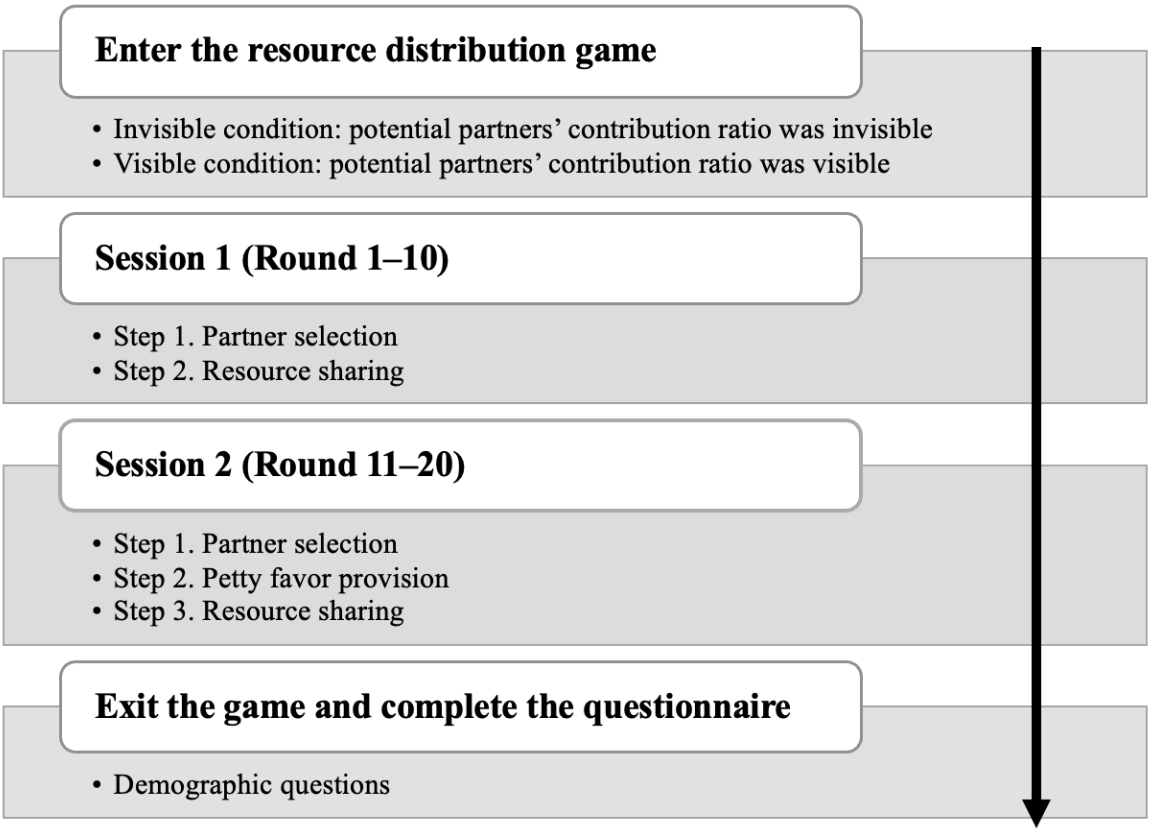
Figure 19(b)

Screenshot of partner selection in the visible condition

Upon completion of the game, participants responded to the manipulation checks and demographic questions presented to them, which was followed by debriefing. The procedure of Study 3 is shown in Figure 20.

Figure 20

Experimental procedure of PDG in Study 3



4.1.2 Results

Distribution of cooperation rates

We created multinomial dependent variables that represented the two-step decision-making process (partner selection → resource sharing) in the experiment. First, we categorized the participants' cooperation rates into three levels: low (cooperation rates < 30%), medium

(30% to 50%), and high (> 50%)[6][7], If the participants provided 50 points as petty favor in Session 2, their cooperation rates were calculated after subtracting the amount from the initial points (i.e., the denominator was 600 – 50 = 550 points)[8] (Figure 21).

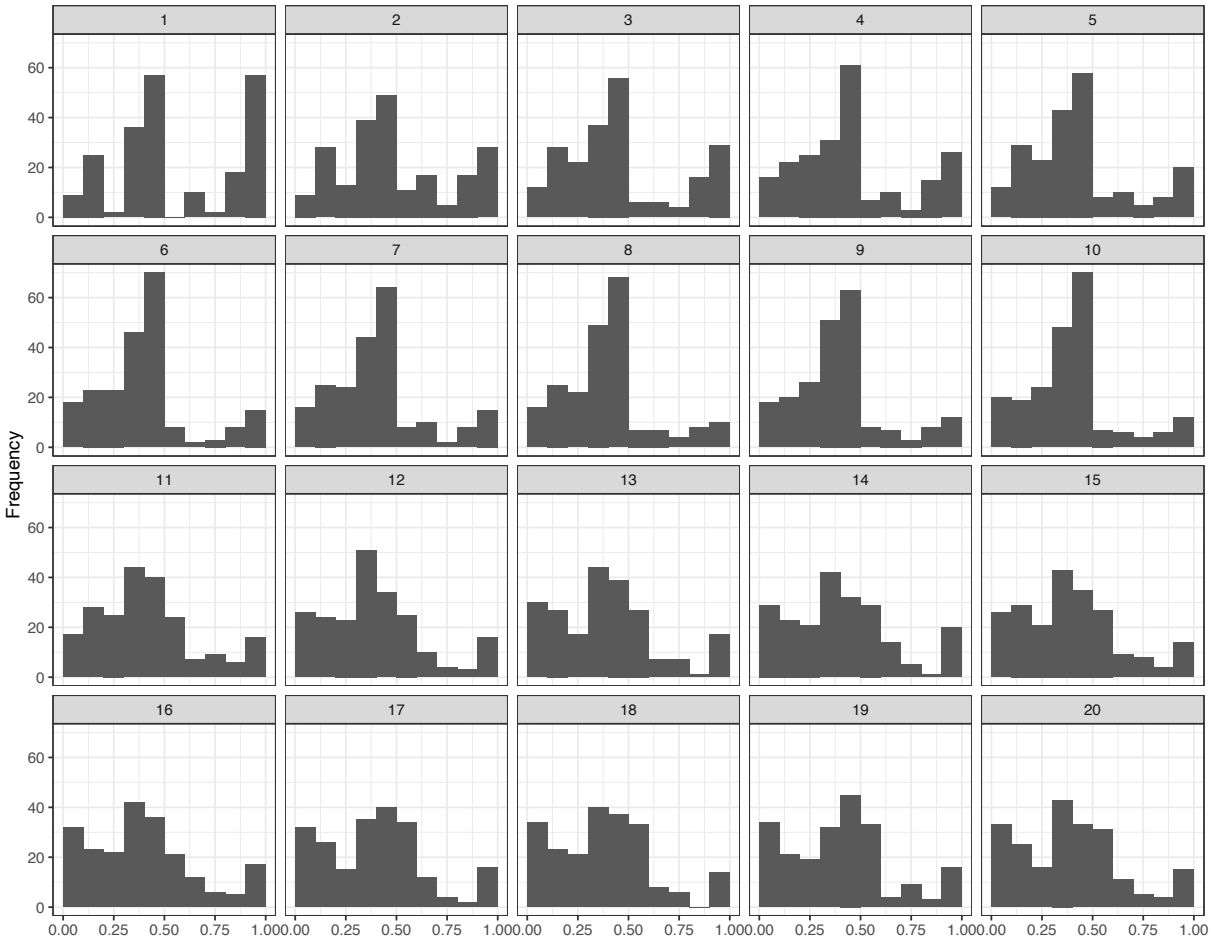
[6] Using cooperation rates as a continuous independent variable resulted in non-convergence when modeling the multistep decision-making process in a Bayesian framework. Therefore, participants' behavioral patterns were categorized and applied in a multinomial regression model.

[7] Participants' cooperation rates in each round (points given to the pair account divided by the initial points) ranged between 30%–50%. A meta-analysis on cross-cultural variations in cooperation reported that the average cooperation rate among strangers is 33% in Japan (Spadaro et al., 2022).

[8] This means that the way to calculate cooperation rates differed between Sessions 1 and 2. If participants contributed 300 points in Session 1, their cooperation rate was 50% (300 / 600). If participants provided 50 points as petty favor and contributed 300 points in Session 2, their cooperation rate was 54.5% [300 / (600 - 50)].

Figure 21

Frequency distributions of cooperation rates in PDG at each round (1–20).



Note. The x-axis represents the cooperation rates (0–1). Session 1 (Round 1 to 10) included two steps: partner selection → resource sharing, and Session 2 (Round 11 to 20) included three steps of partner selection → petty favor provision → resource sharing. $N = 216$.

Then, the behavioral strategies of each round were categorized based on two-step decision-making strategies, including partner selection (2: cooperative poor or selfish-rich) × cooperation rate (3: low, medium, or high), and classified into six types: H-poor [high contribution with a cooperative poor partner], M-poor, L-poor, H-rich, M- rich, and L-rich. Descriptive statistics are reported in the Table 11.

Table 11

Frequency of choice and cooperation rates in three-step decision making process

Partner choice	Visibility of cooperativeness	Petty favor		Frequency (*n*)	Cooperation rate	
		Provision	Type		*M*	*SD*
Session 1						
Poor	Invisible	-	(Donation)	210	0.503	0.264
Poor	Invisible	-	(Signaling)	193	0.438	0.250
Poor	Visible	-	(Donation)	291	0.461	0.230
Poor	Visible	-	(Signaling)	331	0.456	0.223
Rich	Invisible	-	(Donation)	300	0.496	0.309
Rich	Invisible	-	(Signaling)	337	0.414	0.298
Rich	Visible	-	(Donation)	279	0.450	0.261
Rich	Visible	-	(Signaling)	219	0.379	0.251
Session 2						
Poor	Invisible	Provision	Donation	223	0.560	0.279
Poor	Invisible	Provision	Signaling	187	0.480	0.246
Poor	Visible	Provision	Donation	257	0.513	0.216
Poor	Visible	Provision	Signaling	278	0.469	0.240
Rich	Invisible	Provision	Donation	83	0.346	0.268
Rich	Invisible	Provision	Signaling	89	0.436	0.316
Rich	Visible	Provision	Donation	54	0.447	0.251
Rich	Visible	Provision	Signaling	56	0.337	0.228
Poor	Invisible	Hold	Donation	65	0.428	0.203
Poor	Invisible	Hold	Signaling	78	0.325	0.195
Poor	Visible	Hold	Donation	119	0.331	0.187
Poor	Visible	Hold	Signaling	110	0.395	0.182
Rich	Invisible	Hold	Donation	139	0.246	0.214
Rich	Invisible	Hold	Signaling	176	0.207	0.202
Rich	Visible	Hold	Donation	140	0.293	0.194
Rich	Visible	Hold	Signaling	106	0.287	0.155

Note. (Donation) and (Signaling) in Session 1 refer to the conditions in Session 2.

Trend in partner choice

A proportion tests was applied to compare preferences for poor over rich residential partners. Participants (rich residential players) in the visible condition (61.88%) were more likely to choose the cooperative poor residential partners across the 20 rounds than those in the invisible condition (45.96%), χ^2 (1) = 109.39, $p < .001$. Cooperative poor residential partners were more likely to be selected as partners in Session 2 (60.97%) than in Session 1 (47.45%), χ^2 (1) = 78.97, $p < .001$. Cooperativeness-based partner selection occurred under conditions of visible cooperativeness and with the provision of a petty favor system.

Preferred strategy between Sessions 1 and 2

A Bayesian multinomial regression model was fitted to estimate the preferences for the strategies across 20 rounds in the visible and invisible conditions, respectively (Table 12). All participants were allocated to the rich residential group. The H-poor strategy was set as the baseline for comparison with the other strategies.

Table 12

Parameter estimates in two-step decision-making process in Sessions 1 and 2

Parameter	Estimate	Posterior SD	95% CI
Visible condition (N = 112)			
Model 1-a			
Session 1 (M-poor vs H-poor)	**0.95**	0.1	**[0.75, 1.14]**
Session 1 (L-poor vs H-poor)	-0.18	0.13	[-0.43, 0.06]
Session 1 (H-rich vs H-poor)	**-0.38**	0.13	**[-0.64, -0.12]**
Session 1 (M-rich vs H-poor)	**0.56**	0.11	**[0.35, 0.77]**
Session 1 (L-rich vs H-poor)	0.09	0.12	[-0.14, 0.33]
Model 1-b			
Session 2 (M-poor vs H-poor)	0.08	0.08	[-0.08, 0.24]
Session 2 (L-poor vs H-poor)	**-0.45**	0.1	**[-0.64, -0.26]**
Session 2 (H-rich vs H-poor)	**-1.88**	0.16	**[-2.21, -1.56]**
Session 2 (M-rich vs H-poor)	**-0.61**	0.1	**[-0.81, -0.42]**
Session 2 (L-rich vs H-poor)	**-0.55**	0.1	**[-0.75, -0.36]**
Invisible condition (N = 104)			
Model1-c			
Session 1 (M-poor vs H-poor)	**0.68**	0.28	**[0.45, 0.92]**
Session 1 (L-poor vs H-poor)	-0.09	0.39	[-0.37, 0.19]
Session 1 (H-rich vs H-poor)	**0.58**	0.21	**[0.34, 0.82]**
Session 1 (M-rich vs H-poor)	**0.93**	0.25	**[0.71, 1.16]**
Session 1 (L-rich vs H-poor)	**0.60**	0.43	**[0.37, 0.84]**
Model 1-d			
Session 2 (M-poor vs H-poor)	**-0.23**	0.10	**[-0.42, -0.05]**
Session 2 (L-poor vs H-poor)	**-0.66**	0.11	**[-0.87, -0.44]**
Session 2 (H-rich vs H-poor)	**-1.26**	0.14	**[-1.53, -1.00]**
Session 2 (M-rich vs H-poor)	**-0.43**	0.10	**[-0.64, -0.23]**
Session 2 (L-rich vs H-poor)	0.10	0.09	[-0.07, 0.27]

Note. CI = credible interval. The Bayesian multinomial regression model was estimated with a logit link that included four chains (5000 warm-up and 10,000 iterations in each chain). Based on partner selection (rich vs. poor) and cooperation rates (high [H] vs. medium [M] vs. low [L]), participants' behavioral patterns were categorized into six types. The H-poor strategy (choosing a poor residential player as a partner and with a high-level cooperation rate) serves as a baseline for comparison with the other strategies. Boldface indicates estimates for which the 95% CI did not overlap zero.

Figures 22 and 23 show the calculated values based on combinations of the parameter estimates and 95% posterior distribution of parameters in the visible and invisible conditions, respectively. In Session 1, the M-poor/M-rich strategies in the visible condition were preferred to the H-poor strategy (Figure 22a). In the invisible condition of Session 1, the H-rich/M-rich/L-rich strategies, as well as the M-poor strategy, appeared to be preferred over the H-poor strategy (Figure 23a). However, the H-poor strategy was generally preferred over the most strategies in both conditions in Session 2. These findings suggest that implementing the petty favor provisioning system induced higher cooperation rates with cooperative poor partners.

Figure 22(a)

Posterior distributions of predictors with medians and 95% credible intervals in Session 1 under visible cooperativeness.

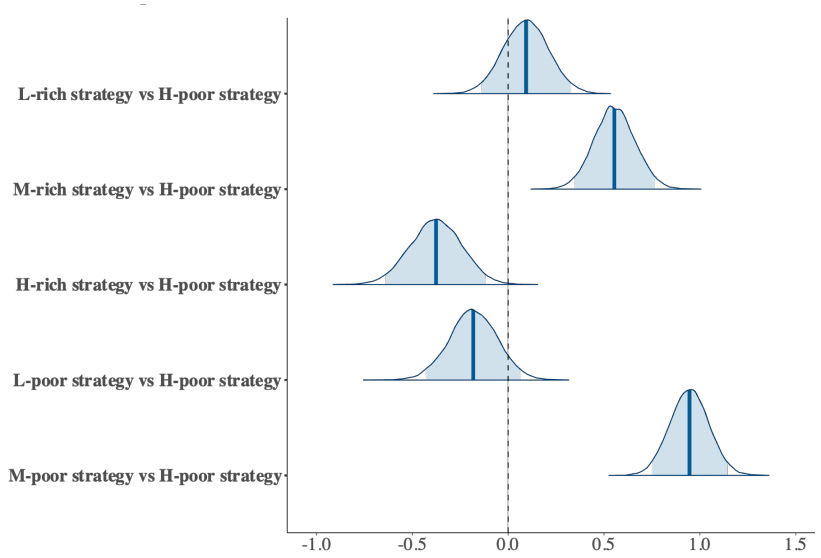


Figure 22(b)

Posterior distributions of predictors with medians and 95% credible intervals in Session 2 under visible cooperativeness

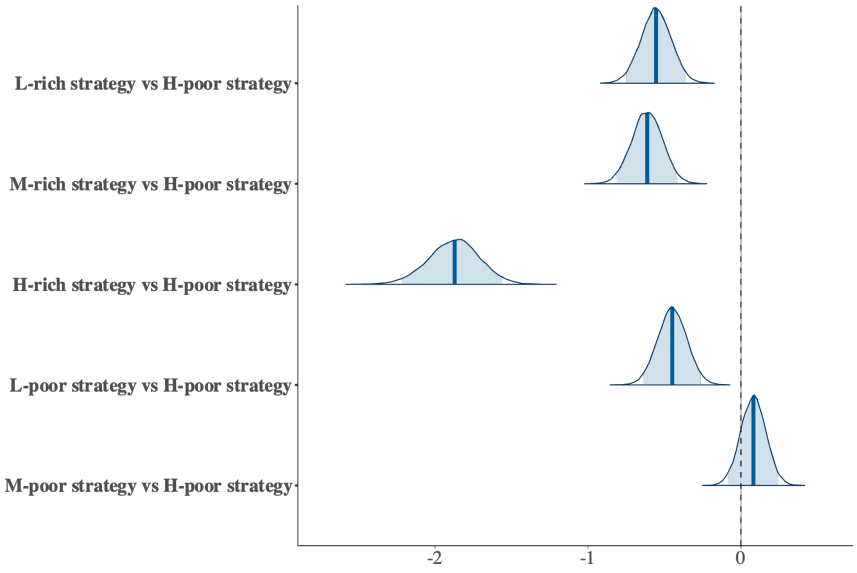


Figure 23(a)

Posterior distributions of predictors with medians and 95% credible intervals in Session 1 under invisible cooperativeness

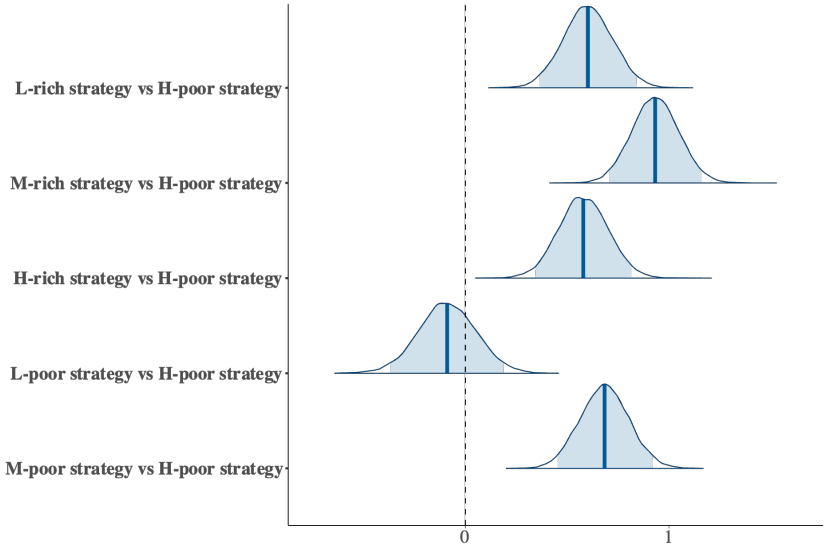
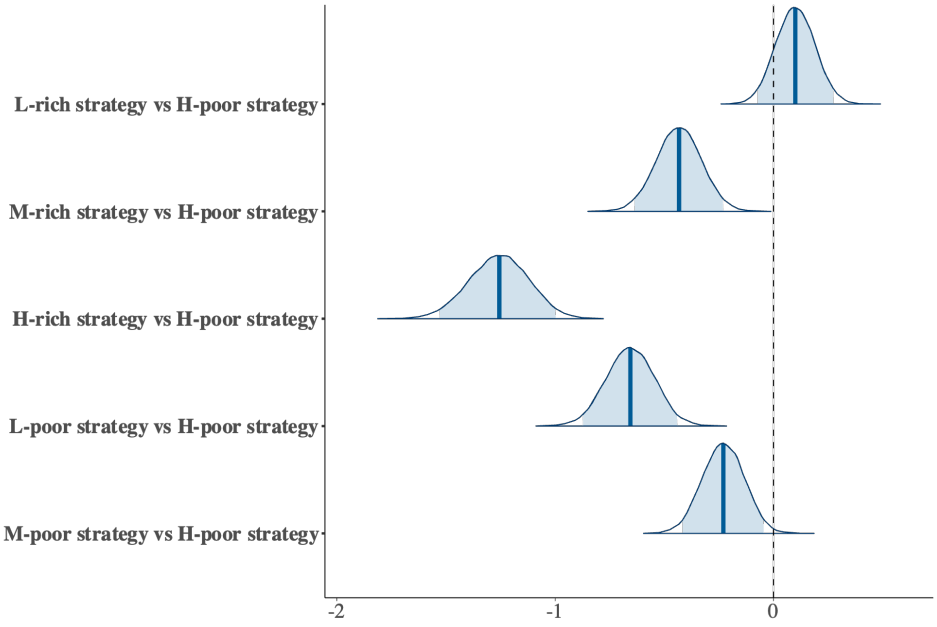


Figure 23(b)

Posterior distributions of predictors with medians and 95% credible intervals in Session 2 under invisible cooperativeness.



Petty favor provisioning and cooperation rate

We created a dummy variable to determine whether participants provided petty favors (provision or hold) in each round in Session 2. Participants showed the highest cooperation rate ($M = 0.56$, $SD = 0.28$) when they selected poor cooperative partners and provided petty favors[9].

Reflecting a three-step decision-making process in Session 2, behavioral strategies of each round were classified into 12 types based on partner choice (2: cooperative poor or selfish rich) × petty favor provisioning (2: provision or hold) × cooperation rates (3: high, medium, or low). For example, if a participant chose a cooperative poor partner, provided petty favors, and assigned a high proportion of points to the pair account, the strategy was categorized as the Provision-H-poor strategy (*providing* petty favors along with a *high*-level contribution by choosing the *poor partner*).

Table 13 and Figure 24 show the estimates of a Bayesian multinomial regression model. The Provision-H-poor strategy (baseline) was the most preferred. Combined with the results reported in the previous section, these findings indicate that rich players tended to execute the petty-favor option with cooperative poor partners and made greater contributions to the pair account.

[9] At the end of the experiment, participants engaged in a manipulation check on whether the sender of petty favor was identifiable (the signaling condition) or unidentifiable (the donation condition) by their interaction partners in Session 2. Of 216 participants, 95 (44%) did not answer correctly and 62 (29%) responded as "unknown." This indicates that the signaling-donation manipulation was not successful. Therefore, we did not include this variable in the analysis.

Table 13

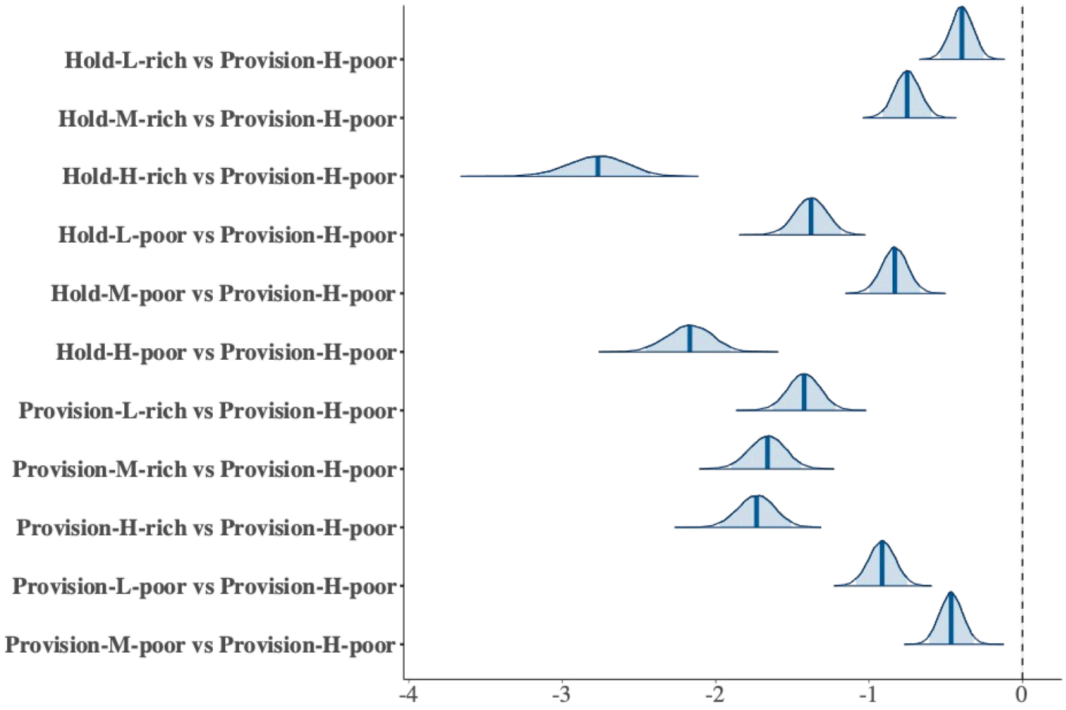
Parameter estimates in three-step decision making process in Session 2 (N = 216)

Parameter	Estimate	Posterior SD	95%CI
Provision-M-Poor vs Provision-H-poor	**-0.46**	0.08	**[-0.61, -0.32]**
Provision-L-Poor vs Provision-H-poor	**-0.92**	0.09	**[-1.09, -0.75]**
Provision-H-Rich vs Provision-H-poor	**-1.74**	0.12	**[-1.97, -1.51]**
Provision-M-Rich vs Provision-H-poor	**-1.66**	0.12	**[-1.9, -1.44]**
Provision-L-Rich vs Provision-H-poor	**-1.42**	0.1	**[-1.63, -1.22]**
Hold-H-Poor vs Provision-H-poor	**-2.17**	0.14	**[-2.46, -1.9]**
Hold-M-Poor vs Provision-H-poor	**-0.83**	0.08	**[-1.00, -0.67]**
Hold-L-Poor vs Provision-H-poor	**-1.38**	0.1	**[-1.59, -1.18]**
Hold-H-Rich vs Provision-H-poor	**-2.77**	0.19	**[-3.16, -2.42]**
Hold-M-Rich vs Provision-H-poor	**-0.75**	0.08	**[-0.91, -0.59]**
Hold-L-Rich vs Provision-H-poor	**-0.40**	0.07	**[-0.54, -0.25]**

Note. CI = credible interval. The Bayesian multinomial regression model was estimated with a logit link that included four chains (5000 warm-up and 10,000 iterations in each chain). Combining participants' cooperation rates (high [H] vs. medium [M] vs. low [L]) with partner selection (rich vs. poor) and provision of petty favors (provision vs. hold), all behavioral patterns were categorized into 12 types. The Provision-H-poor strategy (choosing a poor partner and providing a petty favor along with a high-level cooperation rate) in the invisible condition served as the baseline in the comparisons across the 12 strategies. Boldface indicates estimates for which the 95% CI did not overlap zero.

Figure 24

Posterior distributions of predictors with medians and 95% credible intervals (N = 216)



Note. All participants played a repeated PDG as rich residential players. Combining participants' cooperation rates (high [H]/medium [M]/low [L]) with decision-making for partner selection (rich/poor) and the provision of petty favors (provision/hold), all behavior patterns were categorized into 12 types. The provision-H-poor strategy (choosing a cooperative poor partner and providing a petty favor along with a high-level cooperation rate) served as a baseline for comparison.

4.1.3 Discussion

Status homophily may contribute to the segregation between the resource-rich and the resource-poor, as wealthy people are more inclined to engage in the resource exchange with wealthy counterparts. Fostering the reciprocal cross-class social interactions becomes crucial for suppressing social inequality. In this study, it is found that implementing a petty favor facilitates mutual cooperation beyond the rich-poor boundary. The interpretation of petty favor effect is threefold. First, granting petty favors to cooperative poor partners can induce a positive mood. Positive mood promotes prosocial behavior (Cunningham, 1988; Salovey et al., 1991) and could subsequently facilitate resource sharing in PDG. Second, expectations of future interactions may work under a permeable resource-based group boundary. The anticipation of future cooperation changes intergroup attitudes and eliminates preferences for ingroups (Misch et al., 2021). In this study, participants might have utilized petty favors as a strategy to establish reciprocal relationships with potential social partners for future interactions. Moreover, the effect of petty favor could be attributed to a psychological phenomenon known as the Concord Fallacy (also called the sunk cost fallacy). Participants who have already contributed a small amount of resources may perceive the petty favor as the sunk cost and were motivated to recoup it by increasing their investment in the subsequent resource exchange.

Chapter 4 focused only on the situation where rich players selected either selfish rich or cooperative poor partners. Future research should include all possible combinations of social categories of players and their partners' cooperativeness to replicate the robustness of the current findings in different settings. Additionally, it may be possible that participants were aware of the number of points they provided but did not recognize changes in cooperation rates with or without

petty favor provision. To address this, participants' cooperation rates should be presented on the computer screen along with the points in each round of the PDG.

As introduced in Chapter 3, people's behavioral patterns in resource exchange may be underpinned by a cooperativeness-based preference, wherein reciprocal altruism drives cooperators to assort with each other for evolutionary advantages. From this perspective, current study broadens the theoretical context of reciprocal altruism from intragroup to intergroup cooperation by modifying group boundaries based on cooperativeness. Given the concern of social inequality issue in the whole society, future research is expected to replicate the findings of this research with regard of large-scale cooperation.

Chapter 5: General Discussion

5.1 Summary of Key Findings

This research primarily focused on exploring ways of suppressing systemic inequality by modifying the preferences and behavioral patterns of the upper class in cross-class interactions. Social prestige and resources are two key factors that determine an individual's position in the social stratification system. These determinants often lead people to categorize others as either "us" or "them." Addressing individuals' focus on individuating information rather than categorical information could motivate the upper class to engage in reciprocal cross-class interaction with the cooperative lower class rather than with their selfish upper-class counterparts. This dissertation employed three scenario experiments and three behavioral experiments to investigate the impact of individuating information, which plays an essential role in selecting social partners and cross-class resource exchange. In this chapter, I provide a summary of the key findings from the current research and discuss the implications of this dissertation. Finally, I address the issues and future directions of this research.

Study 1 employed occupational and educational prestige as a cue to determine an individual's position on the social ladder. "Non-regular (temporary)" and "regular (tenured company employee)" employees (Studies 1a and 1b), as well as new graduates from a "regional" and "urban" university (Study 1c) were adopted as social category information to describe low-prestige and high-prestige targets in the Japanese labor market. Three scenario experiments were conducted to investigate people's preferences regarding newcomer acceptance of four candidates: an interdependent high-prestige target, an independent high-prestige target, an interdependent low-prestige target, and an independent low-prestige target. Consistent with previous research (e.g., Hashimoto et al., 2011), the results indicated a preference for

interdependent targets compared to independent ones in Japan. The experimental manipulation of prestige did not significantly predict individuals' attitudes toward accepting newcomers.

Study 2 focused on resource disparities prevalent among distinct social strata, delineating the resource-rich as the upper class and the resource-poor as the lower class. To investigate the upper class's preferences in resource exchange, I manipulated the individuating attributes of potential partners regarding cooperativeness into two types: generous resource-poor and selfish resource-rich. Within the restricted experimental settings, Study 2a revealed the upper class's preference for generous resource-poor partners. This result was replicated in Study 2b conducted in China, further indicating that the upper class's preference for generous resource-poor partners is not driven solely by pure altruism but rather a strategy of mutual cooperation to obtain more benefits in resource exchange systems.

In Study 3, I further discussed the effect of implementing a reward-based intervention option in the exchange system for encouraging the resource-rich to share more resources with cooperative resource-poor partners. Based on evidence indicating that the resource-rich tend to engage in resource exchange driven by a preference for cooperativeness rather than categorical considerations, Study 3 provided an insightful intervention to enhance rich–poor cooperation in the resource exchange system. The results of Study 3 showed that the resource-rich were more likely to share more resources with their cooperative resource-poor partners after providing a small amount of resources to those partners.

Taken together, the three studies in this dissertation found that (1) individuals tend to prioritize individuating information over categorical information when making selection decisions; (2) in resource exchange, the generous resource poor are more likely to be favored compared to the selfish resource rich; and (3) implementing a reward-based intervention (petty

favor) in a system encourages the resource rich to engage in reciprocal resource exchange with the cooperative resource poor, thereby creating opportunities for upward mobility on the social ladder. Specifically, this research addresses two aspects of the effect of individuating information on combating systemic inequality.

5.1.1 On Triggering Cross-Class Connections

The findings from the three studies underscore the influence of individuating information on interactions across social classes. First, it was revealed that individuals were more inclined to employ individuating information rather than categorical group affiliations as cues for selecting social partners (Studies 1–3). Moreover, the preference for cooperative resource-poor individuals served as a foundation for reciprocal interactions between the resource-rich and the resource-poor in cross-class resource exchange (Studies 2 and 3).

These findings are consistent with empirical research that suggests reputational information plays a pivotal role in people's decisions regarding social partner selection (see Melamed et al., 2018; Rand et al., 2011). Compared to competence and intelligence, people have a tendency to prefer morality in partner selection (De Bruin & Van Lange, 1999; Wayne Leach et al., 2007). However, other research has shown inconsistent tendencies, indicating that categorical affiliations may override reputational information in intergroup interactions (Melamed et al., 2020). This can be interpreted by the *changeability* of categories during repeated interactions in a selective play paradigm. Individuals have the potential to change their categorical group labels (e.g., wealthy vs. impoverished people) through the accumulation of resources. Due to this changeability, individuals may assign less importance to temporary categorical affiliations. In line with the experimental setting involving category changeability, empirical research on the

stability of wealth has provided evidence that people tend to prioritize partners who are poor but fair over partners who are rich but stingy when potential partners' wealth is more likely to drastically change in the future interactions (Raihani & Barclay, 2016).

Social class disparities defined by prestige did not significantly influence individuals' selection decisions (Study 1). This may be attributed to the presence of anti-negativity norms (Bergsieker et al., 2012; Trawalter et al., 2009) within the experimental environment. When exposed to entirely fictional scenarios, individuals may consciously omit negative and stereotypical perceptions toward the lower class (i.e., non-regular (temporary) employees) as a self-presentation strategy, thereby shaping their attitudes toward social partner selection.

In summary, these findings shed light on the possibility that receiving and updating individuating information about social partners through repeated interactions can drive the selection preferences of the resource rich and facilitate connections between individuals from different social classes.

5.1.2 On Facilitating Upward Mobility Within a Stratification System

As previously mentioned, the removal of social class barriers to elicit resource flow across social classes is essential for mitigating systemic inequality. This research has proposed that the presence of individuating information influences individuals' preferences in social selection (Study 1) and promotes the flow of resources between different social classes by expanding the cognitive boundaries of cooperative clusters beyond categorical groups (Studies 2 and 3). In the context of cross-class resource exchange, while previous research has demonstrated a contrasting pattern in which individuals primarily allocate and exchange resources based on categorical group identities (Martinangeli & Martinsson, 2020), the present

research posits that the potential for upward mobility, as determined by the amount of resources, serves as a pivotal factor in interpreting this inconsistent tendency. As discussed earlier, the categories of resource-rich and resource-poor can be changeable and permeable, offering opportunities for resource-poor individuals who are willing to share their resources to ascend to the status of resource rich through repeated interactions. By emphasizing the prospects of upward mobility, the resource rich are motivated to secure their positions within the resource-rich category and establish connections with cooperative game partners across permeable and changeable boundaries separating the rich and the poor.

Expanding the findings of cooperativeness-based preferences influencing individual behavioral patterns in cross-class interactions, this study further investigated the effect of implementing a reward-based option known as “petty favor” in the resource exchange system. The “petty favor” option acts as a catalyst for reciprocal interactions, fostering mutual resource sharing between the resource-rich and the resource-poor. Consistent with the unbound reciprocity hypothesis in previous research (e.g., Romano et al., 2017; Stroebe et al., 2005), the norm of reciprocity embedded in the “petty favor” played a crucial role in facilitating cross-class resource exchanges. Specifically, the resource-rich showed a greater propensity to share more resources with their cooperative poor-group partners when they have contributed a small amount of resource to their partners in advance.

In summary, this section underscores the impact of the presence of individuating information on shaping the strategies of the resource-rich in cross-class resource exchange. It also illuminates the existence of potential boundaries between cooperators and non-cooperators that override the temporary divisions of wealth between the rich and the poor. The inclination to

exchange resources with cooperative partners is pronounced when the prospects of upward mobility are addressed.

5.2 Theoretical and Practical Implications

5.2.1 Altruism Homophily in a Social Stratification System

Thus far, the influence of parochialism has been underscored in shaping human cooperation for evolutionary adaptation (Bernhard et al., 2006; Choi & Bowles, 2007). Humans exhibit a parochial inclination toward individuals who share common categorical memberships. Meanwhile, researchers have highlighted the imperative of overcoming parochial cooperation in resolving global predicaments, such as environmental issues, global warming, and poverty (e.g., Aaldering & Böhm, 2020; Buchan et al., 2009). However, little is understood about how to transcend parochial preference, particularly in fostering universal cooperation between the upper and lower classes within a social stratification system. This dissertation presents an insightful approach utilizing individuating information as leverage to modify the upper class's category-based preferences. Enhancing reciprocal interactions between the upper and lower classes can prompt the flow of resources across social strata, removing social class barriers and reducing systemic inequality.

Does Altruism Homophily Exist? A fundamental point of this dissertation is how individuals conceptualize homophily in their minds. It has been well-documented that parochialism is closely associated with individuals' homophilous choices (Berg et al., 2021). As discussed in Chapter 1, status homophily serves as the primary driver of social connections, as individuals tend to exchange resources with those who share common social identities (Currarini & Mengel, 2016). An intriguing puzzle arises; if there is homophily based on social group

categories, is there an altruism homophily that shapes people's social connections in the real world? Sociologists have explored this puzzle but have found no compelling evidence for altruism homophily. Simpson et al. (2014) proposed that people are more inclined to distinguish between altruists and egoists in the early stages of a relationship but become less capable of detecting potential partners' altruism in repeated interactions. Consequently, one should not expect individuals to have accurate insight into others' altruism. Additionally, the detection of altruism homophily is connected to social mobility, as individuals tend to maintain existing relationships with less effort to discern altruists in contexts with low mobility (Macy & Sato, 2002; Simpson et al., 2014).

Beyond these sociological findings, psychological research has offered interpretations of parochial cooperation, commonly referred to as ingroup favoritism (Balliet et al., 2014; Everett et al., 2015). The BGR perspective posits that categorical group memberships regulate the boundaries of reciprocal exchange systems (Yamagishi et al., 1999). Recently, this perspective has been extended to a more comprehensive reputation-driven mechanism for cooperation that is irrespective of group categories (Imada et al., 2023; Romano & Balliet, 2017; Romano et al., 2017). This assertion has been confirmed within the traditional minimal group paradigm (Tajfel et al., 1971). However, categorical memberships in the minimal group paradigm are not changeable, and no stereotypes are associated with the categories. Moreover, it remains unclear whether individuals prioritize reciprocal relationships over categorical memberships when the two conflict. Research on partner choice suggests that individuals tend to prioritize potential partners' altruism (their willingness to confer resources) and morality over their ability (Dhaliwal et al., 2022; van der Lee et al., 2017; Wayne Leach et al., 2007). However, the influence of categorical memberships was not thoroughly addressed in these research.

Therefore, this dissertation explored the puzzle of altruism homophily from a psychological perspective, specifically concentrating on a restricted context: when confronted with disparities in resources, are the resource-rich more inclined to form connections with the selfish resource-rich or the generous resource-poor? Does altruism homophily exist? The answer may indeed be yes. In this dissertation, I contend that a preference based on reputation can emerge between the upper and lower classes when individuals are presented with effective individuating information during the process of person perception. The findings of this research also provide supporting evidence for the unbounded indirect reciprocity perspective.

5.2.2 Reducing Systemic Inequality From a Psychological Perspective

The findings of this dissertation on individuating information and cross-class interactions have implications for correcting systemic inequality and mitigating social segregations in the real world. Additionally, this study explored the potential of upward social mobility through dynamic interactions between the upper and lower classes in a stratification system.

With the development of the global economy, addressing social inequality has become a prominent concern transcending national boundaries. In 2015, the United Nations launched the Sustainable Development Goals (SDGs), a 15-year agenda with a commitment to “leave no one behind.” The SDGs encompass a wide range of social issues, including poverty, hunger, quality education and healthcare, sustainable economic growth, and climate change and environmental problems. Among these numerous social issues, this research investigated a simple question: how can we enhance upward social mobility opportunities for qualified individuals from lower-class backgrounds?

While meritocratic ideology promotes equal opportunities for upward mobility, it has been pointed out that such an ideology may perpetuate systemic inequality, where disparities arise from the social structure rather than individual ability and effort (Arrow et al., 2018; Morris et al., 2022). The privileged classes enjoy better educational opportunities and can ascend the social ladder, while individuals living in poverty struggle to achieve upward social mobility despite their abilities and efforts, resulting in social segregation. However, based on the findings of this study, it becomes evident that segregation is not an immutable condition. As discussed above, a reciprocal system can exist independently of categorical groups. In this dissertation, emphasizing the knowledge of and information about potential partners, rather than categorical group affiliations, during the process of interpersonal perception can strengthen social connections between the upper and lower classes, thereby facilitating cross-class resource exchange. These findings indicate that systemic inequality can be rectified by leveraging individuating information in interpersonal perceptions. From this standpoint, this dissertation engages with the SDGs from a psychological perspective.

Another notable point is that the categories in this research were based solely on the amount of resources, implying that categorical group affiliations were changeable within the experimental framework. In the real world, immigration challenges and issues of racial discrimination have assumed prominence within contemporary societal discourse. Despite the changeable amount of resources, people are unable to alter their nationality or race. Stereotypes and biases deeply ingrained within social categories, particularly those related to race and ethnicity, present formidable challenges to override. Addressing these social issues could expand the results of this research to explore immigration issues and racial prejudice.

A Public Reputation System in the Whole Society. Drawing on the effect of individuating information in interpersonal perceptions, the present study proposes a viable approach to tackle systemic inequality—the implementation of a reputation system that disseminates a diverse diagnostic criterion extending beyond categorical group affiliations. In the real world, those lacking resources can transition to become resource rich, while the resource rich can experience impoverishment depending on changes in their resources. This research suggests that enhancing the visibility of reputational information and accessing a public reputation system can effectively assist individuals in transcending the influence of social categorical groups. Future research should include the reputation system in the permeable group setting and determine how it influences the current findings.

"Petty Favor" in the Real World. Implementing a petty favor facilitates mutual cooperation beyond the social class boundaries. This finding enlightens us on the potential to alleviate social resource disparities by modifying policies within the social system. Through the social systemic reformation, it is possible to induce upper-class individuals to contribute a small portion of their resources to support the capable lower-class ones. Policymakers are expected to intervene incentive policies, such as tax exemptions, for some major enterprises to encourage them to construe partnerships with small but high-performing business ventures. Alternatively, policymakers can incorporate reward mechanisms to encourage employers to adopt diverse evaluation criteria for hiring high-performing candidates from non-prestigious universities. Through these policies, it is possible to increase positive contacts among different social classes and establish mutually beneficial, long-term cooperative relationships.

5.3 Limitations and Future Directions

The studies in this dissertation had several limitations that are worth discussing. These limitations suggest more potential avenues for expanding and developing the current research to cope with systemic inequality.

First, this study focused exclusively on individuals who possessed resources and privilege in the context of choosing social partners rather than being chosen. For instance, in Study 1, all participants were assigned the role of a manager and tasked with demonstrating their willingness to hire other candidates. In Studies 2 and 3, participants were instructed to begin as resource-rich players who had the prerogative to select their game partners before engaging in resource exchange. It is noteworthy that the behavior patterns of the resource rich and the resource poor differ from each other. In contrast, in the case of the resource poor, the lack of resources may trigger negative affect, leading to short-sighted decision making or even risk-taking behaviors (Haushofer & Fehr, 2014; Payne et al., 2017). These findings suggest that individuals lacking resources and opportunities, unlike the resource rich, may not possess the inclination or insight to choose long-term cooperation partners. In the real world, individuals living in poverty are more susceptible to engaging in criminal behavior as a means of acquiring additional resources. Additionally, numerous studies have examined the relationship between prosocial behavior and social class, revealing that individuals from lower social classes tend to exhibit interdependent behaviors and a greater willingness to share resources with counterparts from similar socioeconomic backgrounds (Piff et al., 2010). From this perspective, the resource poor are more likely to engage in resource exchange with other resource-poor individuals for the purpose of mutual survival. Furthermore, considering that stereotypical perceptions of social groups can influence individual behavior, it is possible that the resource-poor may prioritize highlighting

their competent aspects while concealing their warmth when interacting with other resource-poor individuals (Swencionis & Fiske, 2016). Such meta-stereotypical tendencies can impact resource exchange between the resource rich and the resource poor. Consequently, social categories such as the rich or the poor may serve as additional barriers that impede the resource-poor from actively engaging in resource exchange with the resource-rich. Future research should expand upon these findings by investigating the preferences of the resource-poor for cooperative partners to fully address the rich–poor resource gap.

Second, the experiments presented in this dissertation were all conducted in East Asia, where social connections and trust are often developed from a networked intragroup perspective (Igarashi et al., 2008; Yuki, 2003). Cultures can be broadly classified along individualism–collectivism dimensions, which are associated with systems of social inequality generation and maintenance (Kraus et al., 2011; Miyamoto et al., 2018). Researchers have adopted a cultural psychological perspective to interpret the emergence of inequality in different social systems (Miyamoto et al., 2018; Oishi et al., 2022). For instance, social systems in East Asian countries such as China, Japan, and Korea have typically been influenced by Confucian hierarchical values, where meritocracy is rooted in the aristocratic social system, whereas Western countries have been primarily driven by meritocratic ideologies. These societal and systemic differences shape individuals' attitudes toward social inequality. Individuals from Western, educated, industrialized, rich, and democratic (WEIRD) societies, characterized by their independent self-construal, tend to emphasize their unique abilities, thoughts, and emotions in regulating their behavior. In contrast, East Asians construe the self as interdependent with others, considering their abilities and characteristics to be subordinate (Henrich et al., 2010; Markus & Kitayama, 1991). Additionally, Brown-Iannuzzi et al. (2021) found that compared to Japan, the upper class

in America were less likely to support redistribution policies benefiting the lower class. Therefore, it is crucial to validate the universality of the current findings in Western societies, where relationship formation and maintenance are typically based on independent self-construal.

Thirdly, the three studies conducted in this dissertation employed scenario-based and behavioral experiments in which participants made decisions within a fictional environment. Moreover, programmed bots were utilized as game partners instead of human participants in the behavioral experiments. Previous research has demonstrated that participants' decision making may differ between hypothetical and real monetary transactions (Kiyonari et al., 2000) and between human-generated and computer-generated responses (Falk & Fischbacher, 2006) in social exchange experiments. Furthermore, the prediction of partner selection based on categorical membership was not fully supported in Study 2. In other words, some participants may have employed an exploitative strategy toward any partner, regardless of their categorical membership, in the resource exchange experiments. This could be attributed to the ambiguous and less meaningful distinction between the resource rich and the resource poor within the experimental environment. Conducting resource exchange experiments between individuals from the upper and lower classes in real-world settings would be desirable.

Another interesting question pertains to the interpretation of the effect of individuating information on modifying individuals' social preferences in social selection and resource exchange. Empirical studies have indicated that presenting individuating information, as well as enhancing the diagnostic level of such information, can attenuate stereotypical perceptions toward disadvantaged social groups (e.g., Black individuals in America; Cone & Ferguson, 2015; Cone et al., 2021; Rubinstein et al., 2018). It remains unclear whether the modification of individuals' behavioral patterns is mediated by the reduction of stereotypical perceptions.

Additionally, individual differences, such as generalized trust (Yamagishi & Yamagishi, 1994), risk preference (Holt & Laury, 2002), and the ability to suppress intuitive decision making (Frederick, 2005), may shape the behavioral patterns of the resource-rich and the resource-poor. Future research is expected to bridge this gap by examining the psychological mechanisms underlying social preference and behavioral modification.

5.4 Conclusion

As inequality and social segregation have come to the fore in recent years, it is imperative for social scientists and policymakers to comprehend how individuals can bridge the divide between the upper and lower classes from a psychological perspective. The studies elucidated in this dissertation furnished evidence substantiating the crucial role of allocating attention to individuating information—such as cooperativeness—pertaining to potential social partners. This approach is indispensable for establishing connections between the resource rich and the resource poor, thereby cultivating a new boundary for reciprocal resource exchange. In the interest of collective welfare, it is vital to assess an individual's capacity, altruism, and morality independently of social categorical group affiliations. Furthermore, this dissertation underscores the potential efficacy of implementing reward-based interventions within the resource exchange system to encourage proactive resource sharing by the resource rich with the cooperative resource poor. This discovery offers novel insights into mitigating issues of social inequality through systemic interventions. This dissertation sheds light on the reduction of social inequality and the dismantling of barriers to upward social mobility.

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Appendices

Appendix A (Study 1)

Study 1a Scenario

あなたの会社では、ソフトウェア開発チームのプロジェクトマネージャー1 名（正社員）を中途採用で募集することになりました。チームのメンバーには、正社員と派遣社員が含まれています。あなた（正社員）は、チームの一員として中途採用担当者に任命され、選考に携わっています。これまでの採用者は全員、他社で大規模システムの開発に従事し、フルタイムの正社員としてプロジェクトマネージャーの実務経験をもつ人たちでした。次の画面では、応募者の情報を表示します。候補者は複数名いますが、ここでは 1 名のみ表示します。

Study 1a Impression Evaluation

下記の応募者の情報を読んだ上で、以下のそれぞれの言葉は、候補者にどの程度当てはまると思いますか（1.まったくあてはまらない ; 2.どちらかというとあてはまらない; 3.どちらともいえない; 4.どちらかというとあてはまる; 5.とてもあてはまる）。

1. 手際のいい

2. 信頼できる

3. 温かい

4. 能力がある

5. 有能な

6. 自信に満ちた

7. 親しみやすい

8. 頭のいい

9. 誠実な

10. 感じの良い

Study 1a Selection Decision Questionnaire

中途採用担当者として、あなたはどの程度この応募者を採用したいと思いますか？

1. まったくそう思わない

2. そう思わない

3. あまりそう思わない

4. 少しそう思う

5. そう思う

6. とてもそう思う

Study 1a Manipulation Check Questionnaire

Q1. 次の 4 つの選択肢の中から、課題の趣旨に最もあてはまるものを選択してください。

1. 中途採用担当者として、求職者を評価すること

2. 他部門のマネージャーと打ち合わせを行うこと

3. 会社の経営理念を宣伝すること

4. 自己評価を書くこと

Q2. 次の 4 つの選択肢の中から、候補者の特徴にあてはまらないものを 1 つ選択してください。

1. 男性である

2. 新卒後、20 年の職歴がある

3 (low-prestige condition). 現職は正社員である

3 (high-prestige condition). 現職は派遣社員である

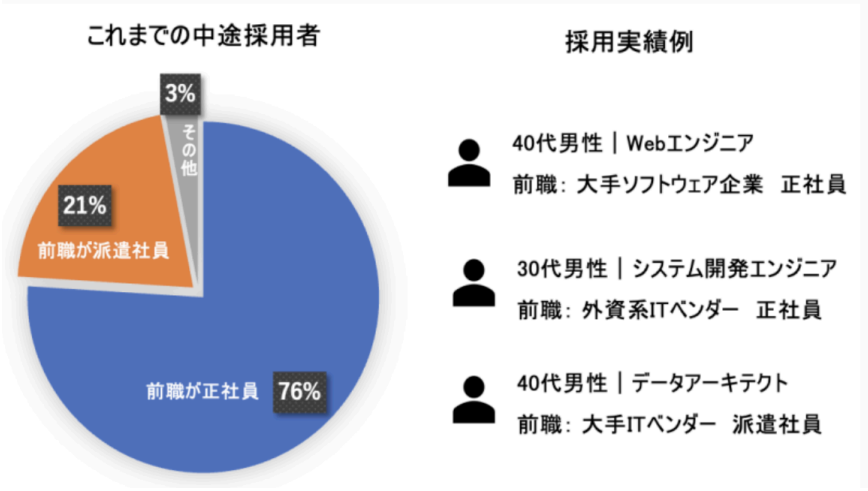
4. 業務システムの開発経験がある

Study 1b Scenario

あなたの会社では、ソフトウェア開発チームのプロジェクトマネージャー1 名（正社員）を中途採用で募集することになりました。チームのメンバーには、正社員と派遣社員が含まれています。あなた（正社員）は、チームの一員として中途採用担当者に任命され、選考に携わっています。

過去の中途採用者の採用実績のグラフと例を示します。これまでの中途採用者は、他社で大規模システムの開発に従事し、プロジェクトマネージャーの実務経験をもつ人たちでした。また、前職は 76%が正社員、21%が派遣社員でした。

選考は、一次選考と二次選考の二段階です。あなたは、二次選考を担当します。一次選考では、応募者の専門知識や実績、人柄を見ます。二次選考では、複数の採用担当者によって、採用すべき人物かどうかの判断が下されます。



次の画面では、応募者の情報を表示します。候補者は複数名いますが、ここでは 1 名のみ表示します。

Study 1b Impression Evaluation

下記の応募者の情報を読んだ上で、以下のそれぞれの言葉は、候補者にどの程度当てはまると思いますか（1.まったくあてはまらない ; 2.どちらかというとあてはまらない; 3.どちらともいえない; 4.どちらかというとあてはまる; 5.とてもあてはまる）。

1. 手際のいい

2. 信頼できる

3. 温かい

4. 能力がある

5. 有能な

6. 自信に満ちた

7. 親しみやすい

8. 頭のいい

9. 誠実な

10. 感じの良い

Study 1b Selection Decision Questionnaire

中途採用担当者として、あなたはどの程度この応募者を採用したいと思いますか？

1. 絶対に採用したくない

2. できれば採用したくない

3. どちらかといえば採用したくない

4. どちらかといえば採用したい

5. できれば採用したい

6. 絶対に採用したい

Study 1b Manipulation Check Questionnaire

Q1. 次の 4 つの選択肢の中から、課題の趣旨に最もあてはまるものを選択してください。

1. 中途採用担当者として、求職者を評価すること

2. 他部門のマネージャーと打ち合わせを行うこと

3. 会社の経営理念を宣伝すること

4. 自己評価を書くこと

Q2. 次の 4 つの選択肢の中から、候補者の特徴にあてはまらないものを 1 つ選択してください。

1. 男性である

2. 新卒後、20 年の職歴がある

3 (low-prestige condition). 現職は正社員である

3 (high-prestige condition). 現職は派遣社員である

4. 業務システムの開発経験がある

Q3. この応募者を採用するかどうかを決める際、現職が派遣社員（低地位条件）/現職が正社員（高地位条件）であることをどの程度重視しましたか？

1. まったく重視しなかった

2. どちらかといえば重視しなかった

3. どちらともいえない

4. どちらかといえば重視した

5. 非常に重視した

Q4. 次の 4 つの選択肢の中から、会社の採用実績にあてはまらないものを 1 つ選択してください。

1. 過去の中途採用者は、ほとんどが経験者である

2. 過去の中途採用者は、ほとんどが他社の派遣社員である

3. 過去の中途採用者は、ほとんどが大企業で働いていたことがある

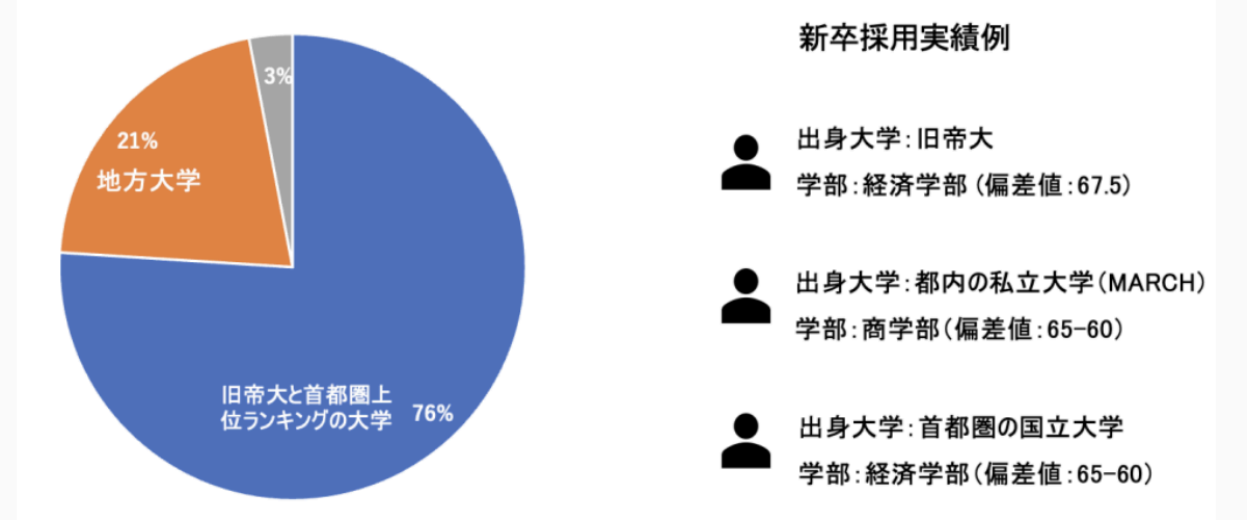
4. 過去の中途採用者は、ほとんどが他社でシステム開発に従事したことがある

Study 1c Scenario

あなたは、東京都内の外資系大手コンサルティング会社、M 社で働いています。あなたの会社では、コンサルティング（営業職）を新卒採用で募集することになりました。あなたは、新卒採用担当者に任命され、選考に携わっています。

過去の新卒採用者の採用実績のグラフの例を示します。これまでの新卒採用者は、旧帝大や首都圏上位ランキングの国立・私立大学から卒業した人たちでした。最近、地方大学から毎年数名が内定を獲得することができます。

選考は、一次選考と二次選考の二段階です。あなたは、二次選考を担当します。一次選考では、筆記試験とグループディスカッションを通じて、応募者の専門知識や能力、人柄を見ます。二次選考では、複数の採用担当者によって、採用すべき人物かどうかの判断が下されます。



しばらく経つと、「次へ」ボタンが表示されますので、読み終わりましたら、「次へ」をクリックしてください。

Study 1c Impression Evaluation

下記の応募者の情報を読んだ上で、以下のそれぞれの言葉は、候補者にどの程度当てはまると思いますか（1.まったくあてはまらない ; 2.どちらかというとあてはまらない; 3.どちらともいえない; 4.どちらかというとあてはまる; 5.とてもあてはまる）。

1. 手際のいい

2. 信頼できる

3. 温かい

4. 能力がある

5. 有能な

6. 自信に満ちた

7. 親しみやすい

8. 頭のいい

9. 誠実な

10. 感じの良い

Study 1c Selection Decision Questionnaire

新卒採用担当者として、あなたはどの程度この応募者を採用したいと思いますか？

1. 絶対に採用したくない

2. できれば採用したくない

3. どちらかといえば採用したくない

4. どちらかといえば採用したい

5. できれば採用したい

6. 絶対に採用したい

Study 1c Manipulation Check Questionnaire

Q1. 次の 4 つの選択肢の中から、課題の趣旨に最もあてはまるものを選択してください。

1. 新卒採用担当者として、求職者を評価すること

2. 他部門のマネージャーと打ち合わせを行うこと

3. 会社の経営理念を宣伝すること

4. 自己評価を書くこと

Q2. 次の 4 つの選択肢の中から、候補者の特徴にあてはまらないものを 1 つ選択してください。

1. 経営学部に所属

2. インターシップの経験がある

3 (low-prestige condition). 出身校は首都圏の大学である

3 (high-prestige condition). 出身校は地方の大学である

4. 出身校は国立大学である

Q3. この応募者を採用するかどうかを決める際、出身校が首都圏/地方大学（神奈川県/滋賀県）であることをどの程度重視しましたか？

1. まったく重視しなかった

2. どちらかといえば重視しなかった

3. どちらともいえない

4. どちらかといえば重視した

5. 非常に重視した

Q4. 次の 4 つの選択肢の中から、会社の採用実績にあてはまらないものを 1 つ選択してください。

1. 過去の新卒採用者は、ほとんどが地方大学出身である

2. 過去の新卒採用者は、ほとんどが偏差値の高い大学出身である

3. 過去の新卒採用者は、ほとんどが経済学部・経営学部・商学部から卒業した方である

4. 過去の新卒採用者は、ほとんどが首都圏大学出身である

Appendix B (Study 2)

Study 2b. Partner selection (Chinese version)

Study 2b. Resource exchange (Chinese version)

Study 2b. Results of resource exchange (Chinese version)

第1回合

(3) 本回合得点情况

	您	搭档玩家
初始点数	1530 点	250点
资源分配的决策	A(-50)	B(0)
点数的增减	-50点	100点
目前总点数	1480点	350点

请点击下一页

下一页

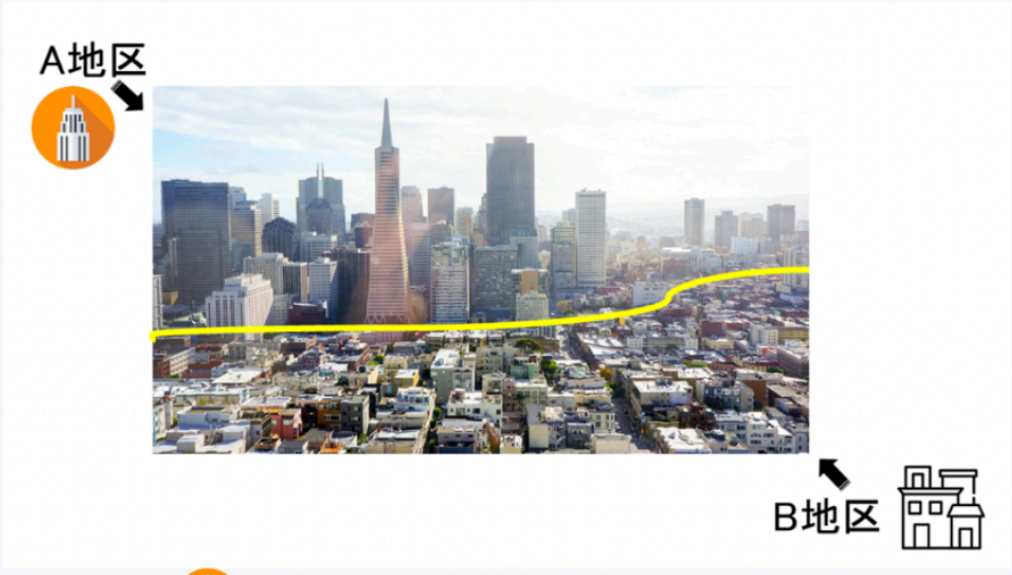
Appendix C (Study 3)

Study 3 Cover story

「資源分配」実験の説明

所属地区の割り振り

- 実験開始時の参加者の所属地区はランダムに決定されます。所属地区によって、参加者の所有ポイントは異なります。



  - A地区の住民（ のアイコン）：所有ポイントが10,000ポイント以上
  - B地区の住民（ のアイコン）：所有ポイントが10,000ポイント未満
- ポイント数は課題を通じて増減し、所有ポイントによって所属地区が決定されます。つまり、すべての参加者には所属地区の移動の可能性があります（例：実験開始時はB地区→課題の途中で所有ポイントが10,000ポイント以上となり、A地区に移動）。

Study 3 Instruction of “petty favor” option

休憩（インターバル）

以降の課題では、新たなルールを追加します。各ラウンドでペアの相手を選択した後、以下の2つのいずれかのオプションを選択して、資源分配を行ってください。

- **オプション1**：**あなたの元金から50ポイントをペアの相手に渡し、**その後、資源分配課題を行います。
- **オプション2**：**あなたの元金を相手に渡すことはせず、**資源分配課題を行います。