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Abstract

The paper examines the impact of having a mentally disordered peer on middle school students' social preferences after the 2008 Sichuan earthquake in China. Using random classroom assignments, height-based seating arrangements, and lab-in-the-field experiments such as dictator and public goods games, the study has found that having a disabled peer significantly enhances altruistic behavior, driven largely by empathy among students with shared traumatic experiences. These findings highlight how peer effects in post-disaster contexts foster social cohesion and prosocial behaviors, reflecting a self-recovery mechanism inherent in human nature that may mitigate secondary trauma and improve welfare.

Keywords: Peer Effects; Prosocial Behavior; Empathy; Experiments; Disasters

JEL Classification: C93; I2; Q54

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1 Introduction

Disasters can profoundly traumatize people, often leading to symptoms of Post-Traumatic Stress Disorder (PTSD), severe mental distress, and depression, as extensively documented in the literature (Van Griensven et al. 2006, Kumar et al. 2007, Goldmann & Galea 2014, Fergusson et al. 2014, Tsuboya et al. 2016, Iwasaki et al. 2017). While these impacts often persist over time (Jia et al. 2013, Goodman 1997), they may also produce ripple effects across space (Neria et al. 2008, Lock et al. 2012). Observing disabled or traumatized peers can induce secondary trauma in non-victims, potentially reducing individual well-being as they adopt self-protective behaviors and exhibit reduced generosity or cooperation. Conversely, such indirect exposure can also promote altruism and empathy, encouraging individuals to develop a sense of solidarity with their group. In the first scenario, public interventions become essential to mitigate negative spillover effects, while the second highlights a self-correction mechanism that is intrinsically embedded in human nature.

To understand these contrasting dynamics, it is crucial to examine peer effects arising from disaster-induced mental health disorders. Quantifying these spillover effects can reveal broader societal implications. The key question is whether a propagation or self-correction mechanism prevails when individuals face extreme events. While existing research explores peer effects on social preferences in laboratory settings, the existing studies remain limited (Thöni & Gächter 2015, Gächter et al. 2013). Notable exceptions include Rao (2019), which leverages a policy experiment to demonstrate that the presence of a poor student in a classroom increases generosity among wealthy students. However, to the best of our knowledge, no study in economics has yet explored the impact of peer effects on individuals' fundamental preferences in a post-disaster context.

To bridge this gap in the literature, this study investigates the impact of peer effects on individual preferences in real-world classroom settings following a disaster caused by a natural hazard, the 2008 Sichuan earthquake in China. The earthquake, with a magnitude of 7.9, caused significant devastation, including the loss of more than 69,000 lives. Specifically, this research examines whether the presence of a disabled classmate influences

fellow students' social and individual preferences, as measured through a series of laboratory experiments conducted with middle school students in the affected areas. We believe our empirical study provides valuable insights into the existing literature, as the theoretical impact of peer effects on student behavior in this context remains indeterminate. The presence of a peer disabled by the earthquake in the classroom may not necessarily influence classmates' behavior, especially because many students themselves experienced losses and endured the earthquake first-hand. However, this setting could evoke feelings of sympathy or empathy, potentially leading to shifts in students' preferences. These changes might arise from psychological shocks, social influence, altered expectations, or updated information (Loewenstein et al. 2003).

Specifically, this paper examines the impact of having a mentally disordered peer due to the 2008 Sichuan earthquake on the social and individual preferences of middle-school students residing in the earthquake-affected area. To elicit these preference parameters, we have conducted lab-in-the-field experiments such as dictator and public goods games as well as multiple price list (MPL) experiments for risk aversion and subjective discount rates. To identify arguably causal peer effects in classrooms, we exploit unique natural experimental conditions. First, in our context, while the unexpected earthquake exogenously induced mental disorders among a few students, classroom assignments at the start of seventh grade (the beginning of middle school) are random. Students remain in the same classroom with the same peers for all classes throughout their three years of middle school. Since students are randomly assigned to classrooms within an academic track and within a school, the presence of a disabled student (either intellectually disabled or mentally disordered) in a class is unrelated to individual or social preferences. Disabled students are also subject to the same random assignment rules. This random allocation creates a natural experimental situation that effectively isolates peer effects from selection bias.

Second, we address the possibility that results might be driven by common shocks, such as having an exceptionally generous teacher for the entire classroom with a disabled student. To account for this, we adopt an alternative identification strategy that exploits

within-classroom variations. Specifically, seat assignments are primarily determined by height (Lu & Anderson 2015). As a result, students of similar heights are positioned physically closer to each other within each classroom.[1] This seating arrangement provides plausibly exogenous variation in personal interactions with disabled students. Using height as a proxy for personal interaction, we isolate the role of proximity-based interactions with disabled peers. Accordingly, we employ a standard difference-in-differences model, comparing students of similar heights to disabled students within and across classrooms, to further disentangle these effects.

To preview our results, we find that having a disabled peer student significantly enhances altruistic behavior within the classroom. This effect is primarily driven by empathy, particularly when students share similar traumatic experiences and directly observe mental disabilities. These findings offer compelling evidence of how peer effects shape social preferences in a post-disaster context, emphasizing the potential of shared adversity to strengthen social cohesion and prosocial behaviors.

While these insights offer valuable guidance for designing educational strategies and broader post-disaster recovery policies, our study makes three important contributions to the existing literature on the nexus of disasters and human behavior. First, we connect the economics of education literature on classroom peer effects with behavioral economics research on other-regarding preferences, demonstrating that classroom peer effects influence social preferences. Second, our findings of positive peer effects in the aftermath of a major disaster show a self-correcting mechanism intrinsic to human nature, providing micro-level evidence supporting the sociological concept of 'disaster utopia,' as described in Solnit (2010), a silver lining emerges in the form of enhanced altruism, goodwill, and generosity. Third, prosocial behavior encompasses various forms, such as pure and impure altruism, warm glow, reciprocity, voluntary reciprocal cooperation, trust, fairness, and inequality aversion. Despite their diversity, limited research has explored the mechanisms underlying these social preferences. Notably, DellaVigna et al. (2022) made significant strides in disentangling these complexities through experimental analysis. Building on

[1]Previous studies, such as Lu & Anderson (2015) and Hong & Lee (2017), also use seat assignments in China and Korea, respectively, to examine subclassroom peer effects.

this foundation, our study addresses the gap in the existing literature by utilizing a natural experimental setting in China to uncover the drivers of social preferences and shed new light on the modalities of prosocial behavior.

The remainder of this paper is organized as follows: Section 2 provides a summary of the related literature. Section 3 outlines the surveys and experiments conducted in this study. Section 4 details our identification strategy within the quasi-experimental design. Sections 5 and 6 present our empirical results and explore the potential mechanisms underlying empathy, respectively. In Section 7, we conduct a series of robustness tests. Finally, Section 8 concludes by summarizing our findings and discussing the limitations of the study.

2 Literature Review

First, our study builds on the extensive body of literature on peer effects in education (Hoxby 2000, Sacerdote 2001, Zimmerman 2003, Kang 2007, Figlio 2007, Ding & Lehrer 2007, Carrell et al. 2009, Ammermueller & Pischke 2009, Carrell & Hoekstra 2010*a*, Duflo et al. 2011*a*, Arcidiacono et al. 2012, Lavy et al. 2012, Burke & Sass 2013, Angrist 2014, Lu & Anderson 2015, Feld & Zölitz 2017, Murphy & Weinhardt 2020). Peer effects are widely recognized as critical determinants of students' school participation, academic performance, and broader behaviors such as smoking, drug use, pregnancy, and criminal activities (Sacerdote 2011*a*). Numerous existing studies have explored how peer spillovers among schoolmates, classmates, or flatmates influence educational outcomes (Hoxby 2000, Sacerdote 2011*b*, Zimmerman 2003, Ding & Lehrer 2007, Carrell et al. 2009, Duflo et al. 2011*b*, Arcidiacono et al. 2012, Lavy et al. 2012, Angrist 2014). Peer effects can be either positive or negative. While positive impacts on academic performance are well-documented, negative spillovers from troubled peers are also evident (Hoxby 2000, Figlio 2007, Carrell & Hoekstra 2010*b*, Carrell et al. 2009). Moreover, It remains unclear whether these effects are merely temporary and confined to observable behaviors or if they induce deeper, lasting shifts in individual preferences, with significant implications

for long-term decisions related to education, fertility, savings, and investments (Strauss & Thomas 1995, Schultz 1997). For instance, students who smoke under peer influence may become less risk-averse, which could have far-reaching consequences beyond what standard data captures. Such behavioral shifts might affect various life decisions, including education choices, fertility preferences, and financial behaviors (Strauss & Thomas 1995, Schultz 1997, Rosenzweig & Stark 1989, Kremer et al. 2019). If these underlying changes are overlooked, we risk underestimating the full significance of peer effects. Moreover, potential underestimation biases in empirical analyses may arise from focusing solely on observable behaviors, neglecting the broader and more enduring impacts of peer influence.

Second, this paper contributes to a small but growing body of literature examining the shaping of social and individual preferences, particularly the impact of education (Fisman et al. 2008, Jakiela et al. 2010, Rao 2019). For instance, Fisman et al. (2008) found that exposure to an emphasis on efficiency over equity influences law students' distributional decisions. Similarly, Jakiela et al. (2010) observed that higher academic achievement reduces the willingness of young Kenyan women to appropriate others' labor income, encouraging adherence to a 50-50 split norm in the dictator game. Furthermore, Rao (2019) demonstrated that the presence of a poor student in a classroom increases generosity among wealthy students and reduces their discriminatory behavior against poorer peers. All of these studies suggest that education may have long-term impacts on social preferences, norms, and institutions, extending beyond the direct production of human capital. While our research aligns closely with the work of Rao (2019), our focus is on post-disaster recovery. As such, the mechanisms at play and the resulting policy implications are fundamentally different, despite yielding somewhat consistent findings with Rao (2019). Furthermore, our study contributes to the limited body of research that examines empathy alongside altruism and social preferences explored in the existing literature (Preston & De Waal 2002, Andreoni & Rao 2011, Andreoni et al. 2017)

Third, our study contributes to the extensive literature on the effects of disasters on human behavior, psychosocial outcomes, and individual social preferences (Eckel et al. 2009, Voors et al. 2012, Cameron & Shah 2013, Callen et al. 2014, Goldmann & Galea

2014, Chuang & Shechter 2015, Hanaoka et al. 2015, Gilligan et al. 2013, Sawada 2022, Kuroishi & Sawada 2024). This body of work often employs field experiments conducted in disaster-affected areas to examine how disasters influence social, risk, and time preferences. However, these studies generally fall short in identifying the specific mechanisms that drive the observed relationship between disasters and preferences. For instance, while Voors et al. (2012) provide comparisons of outcomes based on direct and indirect traumatic experiences, they do not causally disentangle the effects of direct exposure from those of indirect exposure. To the best of our knowledge, our paper is the first to isolate the indirect spillover effects of disasters—mediated through peer interactions—from the direct impacts, thereby identifying the post-disaster peer effect.

Finally, our study contributes to the economics literature on the Sichuan earthquake. A distinctive feature of this disaster, examined by both our paper and Cao (2024), is the disproportionate damage to schools, which resulted in post-disaster deficiencies in human capital development. While Cao (2024) investigates potential collusion contributing to the structural damage of school buildings, our paper focuses on the outcomes stemming from such damage. Most existing studies in this field explore the direct impacts of the earthquake, such as its effects on savings, academic performance, and the local economy (Filipski et al. 2019, Lu et al. 2023, Huang et al. 2024, Deng et al. 2015, Bulte et al. 2018, Park & Wang 2017). In contrast, our study distinguishes itself by examining the indirect impacts of the disaster, particularly those arising through peer interactions—an area that remains largely understudied in disaster-related research.

3 The Surveys and Experiments

We investigate peer effects in classrooms by leveraging a unique natural experiment in China following the Great Sichuan (Wenchuan) Earthquake of 2008. On the afternoon of May 12^{th}, 2008, Sichuan Province was struck by a 7.9-magnitude earthquake (USCS, 2012). This was the first major quake in the region since the start of China's market-oriented reforms in 1978 (Asian Development Bank 2020).[2] The earthquake resulted in

over 69,000 confirmed fatalities in the province.

3.1 Study Outline

This study is based on a survey conducted through structured interviews by Renmin University of China in December 2009, encompassing 5,482 students and 980 teachers from 12 elementary schools, 5 middle schools, and 3 high schools in Wenchuan County and Mao County, Sichuan Province. Our study employs data from an economic experiment and associated survey conducted in April 2011. This experiment involved a total of 1,528 middle school students, including 432 from Wenchuan County, 462 from Mao County, and 634 from Wangcang County, all located in Sichuan Province.

After the earthquake, all schools, along with their students and teachers in Wenchuan County, were relocated to other counties for one year, either within Sichuan Province or to other provinces. This relocation potentially created varying spillover effects depending on the host county. To isolate such impacts, our study focuses on Mao County, a neighboring county near the earthquake's epicenter, where all students, teachers, and schools remained in place after the disaster. Note that we also excluded Wangcang County, as no students were reported to have become disabled due to the earthquake. Mao County consists of three towns and 19 villages. While it experienced significantly fewer casualties and received less media attention than Wenchuan County, where the epicenter was located, the damage was still severe. According to official statistics reported by public media, 3,122 people, or 2.8% of Mao County's population of 110,000, died during the earthquake.

In Mao County, we conducted laboratory experiments and gathered related information from all three middle schools in April 2011, approximately three years after the May 2008 earthquake. Within each school, two classes were randomly sampled from the 8^{th} and 9^{th} grades. Then, surveys and laboratory experiments were conducted with all students in the selected classes, resulting in a total of 12 classes with an average of 39 students per class, which is 462 students. Consequently, all students who participated in the laboratory

[2]The last significant earthquakes in the area occurred in 1933 (magnitude 7.5) and 1976 (magnitude 7.2).

experiments were in primary school (5^{th} or 6^{th} grade) at the time of the earthquake.

In Table 1, our student-level survey data highlights the significant adverse effects of the earthquake. Among the 462 students surveyed in 2011, 1% (five students) reported becoming disabled, either intellectually or due to a mental disorder, as a result of the earthquake. Furthermore, 26% had at least one relative who was injured, 10% reported personal injuries, 65% experienced damage to their primary school, and 4% reported damage to their homes. At the classroom level, every classroom had at least one student who either sustained personal injuries, had an injured relative, experienced damage to their home, or attended a primary school that was damaged during the earthquake.

Table 1: Descriptive Statistics

	mean	sd	max	min
Basic Characteristics				
Height	159.29	8.14	190.00	124.00
Qiang Ethnicity	0.97	0.17	1.00	0.00
Female	0.54	0.50	1.00	0.00
Age	15.16	0.89	18.08	13.33
Proxy for Wealth	0.23	0.42	1.00	0.00
Home Subsidy	4.43	0.82	5.00	1.00
School Subsidy	2.66	1.28	4.00	0.00
Student-Level Damage				
Dummy for Self Disability	0.01	0.10	1.00	0.00
Dummy for Having Relative Hurt	0.24	0.43	1.00	0.00
Dummy for Self Hurt	0.10	0.30	1.00	0.00
Dummy for House Damage	0.04	0.20	1.00	0.00
Dummy for Primary School Damaged	0.65	0.48	1.00	0.00
School-Level Damage				
Number of Students in the Class	38.94	4.05	45.00	32.00
Classlevel Dummy for Having Relative Hurt	1.00	0.00	1.00	1.00
Classlevel Dummy for Self-Hurt	1.00	0.00	1.00	1.00
Classlevel Dummy for House Damage	0.75	0.43	1.00	0.00
Classlevel Dummy for Primary School Damage	1.00	0.00	1.00	1.00
Observations				462

3.2 Mentally-Disabled Students

It is well-documented that symptoms of Post-Traumatic Stress Disorder (PTSD) and depression have persisted over time among child and adolescent survivors of the Sichuan earthquake (Jia et al. 2013). Against this backdrop, we focus on classroom-level peer effects stemming from the presence of a student who became mentally disabled due to

the earthquake. The disability measure in our study is self-reported and defined as intellectual disability and/or mental disorder. We construct a binary "treatment" variable that indicates whether such a student is present in each classroom. To account for other direct impacts of the earthquake, our analysis includes variables that capture "shocks" such as having at least one relative injured, experiencing personal injury, encountering home damage, or attending a damaged primary school. This approach allows us to isolate the indirect peer spillover effect in classrooms from the direct consequences of the disaster. Among the potential indirect effects, we emphasize the disability variable due to its visibility, persistence, and relevance within the classroom context.

One year after the earthquake, the county education department issued a memo stating that all disabled students were exempt from tuition, textbook, and boarding fees. Additionally, these students could receive a small supplemental stipend (0.8 USD per school day), in line with national recommendations. The department also advised teachers to provide extra support and encouragement to disabled students to help them build confidence. In November 2008, the education department collected data on the number and types of disabilities among students. However, no updated information was gathered for students who enrolled after 2008. Furthermore, in the schools included in our study, there were no explicit special policies for treating students with disabilities.[3]

In our survey, five students self-reported becoming disabled as a result of the earthquake (Table 1). These students, all belonging to the Qiang minority, were enrolled in two separate classes at two different middle schools[4]. Although the survey did not specify the type of disability, we argue that it is reasonable to infer that these students likely experienced mental disabilities due to the earthquake, based on the following four reasons.

First, our data indicate that these students exhibit poor psychosocial outcomes, measured by depression symptoms, peer behavior, and self-esteem levels. To assess the psy-

[3]In interviews, head teachers reported being responsible for 80 to 100 students, with a focus on high-performing students. They noted that unless students actively sought help—which they generally did not—teachers had limited knowledge of their students beyond classroom conduct. This indicates that specific care was not provided to disabled students in these schools.

[4]Of the five disabled students, four are from the same class within one school, while the fifth belongs to a different class in another school

chosocial status of the students, we employ three measures. The first is the Center for Epidemiological Studies Depression Scale (CES-D), based on the questions listed in Appendix Table A1, a widely used tool to capture depression. Second, we use the Strengths and Difficulties Questionnaire (SDQ) developed by Goodman (1997) to measure psychological attributes, specifically conduct and peer relationship problems (Appendix Table A2). Third, we adopt the Rosenberg Self-Esteem Scale (RSES), which measures self-worth perceptions (Rosenberg 1965). This 10-item scale, designed for adolescents and adults, assesses the degree of approval or disapproval individuals have toward themselves (Appendix Table A3). All responses are aggregated and rescaled, so higher scores correspond to lower depression, fewer relationship problems, and higher self-esteem. Compared to the mean of all students studied, disabled students score significantly lower: -1.08, -0.48, and -0.53 standard deviations for depression, peer conduct, and self-esteem, respectively (Table 2, the last block).

Second, to better understand and verify the nature and condition of the mental disabilities reported by these students, we conducted additional qualitative interviews with their head teachers three years after our original study. One head teacher noted that in one class, the self-reported disabled student exhibited mental disorders attributed to the earthquake, describing the student as highly aggressive and prone to negative perceptions. In another class, the head teacher indicated that a self-reported disabled student had developed an intellectual disability.

Third, according to our survey results, one of the five students reported the death of a close family member during the earthquake, while another indicated that an immediate family member had been seriously injured. At the time of the 2011 survey, two students' families were unemployed. In addition, all five students experienced the collapse of their homes, homes, and schools during the earthquake, and their families lived in temporary housing in its aftermath.

Finally, our experiments, discussed later, reveal somewhat peculiar characteristics of these five students that may be linked to their mental disorders. They donate significantly more in dictator games overall, particularly to earthquake victims, compared to their

classmates' average. However, they contribute less in public goods games. Although their discount rates are not statistically different from those of their classmates, they exhibit a substantially high level of risk taking.

Accordingly, in the remaining sections of this paper, we refer to students who self-report a disability (intellectual disability or mental disorder) as disabled students, a classroom with a disabled student as a "treatment" class, and a classroom without a disabled student as a "control" class. However, it is important to note that the disability status is self-reported, and there are no counselors in the schools to assess or address the severity of these issues.

3.3 Lab-in-the-Field Experiments

To accurately capture the individual and social preferences of the student subjects, we conducted a series of widely used laboratory experiments involving monetary rewards. These included dictator games and public goods games to measure students' altruism and their degree of reciprocal expected cooperation, respectively. Additionally, we employed multiple price list (MPL) experiments to elicit risk aversion and subjective discount rates. Although the experiments measuring risk aversion included monetary rewards, the ones assessing discount rates were conducted in a hypothetical setting without monetary rewards. These lab-in-the-field experiments were carried out by four Ph.D. and master's students from Renmin University of China, under the supervision of our research team. Each class was randomly divided into two groups, X and Y, which completed slightly different versions of the test. While the questions in both versions were identical, they differed in the order of partners presented in the public goods and dictator games. Groups X and Y participated in separate classrooms, each led by a different instructor. To address potential estimation bias arising from these arrangements, our regression analyses include fixed effects for both instructors and experimental groups.

Following the experiments, a short survey was conducted to collect information on students' basic demographic characteristics, academic performance, actual donation behavior, psychosocial measures, details about their previous (primary) schools, earthquake-

related losses and damages, family asset ownership prior to the earthquake, and aid received after the disaster. The sequence of games and survey questions was carefully designed to minimize priming effects; for example, questions about damage and aid information were placed at the very end of the survey.

At the conclusion of the experiment, a coin was flipped to determine which question would be used to calculate each student's payment. The amount indicated in the selected question was distributed to students on the same day. The average payment was 98 RMB, approximately equivalent to a day's wage in Sichuan Province, China, which was substantial given that the experiment lasted less than three hours.

3.3.1 Dictator Game

To measure students' generosity and altruism, we use the standard dictator game (Camerer & Fehr 2004, Engel 2011). In this classroom-laboratory experiment, student subjects are informed that they have five 20 RMB bills, totaling 100 RMB, which they can allocate between themselves and their partners individually and anonymously.[5] To determine whether students exhibit general generosity or targeted generosity toward specific populations, we employ a within-subject design. Each subject plays five rounds of the dictator game, one for each type of partner where the five types of partners include: (1) a survivor of the Haiti earthquake, (2) a survivor of the Qinghai earthquake, (3) a poor student at the school, (4) a randomly selected classmate from another class, and (5) a random stranger. While participants are not paired with their partners on-site, they are informed about the background characteristics of the partners and the procedures for money transfers.[6] We measure a subject's social orientation using the ratio of the total amount allocated to the

[5]The allocation options are in increments of 20 RMB, with a total of 100 RMB available for distribution.

[6]Before the subjects made their decisions, brief descriptions were provided, including the number of people affected by the Haiti and Qinghai earthquakes, along with pictures of survivors and their damaged towns. The procedure for money transfers was explained in detail, specifying that the donated money would be distributed through the following channels: (1) the International Rescue Committee (Haiti earthquake victims), (2) the China Red Cross Foundation (Qinghai earthquake victims), (3) compensation for responding to a nationwide survey (random stranger), (4) the study school (poor student), and (5) the study school (student from another class).

partner compared to the amount allocated to themselves. This ratio ranges from 0%, indicating complete selfishness (when the subject allocates the entire amount to themselves), to 100%, indicating complete altruism (when the subject allocates the entire amount to the partner). The absolute amount donated is used as the outcome measure for altruism.

3.3.2 Public Goods Game

In addition to the dictator game, we employ the public goods game, a variant of the multi-person prisoner's dilemma, to measure a combination of altruism, risk aversion, and reciprocal expectations of cooperation. This game was played three times by a group of four student participants. Each participant was given 100 RMB in the form of five 20 RMB notes and asked to decide how to allocate the money between their 'personal fund' and the group's 'mutual fund.' Participants could either keep the money for themselves or contribute it to the mutual fund, which would be doubled and then evenly distributed among all members of the group.

Students participate in the public goods game three times. In the first two rounds, they play with known members of their assigned group, while in the third round, their partner is an anonymous classmate. Previous literature has consistently shown a decline in cooperation in finitely repeated public goods games (Andreoni 1988, Fischbacher & Gächter 2010). To partially account for learning effects and other factors driving this decline, students are not informed of their peers' contributions during the study. Instead, they only learn the total amount they earn at the study's conclusion, and only if one of their public goods game decisions is selected for actual payment.

In our public goods game, the dominant strategy for all participants is to contribute nothing, resulting in a pure strategy Nash equilibrium where no one contributes. In other words, each individual seeks to "free ride" on the contributions of others, regardless of others' actions. However, the socially optimal outcome is for everyone to contribute all their money to the public pot, which would maximize collective welfare and make everyone better off. The amount of contribution can be interpreted as a reflection of altruism, fairness preferences, and/or the anticipated level of reciprocal cooperation (Camerer &

Fehr 2004, Levitt & List 2007).

3.3.3 Individual Preferences

In addition to measuring social preferences, we elicited risk aversion parameters and subjective discount rates. To assess risk aversion, we used the standard multiple price list design introduced by Holt & Laury (2002), with monetary rewards. Participants were presented with a series of choices between two lotteries, referred to as Option A and Option B.[7] These two lotteries have a relatively significant difference in expected values. As one moves down the list, the expected values of both lotteries increase, but the expected value of Lottery B eventually surpasses that of Lottery A. In each row, the subject chooses either Lottery A or Lottery B. The underlying logic of this test for risk aversion is as follows: risk-loving individuals are likely to choose Lottery B in the first row, whereas only risk-averse individuals would select Lottery A in the second-to-last row. A risk-neutral individual would switch from choosing A to B at the point where the expected values of both lotteries are equal. Following (Andersen et al. 2008), we analyze these choices to estimate the parameter of a latent utility function specified under the constant relative risk aversion (CRRA) framework. The CRRA utility function is defined as: $u(M) = (w + M)^{1-r}/(1 - r)$. where r is the CRRA coefficient, w is the background consumption level, and M is the monetary payoff. For our analysis, the background consumption level (w) is set at zero. With this functional form, r=0 indicates risk-neutrality, $r > 0$ denotes risk aversion and $r < 0$ shows risk tolerance.[8]

To measure discount rates, we follow Ashraf et al. (2006) and use non-incentivized multiple price list (MPL) experiments. In these experiments, student subjects are pre-

[7]Game 3 in Appendix B illustrates the basic payoff matrix provided to participants in the experiment. For example, in the first row, Option A offered a 10% chance of receiving 100 RMB and a 90% chance of receiving 80 RMB. The expected value of this lottery, EV(A), is calculated as 82 RMB, although this information was not disclosed to participants. Similarly, Option B in the first row offered a 10% chance of receiving 190 RMB and a 90% chance of receiving 5 RMB, with an expected value of 23.5 RMB.

[8]Since we only have a range for the CRRA coefficient, we derive a point estimate to quantify risk aversion. Specifically, we set –2 as the lower bound for the least risk-averse range and +2 as the upper bound for the most risk-averse range, taking the midpoint of this range as our measure of risk aversion. We also explored alternative bounds (–3 and +3) and found qualitatively similar results.

sented with a series of hypothetical questions, each requiring a choice between two options (Appendix B, Questions 3–6): receiving a specified amount of money today or receiving a larger amount of money at a future date. The two options presented are: (A) receive 200 RMB today, or (B) receive 200, 230, or 260 RMB in the next month. If a student consistently chooses option (A) across all scenarios, we further ask how much money they would need to receive in a month to forego the immediate payment of 200 RMB. The point at which a student switches from choosing option (A) to option (B) indicates their level of patience: the earlier they choose option (B), the more patient they are. We calculate the discount rate, d, using the formula: $V_F{=}V_P{\times}(1{+}d)$, where V_P and V_F are the present value and the future value, respectively, determined when a student is indifferent between the two values. We also employed an alternative specification for our outcome, utilizing a continuously compounded exponential discount rate (Samuelson 1937, Pender 1996), calculated as $V_P = V_F e^{-d}$. Our results remain robust under this specification.[9] In our analysis, the elicited discount rate, d, takes values such as 0.15, 0.3, 0.5, and so on. The discount rate is assessed in ranges, with values calculated using the midpoint of each range. For computation purposes, we assumed a lower bound of zero for the discount rate and used the average value within the specified range.

3.3.4 Descriptive Statistics

Table 2 presents the descriptive statistics of the experimental results, categorized by treatment status (i.e., control students and treatment students excluding disabled students), as well as disabled students and the overall average. First, regarding the dictator game outcomes, we observe that the presence of a disabled peer significantly increases students' generosity. Specifically, the average total donation for all students is 266.67 RMB, equivalent to 53.33% of the total endowment of 500 RMB across five games. When comparing the control and treatment groups, the average donations are 260.98 RMB and 297.54 RMB, respectively—a difference of 36.56 RMB, or approximately 14% of the con-

[9] Andersen et al. (2008), Andreoni & Sprenger (2012) emphasize that if a decision maker is not risk-neutral, experiments of this nature conflate the curvature of the utility function, resulting in an upward bias in the estimated discount rate.

trol group's average. Breaking down the donations by partner, the levels and differences between the treatment and control groups are more pronounced for partners from Haiti, Qinghai, and poor students within the schools. This pattern may suggest increased empathy and/or sympathy arising from the presence of a disabled student in the classroom. In contrast, the public goods game results show no notable differences between the control and treatment groups.

Regarding the public goods game results, the total average contribution to the public pot is 186.26 RMB, representing 62.09% of the total endowment of 300 RMB. The average contribution in the treatment group is 187.30 RMB, closely matching the 186.65 RMB contributed by students in the control group. The anonymous setting in Game 3 appears to systematically incentivize lower contributions compared to Games 1 and 2, where the identities of participants are known.

Table 2 also presents the results of the risky lottery choice experiments and hypothetical questions on subjective time discounting. The findings indicate that the average coefficient of relative risk aversion is 0.11 across all students. Among treatment students, the coefficient is 0.05, compared to 0.13 for control students, suggesting that treatment students are, on average, more risk-tolerant. Regarding time discounting, the overall average discount rate is 0.30. Treatment students exhibit an average discount rate of 0.31, while control students average 0.30, indicating minimal differences between the two groups.

In profiling the disabled students, Table 2 shows descriptive statistics of experimental game results for the mentally-disabled students. By comparing these students with the students in other categories, we can confirm the peculiar tendencies of the disabled students. They exhibit significantly higher overall donations in dictator games, particularly to earthquake victim recipients in Haiti and Qinghai earthquakes, compared to the average of their classmates. However, they contribute less in public goods games, indicating "rational" decisions with a lower propensity for reciprocal mutual cooperation. Additionally, they display substantially higher levels of risk-taking with low academic achievements with systematically lower mathematics and Chinese test scores. As previ-

Table 2: Descriptive Statistics of Experimental and Non-Experimental Outcomes

	Control Students		Treatment Students (Excl. Disabled)		Disabled Students		Total	
	Mean (SD)	n^*	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n
Dictator Games								
All Game Donation	260.98 (91.61)	389	297.54 (79.18)	65	308.00 (65.73)	5	266.67 (90.58)	459
Donation to Haiti	68.17 (25.49)	389	77.85 (23.75)	65	96.00 (8.94)	5	69.85 (25.47)	459
Donation to Qinghai	71.77 (24.92)	389	84.00 (20.06)	65	92.00 (10.95)	5	73.73 (24.60)	459
Donation to Stranger	27.71 (24.83)	389	27.38 (26.36)	65	36.00 (16.73)	5	27.76 (24.95)	459
Donation to Poor Student	59.18 (24.61)	389	71.69 (17.64)	65	52.00 (33.47)	5	60.87 (24.21)	459
Donation to Other Schoolmates	34.14 (24.51)	389	36.62 (21.67)	65	32.00 (22.80)	5	34.47 (24.08)	459
Public Goods Games								
All Contribution	186.65 (66.39)	373	187.30 (65.97)	63	144.00 (49.80)	5	186.26 (66.20)	441
Contribution Game 1	63.26 (28.73)	387	62.15 (28.75)	65	64.00 (26.08)	5	63.11 (28.65)	457
Contribution Game 2	63.38 (27.55)	379	64.92 (29.16)	65	36.00 (16.73)	5	63.30 (27.80)	449
Contribution Game 3	59.06 (29.14)	383	61.27 (28.26)	63	44.00 (32.86)	5	59.20 (29.05)	451
Individual Preferences								
Risk Aversion	0.13 (0.68)	390	0.05 (0.76)	67	-0.60 (0.87)	5	0.11 (0.69)	462
Discount Rate	0.30 (0.31)	376	0.31 (0.24)	65	0.30 (0.15)	5	0.30 (0.30)	446
Test Scores								
Maths Test Score	0.30 (1.05)	390	0.26 (0.84)	67	-0.55 (0.90)	5	0.29 (1.02)	462
Chinese Test Score	0.32 (0.89)	390	0.59 (1.17)	67	-0.60 (1.39)	5	0.35 (0.95)	462
Pyschological Outcomes								
CESD	0.02 (0.99)	378	-0.04 (1.01)	65	-1.08 (0.99)	4	-0.00 (1.00)	447
SDQ	0.03 (1.00)	386	-0.13 (1.01)	64	-0.48 (0.45)	4	0.00 (1.00)	454
Rosenberg	0.08 (0.99)	385	-0.43 (0.94)	65	-0.53 (1.20)	4	-0.00 (1.00)	454

*The overall sample size is 462. This table includes observations without any missing values for the respective variables.

ously explained, compared to the mean scores of all students, mentally disabled students score significantly lower on the depression (CES-D), peer conduct (SDQ), and self-esteem (RSES) scales, with differences of -1.08, -0.48, and -0.53 standard deviations, respectively (Table 2).

4 Empirical Strategy

We adopt two empirical strategies in our analysis. First, we exploit variations across classrooms generated by the random assignments of disabled and non-disabled students into classrooms, conditional on each school, academic track, and grade. Second, we analyze exogenous within-classroom differences to evaluate the intensity of peer effects, driven by seating assignments determined exogenously based on each student's height.

4.1 School, Academic Track, and Grade Fixed Effects Model

We examine whether being in a classroom with a disabled student affects the social and individual preferences of their peers, using the random assignment of students into classrooms within the same school and academic track. This approach, leveraging random classroom assignments to study peer effects, is well-established in the literature (Whitmore 2005, Ammermueller & Pischke 2006, Kang 2007, Gershenson et al. 2022, Bietenbeck 2025). In our context, each student's choice of one of the three middle schools in Mao County is primarily determined by the location of their home village. Once a school is selected, students are assigned to a classroom at the start of the seventh grade—the beginning of middle school. Students remain in the same designated classroom with the same classmates for all their classes over the three years of middle school.

All incoming students take an achievement test before entering their respective middle schools. Of the three middle schools in Mao County, one school randomly assigns students to classrooms within a grade based on their test scores.[10] The other two schools

[10]For example, in a grade with ten classes, the 1st and 11th ranked students are placed in the first class, while the 2nd and 12th ranked students are assigned to the second class.

divide students into two academic tracks: advanced and regular. Approximately one-third of the classes are advanced, while the remaining two-thirds are regular. Within each track—advanced (typically three to four classes per grade) and regular (usually ten classes per grade)—students are randomly assigned to classrooms by grade. This system ensures that teachers are fairly rewarded based on their contributions rather than the pre-determined characteristics of their students.

Since students in each grade are randomly assigned to classrooms within a track and within a school, the presence of a disabled student in the classroom is presumably unrelated to individual and social preferences. This random assignment effectively creates a natural experiment, isolating the peer effect from classroom selection bias. Based on this framework, we propose the following regression model to identify peer effects resulting from having a disabled student on preferences, while controlling for fixed effects at the primary school, middle school, grade, and academic track levels:

$$Y_{i,c} = \alpha + \beta \text{StuDisable}_c + \gamma X_i + \delta_s + \varphi_v + \theta_k + \eta_g + \epsilon_{i,c}, \tag{1}$$

where $Y_{i,c}$ represents one of the social or individual preference variables for student i from primary school v, middle school s, grade g, and classroom c. X_i is a set of detailed demographic and control variables, which will be discussed in detail in the following subsection. δ_s, φ_v, θ_k, and η_g denote fixed effects for the middle school, primary school, academic track, and grade, respectively. StuDisable_c is a dummy variable indicating whether there is a disabled student in the classroom, which is the primary independent variable. β is the coefficient of interest, capturing the estimated treatment effect of having a disabled student in the classroom. The well-behaved error term, $\epsilon_{i,c}$, is clustered at the classroom level to account for potential intra-classroom correlation.

4.2 Identification Assumption of Fixed Effects Model

The validity of our empirical strategy relies on the random assignment of students within each grade and academic track in a given school. In other words, the key identification

assumption is that the presence of a disabled student in a classroom is uncorrelated with individual student characteristics, conditional on unobserved factors specific to the academic track and school.

A potential concern is that the random assignment process might be compromised. For example, some parents may exert additional effort to influence classroom placements for their children, possibly by leveraging informal relationships with teachers or school administrators, or through bribery. In such cases, parents might request that their children be assigned either together with or away from disabled students, which would undermine our identification assumption.[11]

Another issue is the non-random attrition of students from schools with disabled students, which could bias the estimated treatment effect due to selective migration, as highlighted by Callen (2015). For example, less (or more) altruistic or risk-averse families might choose to leave the town after the earthquake. However, in Mao County, school assignments are strictly determined by household registration, and students are not allowed to attend schools outside their designated zones unless their families relocate. This rigid registration system imposes substantial moving costs, which likely reduce the scope for selective migration and its associated bias. Although selective attrition cannot be entirely ruled out, these institutional constraints indicate that it is unlikely to pose a significant concern.

To assess the validity of the randomized classroom assignment, we conduct a pre-treatment balance test to compare student characteristics, household characteristics, and earthquake-related losses across treatment and control groups. This involves estimating treatment-control differences for each variable by regressing the variable of interest on a treatment indicator that denotes the presence of at least one disabled student in the class. The regression model includes fixed effects for school, academic track, and grade to account for systematic differences across these categories. Table 3 presents the results of the balance check. Column 1 shows the mean value of each variable for the control group,

[11]However, it is important to note that the schools in our study do not collect detailed background information on students beyond their academic test scores, which limits the scope for systematic sorting based on other characteristics.

represented by the constant term in the regression. Column 2 reports the coefficients on the treatment indicator from the regression, reflecting the mean difference between the treatment and control groups, with the corresponding p-value displayed in column 3. To address the multiple testing problem, columns 5 and 6 present the adjusted p-values using the Romano-Wolf and Westfall-Young methods, respectively.

The results reveal that, out of 11 variables, only one—age—is significantly associated with treatment status. However, it is unlikely that a child's age influences a parent's ability to place their child in a more "friendly" classroom. Specifically, there is no indication that parents of older children are more likely to establish relationships with school administrators or teachers that could facilitate such placements. Therefore, we conclude that the balance check results provide no substantial evidence of endogenous sorting into classrooms.

Appendix Table A4 provides additional comparisons of basic demographic characteristics and family backgrounds across different treatment and control groups. Treatment status is determined by the presence of a classmate with a specific type of disability. Initially, the treatment is defined based on the presence of any disability, and then further categorized by specific types, such as mental deficiency, blindness, deafness, and other disabilities. Students are included in the treatment group if they share a classroom with a peer who has the corresponding type of disability. Out of 20 comparisons conducted, only two cases show statistically significant differences. These findings indicate that endogenous selection into classrooms based on the type of disability is unlikely to be a major concern for our analysis.

4.3 Difference in Differences Model

Another estimation issue arises from the potential for spillover effects. Since our identification strategy relies on variation across classrooms within a school, two concerns need to be addressed. First, students in other classrooms may already know the disabled student from the same primary school and could also be influenced in terms of their preferences. This possibility suggests that our estimates might be downward biased, as the treatment

Table 3: Exogeneity of Control Variables in Fixed Effects Models

	Fixed Effects: Disabled Student in Class				
	(1) Mean of Control	(2) Diff Between T and C	(3) Model p-val	(4) Romano-Wolf Adjusted p-val	(5) Westfall-Young Adjusted p-val
Height	158.91	-1.06	0.13	0.85	0.68
Ethnic	0.99	0.01	0.74	0.90	0.80
Female	0.56	-0.05	0.47	0.90	0.72
Age	15.38	-0.67**	0.01**	0.72	0.01**
Proxy for Wealth	0.22	-0.05	0.36	0.90	0.68
Home Subsidy	4.56	-0.18	0.13	0.85	0.51
School Subsidy	2.96	0.36	0.16	0.85	0.39
Relative Hurt	0.19	-0.02	0.57	0.90	0.80
Self Hurt	0.12	-0.05	0.42	0.90	0.68
House Damaged	0.02	-0.02	0.50	0.90	0.75
School Damaged	0.71	-0.08	0.10	0.82	0.68

This table presents the average characteristics of students in classes with a disabled student compared to those in classes without a disabled student. The column "Mean of Control" reports the predicted mean of each characteristic for the control group, derived from regressions of the characteristics on the treatment indicator and covariates, including classroom academic track and school fixed effects. The column "Diff between T and C" shows the estimated coefficient on the treatment indicator, with its corresponding p-value provided in the "Model p-val" column. To account for multiple hypothesis testing, Romano-Wolf and Westfall-Young adjusted p-values are included for each characteristic.

effect could spill over to control groups, diluting the observed differences. Second, there is the possibility that the results are driven by common shocks, such as the presence of a particularly competent teacher in the classroom with a disabled student. Such shocks could confound our estimates, as they may influence the outcomes for reasons unrelated to the treatment itself. These factors highlight the need for cautious interpretation of the fixed effects estimation results and consideration of potential spillover and confounding effects.

To address potential estimation bias arising from these within-school selection issues, we adopt a second identification strategy that isolates the role of personal interactions with disabled students by exploiting variations in peer groups within and across classrooms. In Chinese middle schools, seat assignments are managed by an administrative teacher, with student height serving as the primary criterion. To ensure clear visibility for all students in crowded classrooms, taller students are seated toward the back, while shorter students are placed at the front. Students are initially grouped into blocks of rows based on height and then randomly assigned to seats within each block(Lu & Anderson 2015). Because

seating arrangements are rigorously determined by height and extracurricular activities are also strictly organized by height, students of similar heights remain physically close to one another for the entirety of their three years in middle school. Through verification with the head teachers in our study schools, we confirmed that seating was primarily assigned based on height, followed by considerations of visual and hearing abilities, and gender. Disabled students were also assigned seats according to this policy, ensuring consistency in the assignment process.

This height-based seating arrangement creates plausibly exogenous variation in the extent of personal interactions with disabled students. Using height as a proxy for the level of interaction, we employ a difference-in-differences strategy to compare the outcomes of students with similar heights to those of disabled students both within and across classrooms. This methodology enables us to effectively isolate and estimate the causal effects of personal interactions on students' social and individual preferences.

To exploit variations within classrooms, we investigate whether height similarity with the disabled student produces differential impacts on preferences in classrooms with and without a disabled student. Using this set-up, our regression model adopts a "spatial" difference-in-differences framework, specified as follows:

$$\begin{aligned} Y_{i,c} = \alpha + \delta_s + \varphi_v + \eta_g + \theta_k + \beta_1 \text{ StuDisable}_c \\ + \beta_2 \text{ SimilarHeight}_{i,c} \text{ StuDisable}_c \\ + \beta_3 \text{ SimilarHeight}_{i,c} + \gamma X_{\text{i}} + \epsilon_{i,c}, \end{aligned} \tag{2}$$

where $\text{SimilarHeight}_{i,c}$ is a dummy variable equal to one if the student is within 3 cm taller or shorter than the disabled student. The choice of 3 cm is arbitrary but reasonable for two key reasons: (i) this bandwidth captures approximately one-third of the students in the two treatment classrooms (a total of 72 students), and (ii) a relatively larger bandwidth helps mitigate potential measurement error in the recorded heights. Robustness checks using wider bandwidths yield qualitatively similar results, confirming that the findings are not sensitive to the exact threshold.

However, a limitation of this approach is the lack of direct information on seating

arrangements or the ordering of seats during morning meetings, which prevents a more precise measurement of physical proximity. Despite this limitation, the use of height similarity provides a plausible proxy for interaction intensity within the constraints of the available data.

4.4 Identification Assumption of Difference in Differences Model

In our "spatial" difference-in-differences model, the event time variable in the standard difference-in-differences framework is replaced with height. Students with a height similar to that of the disabled student are considered treated, while those with a greater height disparity are either never treated or not yet treated. Consequently, the "spatial" parallel trends assumption can be reformulated as follows: in the absence of treatment, the outcome differences between students with greater height disparities and those with smaller disparities from the disabled student would remain constant.

To empirically verify this identification assumption, we employ the following model to conduct placebo tests on the effects of no exposure to disabled students:

$$\begin{aligned} Y_{i,c} = \alpha + \delta_s + \varphi_v + \eta_g + \theta_k + \beta_1 \text{ StuDisable}_c \\ + \beta_2 \text{ FurthestHeight}_{i,c} \text{ StuDisable}_c \\ + \beta_3 \text{ FurthestHeight}_{i,c} + \gamma X_{\text{i}} + \epsilon_{i,c}, \end{aligned} \tag{3}$$

where FurthestHeighti, c is a binary variable equal to one if a student's height differs by at least 5, 6, or 7 cm (greater or smaller) from the height of any disabled student in the same school. For this test, only students whose height differs by more than 3 cm from the disabled student are included in the analysis.[12] The interaction term, FurthestHeight$_{i,c}$ StuDisable$_c$, captures the outcome difference between the "furthest height" group and the group with a "relatively smaller height disparity." Under the parallel trends assumption,

[12]Note that the condition of a height difference greater than 3 cm in this "spatial" difference-in-differences model corresponds to the pre-trend timing in the canonical difference-in-differences model. This condition ensures that, in the absence of treatment, the outcome differences between students with a greater height disparity and those with a smaller disparity remain constant, aligning with the parallel trends requirement of the standard framework.

the coefficient on this interaction term is expected to be zero.

We use the giving level measured in the dictator game as the outcome variable for this test. Table 4 presents the results, with Panel A reporting the total donation across all games in the dictator game as the outcome. The findings show that we cannot reject the null hypothesis of no effect as the height distance increases, regardless of the centimeter threshold applied. This indicates that outcome differences remain stable as long as students are sufficiently distant from the "treatment"—the presence of a disabled student.

Panels B and C analyze donations to Haiti and Qinghai earthquake victims, respectively. Across all height thresholds, we observe no significant effect for students with the greatest height disparity. Furthermore, the magnitude of the interaction terms is consistently close to zero, contrasting sharply with the main findings discussed in the next section. These results support the validity of the parallel trends assumption within this framework.

Table 4: Testing Identification Assumption in Difference in Differences Model

	Students with the greatest height disparity v.s. Students with a relatively smaller height disparity		
Definition of greatest height disparity	(1) 5 cm	(2) 6 cm	(3) 7 cm
Panel A: Total donation			
Disabled Student in Class × Greatest Height Disparity	19.50	18.51	19.70
	(34.93)	(33.39)	(21.42)
WCB p-val (Disabled × Height)	0.63	0.64	0.49
Control Mean	262.79	262.63	266.1
Panel B: Donation to Haiti earthquake victim			
Disabled Student in Class × Greatest Height Disparity	-1.41	-3.49	0.30
	(11.21)	(9.40)	(8.11)
WCB p-val (Disabled × Height)	0.94	0.76	0.97
Control Mean	71.53	71.40	69.78
Panel C: Donation to Qinghai earthquake victim			
Disabled Student in Class × Greatest Height Disparity	0.25	-1.31	1.34
	(5.28)	(4.76)	(3.55)
WCB p-val (Disabled × Height)	0.97	0.82	0.71
Control Mean	74.38	74.69	73.71
Observations	355	355	355

$^{\star}p < 0.1, ^{\star\star}p < 0.05, ^{\star\star\star}p < 0.01$. This model presents the estimation results of Model 3. All regressions include controls for school, grade, and academic track fixed effects. The estimation includes only students whose height differs by more than 3 centimeters from the disabled student. Columns 1 to 3 define the "greatest height disparity" group as students whose height differs by at least 5, 6, or 7 centimeters from the disabled student, respectively. Standard errors clustered at the class level are shown in parentheses, with Wild Cluster Bootstrapped p-values (WCB p-val) shown at the bottom of each panel.

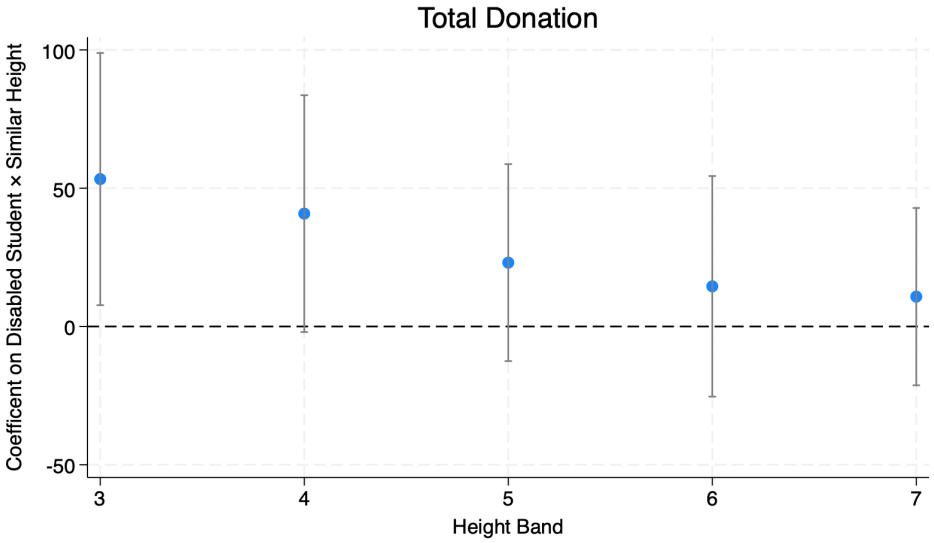


Figure 1: Placebo Tests on the Effects of No Exposure to Disabled Students

This figure illustrates the change in the estimated treatment effect on total donation in the dictator game based on the empirical model 2, using varied height bandwidths. The estimated values and their 90% confidence intervals are presented. The regressions include controls for school, grade, and academic track fixed effects, as well as demographic characteristics and earthquake loss. $SimilarHeight_{i,c}$ is a binary variable equal to 1 if the height distance is within x centimeters of the disabled students. The value of x, shown on the x-axis, ranges from 3 cm to 7 cm.

5 Estimation Results: Dictator Game

5.1 Main Results

Table 5 summarizes the results of giving behavior in the dictator games, with treatment effects estimated across multiple specifications using experimental data involving five partner types: victims of the Haiti earthquake, victims of the Qinghai earthquake, poor students within the same school, schoolmates in other classes, and strangers. The school-tracked fixed-effects models incorporate school, grade, and academic track fixed effects to exploit cross-classroom variation. The treatment effect is captured by the indicator variable "Disabled Student in Class."

Students who are themselves earthquake-caused disabled individuals, along with three students with missing outcomes, are excluded from the analysis.[13] Results are reported

[13]Among the three students with missing outcomes, two belong to the treatment class and one to the control class. Although the reasons for the missing data are unknown, the similarity in their background

in columns (1) and (2), with column (2) including additional controls for demographic characteristics and earthquake exposure. Wild bootstrapped p-values (Cameron et al. 2008) are reported, but it is important to note that tests using the wild cluster bootstrap method can significantly under-reject when the number of treated clusters is small (MacKinnon & Webb 2018). This limitation is particularly relevant to our study, as only 2 out of 12 clusters are treated. Therefore, the bootstrapped p-values should be interpreted as conservative estimates. Columns (3) to (6) of Table 5 present results from difference-in-differences specifications. Columns (3) and (4) report models without and with controls for demographic characteristics and earthquake exposure, respectively. In these models, the coefficient on the interaction term "Disabled Student in Class $\times$ Similar Height" captures the treatment effect, isolating the impact of proximity on giving behavior. Columns (5) and (6) extend the analysis by incorporating additional controls for test scores and a proxy for social-image concerns—students' beliefs about whether teachers favor more generous behavior. This proxy is designed to account for the potential role of social-image concerns in seemingly altruistic decisions, as students may behave generously to gain social rewards rather than out of pure altruism (Carpenter & Myers 2010). The fourth model (column 4) is designated as the main specification for interpreting students' behavior, providing a comprehensive framework that accounts for both demographic and contextual factors influencing giving decisions.

In Table 5, the fixed-effects specifications reveal a positive and significant impact of having a disabled student in the class on giving behavior. Specifically, donations increase by 14.53–15.15 RMB for Haiti victims, 17.68–17.91 RMB for Qinghai victims, 15.99–16.37 RMB for poor students, 6.84–6.90 RMB for other schoolmates, and 3.83–4.59 RMB for strangers. Relative to the average giving in the control group, these effects correspond to increases of approximately 21.79% for Haiti victims, 24.39% for Qinghai victims, 26.85% for poor students, 19.70% for other schoolmates, and 13.71% for strangers.

The difference-in-differences models yield consistent findings, particularly for donations to earthquake victims. Sitting closer to a disabled peer significantly raises donations

characteristics suggests that bias due to missing values is unlikely.

Table 5: Altruism By Partners

	Fixed Effects		DID		Ex-post Controls	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: *Haiti*						
Disabled Student in Class	14.53***	15.15***	7.54	8.37*	7.93	8.31*
	(5.38)	(4.62)	(5.46)	(5.18)	(5.89)	(5.15)
Disabled Student in Class × Similar Height			23.39**	22.41**	22.76**	22.65**
			(9.86)	(10.47)	(11.24)	(10.60)
WCB p-val (Disabled)	0.20	0.19				
WCB p-val (Disabled × Height)			0.14	0.14	0.15	0.14
R-squared	0.12	0.15	0.14	0.16	0.17	0.16
Panel B: *Qinghai*						
Disabled Student in Class	17.68***	17.91***	13.02***	13.56***	14.05***	13.43***
	(3.48)	(2.89)	(3.18)	(3.04)	(3.43)	(3.02)
Disabled Student in Class × Similar Height			15.81***	14.64**	13.83**	15.17**
			(5.75)	(6.06)	(7.01)	(6.17)
WCB p-val (Disabled)	0.08	0.10				
WCB p-val (Disabled × Height)			0.13	0.14	0.16	0.14
R-squared	0.16	0.19	0.17	0.20	0.20	0.20
Panel C: *Poor Students*						
Disabled Student in Class	15.99***	16.37***	14.57***	15.21***	15.60***	15.15***
	(1.97)	(1.85)	(2.08)	(2.00)	(2.03)	(1.99)
Disabled Student in Class × Similar Height			6.13	5.44	4.82	5.69
			(5.91)	(6.70)	(6.56)	(6.82)
WCB p-val (Disabled)	0.04	0.04				
WCB p-val (Disabled X Height)			0.36	0.47	0.52	0.47
R-squared	0.11	0.13	0.12	0.14	0.14	0.14
School & Grade & Academic Track Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Demographic & Loss Control		Yes		Yes	Yes	Yes
Test Score Control					Yes	
Belief Control						Yes
Observations	454	454	454	454	454	454

$^{\star}p < 0.1, ^{\star\star}p < 0.05, ^{\star\star\star}p < 0.01$. The outcome is the donation amount given to the partner specified in each panel in the dictator game. Columns (1) and (2) present estimates from the fixed effects model, while Columns (3)–(6) report estimates from the difference-in-differences model. All regressions include controls for school, grade, and academic track fixed effects. Demographic and loss controls encompass ethnicity, sex, age, proxy for wealth, home subsidy, school subsidy, relative injury, own injury, family house damage, and primary school damage. Column (5) adds test score controls, with missing values imputed using the single imputation method (replaced with the mean). Column (6) incorporates teacher beliefs as an additional control. Standard errors clustered at the class level are reported in parentheses, with Wild Cluster Bootstrapped p-values (WCB p-val) shown at the bottom of each panel.

by 22.41–23.39 RMB for Haiti victims and 14.64–15.81 RMB for Qinghai victims. For other partner types, while proximity to a disabled peer does not substantially or significantly increase giving, the presence of a disabled peer in class still positively influences donations. The observed effects include increases of 14.57–15.21 RMB for poor students, 6.93–8.57 RMB for other schoolmates, and 0.54–2.23 RMB for strangers. These results

Table 5: Altruism By Partners (Continued)

	Fixed Effects		DID		Ex-post Controls	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel D: *Other Schoolmates*						
Disabled Student in Class	6.90***	6.84***	5.13***	4.57**	4.66**	4.55**
	(1.54)	(1.72)	(1.29)	(1.49)	(2.14)	(1.52)
Disabled Student in Class × Similar Height			6.93	8.57*	8.51*	8.62*
			(4.63)	(4.50)	(5.33)	(4.65)
WCB p-val (Disabled)	0.02	0.10				
WCB p-val (Disabled × Height)			0.32	0.21	0.28	0.21
R-squared	0.08	0.10	0.09	0.11	0.11	0.11
Panel E: *Stranger*						
Disabled Student in Class	4.59**	3.83**	4.65	3.35	3.41	3.36
	(1.46)	(1.39)	(3.01)	(2.63)	(2.98)	(2.67)
Disabled Student in Class × Similar Height			0.54	2.23	2.28	2.17
			(6.97)	(6.33)	(6.45)	(6.52)
WCB p-val (Disabled)	0.08	0.08				
WCB p-val (Disabled × Height)			0.95	0.77	0.78	0.78
R-squared	0.10	0.13	0.11	0.13	0.14	0.13
School & Grade & Academic Track Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Demographic & Loss Control		Yes		Yes	Yes	Yes
Test Score Control					Yes	
Belief Control						Yes
Observations	454	454	454	454	454	454

$^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. The outcome is the donation amount given to the partner specified in each panel in the dictator game. Columns (1) and (2) present estimates from the fixed effects model, while Columns (3)–(6) report estimates from the difference-in-differences model. All regressions include controls for school, grade, and academic track fixed effects. Demographic and loss controls encompass ethnicity, sex, age, proxy for wealth, home subsidy, school subsidy, relative injury, own injury, family house damage, and primary school damage. Column (5) adds test score controls, with missing values imputed using the single imputation method (replaced with the mean). Column (6) incorporates teacher beliefs as an additional control. Standard errors clustered at the class level are reported in parentheses, with Wild Cluster Bootstrapped p-values (WCB p-val) shown at the bottom of each panel.

highlight the robust influence of having a disabled peer on altruistic behavior, particularly toward vulnerable groups like earthquake victims.

As the presence of disabled students in the classroom might influence prosocial behavior indirectly through academic performance—where disabled students could act as a "bad apple," potentially hindering their peers' academic learning—column (5) adds test scores as an additional control. The results indicate that including test scores does not substantially alter the estimated coefficients, suggesting that changes in academic performance are not driving the observed increase in prosocial behavior. Column (6) further

incorporates controls for students' beliefs about teacher opinions.[14] The coefficients remain stable across partner types compared to column (4), indicating that image concerns do not account for the observed increase in donations. These findings collectively suggest that the presence of a disabled student in the classroom directly fosters prosocial behavior, rather than through indirect channels such as academic performance or social-image considerations.

5.2 Anatomy of Prosocial Behavior

Our experiments with various partner types offer a unique opportunity to investigate the mechanisms underlying the prosociality-enhancing effect observed in the presence of disabled students. In this subsection, we utilize variations in returns to receivers, physical proximity, and social distance across partner types to decompose prosocial behavior into three key components: impure altruism, pure altruism, and empathy.

Figure 2 provides a visual representation of this framework, using the estimates from column (4) of the main results in Table 5. The x-axis denotes the height distance to the disabled student in the classroom, with zero representing the closest proximity. The y-axis reflects the change in giving behavior observed in the dictator game. This framework enables us to systematically analyze how physical and social proximity to disabled students shapes prosocial decision-making, shedding light on the interplay between altruistic motives and empathy-driven actions.

5.2.1 Impure Altruism and Pure Altruism

Variations in returns to receivers across partner types allow us to disentangle impure altruism from pure altruism. Impure altruism arises from the act of giving itself, regardless of the recipient's circumstances, while pure altruism is driven by the recipient's utility gain. Specific comparisons are particularly informative in distinguishing between these

[14]Teacher opinions are included as a control because altruistic behavior may not solely reflect pure altruistic motives; it can also stem from career incentives or image concerns. For instance, Carpenter & Myers (2010) found that individuals volunteer for firefighting partly because they believe such activities enhance their job prospects.

motives, such as contrasting donations to poor students or earthquake victims with those to schoolmates or strangers. Unlike random strangers or schoolmates, earthquake victims and poor students are economically disadvantaged and therefore derive greater utility from a given donation under a standard concave utility function.

Among these comparisons, poor students and other schoolmates serve as ideal counterparts, as they are symmetric in all aspects except economic circumstances. As shown in Figure 2, the larger effect observed for poor students compared to other schoolmates can be attributed to pure altruism, where donations increase because the recipient gains more utility. The estimated effect size is approximately 10.64 RMB. In contrast, the observed increase in giving to other schoolmates—around 4.57 RMB—represents baseline impure altruism, driven by the intrinsic satisfaction derived from the act of giving, irrespective of the recipient's need.[15]

5.2.2 Empathy

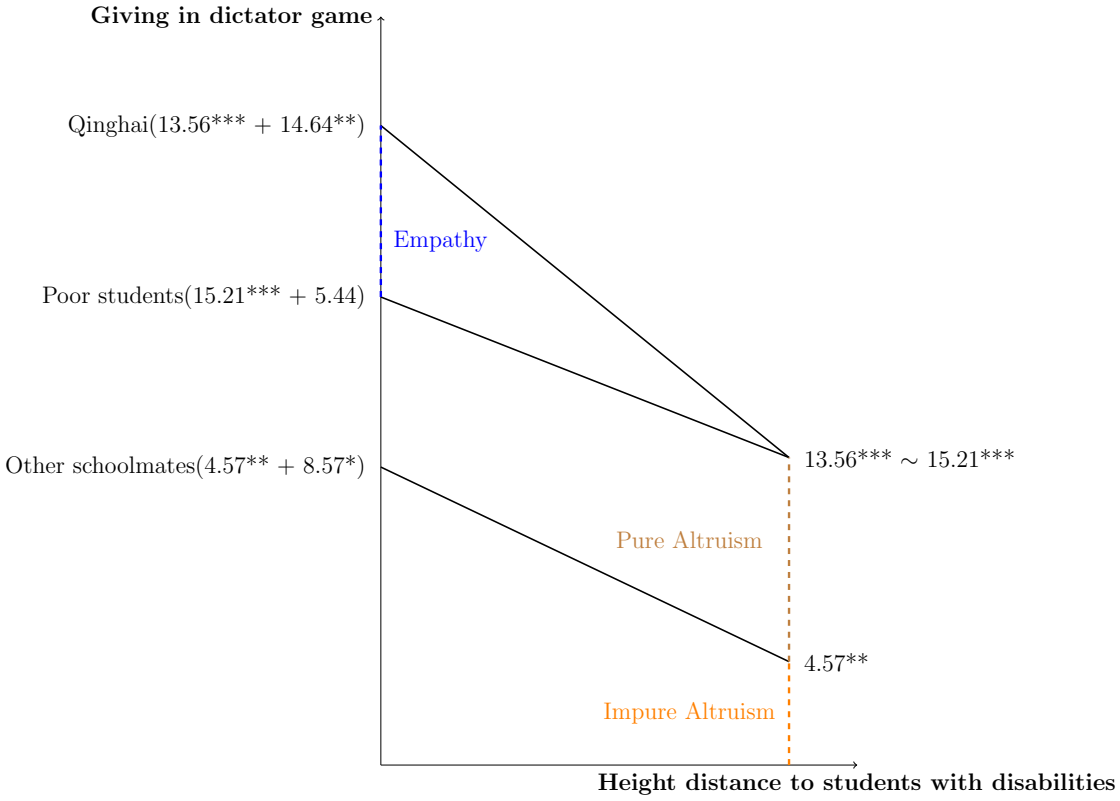
Although altruism, broadly defined, encompasses various psychological motivations for giving—including empathy—a distinctive feature of our experimental design is its ability to disentangle empathy from other components of altruistic behavior (Preston & De Waal 2002, Andreoni & Rao 2011, Andreoni et al. 2017). While both earthquake victims and poor students represent economically disadvantaged partners, they differ in their capacity to elicit empathy. All students in our experiment experienced disaster-related losses, including home damage and injuries to some extent. As a result, interacting with an earthquake victim partner—compared to engaging with a general poor partner—evokes "empathy," i.e., a stronger sense of emotional resonance due to shared experiences.

As illustrated in Figure 2 using the estimation results in column (4) of Table 5, the classroom-level effect of having a disabled student is similar for both Qinghai earthquake victims and poor students, with donations increasing by 13.56–15.21 RMB. However,

[15]It is notable that the estimated coefficient for strangers is slightly smaller than that for other schoolmates (Table 5). This difference likely stems from variations in social distance: other schoolmates are socially closer to the students than strangers, and impure altruism tends to increase as social distance decreases(Andreoni et al. 2017).

the proximity effect, captured by height similarity, is twice as large when the partner is a Qinghai earthquake victim (14.64 RMB for Qinghai victims vs. 5.44 RMB for poor students). This finding suggests that the strongest prosocial response occurs when the giver, the receiver, and the trigger (a physically proximate disabled student) all share the experience of being earthquake victims. These results provide compelling evidence that empathy significantly amplifies prosocial behavior. A more detailed exploration of empathy's role is presented in Section 6.

Figure 2: Decomposing Prosocial Behavior into Empathy, Pure Altruism, and Impure Altruism.



This figure illustrates the potential contributing factors influencing prosocial behavior as measured in the dictator game. The estimates correspond to Column 4 of Table 5. The x-axis represents the smallest height distance to a disabled student in the class, with larger values indicating less height similarity. The y-axis represents the amount given in the dictator game.

6 Mechanisms Behind Empathy

Why does having a disabled peer increase prosocial behavior? Andreoni et al. (2017) suggests that individuals are more inclined to give when their empathy is actively stimulated. In our context, all students experienced the earthquake, and observable earthquake-related disabilities likely serve as strong empathy triggers, thereby fostering increased giving behavior.

This mechanism gives rise to two testable hypotheses. First, students who experienced greater suffering from the earthquake—whether through personal or family injury or severe home damage—are likely to be more affected by empathetic stimuli, potentially resulting in higher levels of giving. Second, disabilities caused by the earthquake are expected to have a stronger effect on empathy and prosocial behavior compared to disabilities caused by other factors. This is because earthquake-related disabilities reinforce the shared traumatic experience, deepening the emotional connection and amplifying the empathetic response. The remainder of this section is dedicated to empirically testing these hypotheses.

6.1 Subsample Analysis

Building on the premise that disabled students act as empathetic stimuli, we propose the following hypotheses:

Hypothesis 1. Students who experience more severe personal or family injuries show a greater increase in giving behavior when they have a disabled peer in their class.

Hypothesis 2. Students whose homes suffer more severe damage display a greater increase in giving behavior when they have a disabled peer in their class.

To empirically test these hypotheses, we perform subsample analyses. For Hypothesis 1, students are divided into two groups based on the severity of their personal or family

injuries. Given that prior analyses demonstrated stable estimates with specifications controlling for demographic and earthquake-related losses, we apply the same specifications here. The fixed-effects regression results in Table 6 indicate that students with more severe personal or family injuries exhibit a significantly larger increase in giving when they have an earthquake-caused disabled peer. Furthermore, difference-in-differences results suggest that closer physical proximity to disabled peers amplifies this effect, particularly for donations directed toward earthquake victims. The role of empathy is further substantiated by the finding that students with severe personal or family injuries, who are physically closest to disabled peers, make the largest contributions to earthquake victims.

For Hypothesis 2, students are categorized by the severity of their house damage. Consistent with the findings for Hypothesis 1, Table 7 shows that students with more severe house damage give significantly more to earthquake victims when they have a disabled peer in class. However, unlike the results for personal or family injuries, students with serious house damage do not show significantly higher giving to other schoolmates or strangers. This discrepancy may stem from the nature of the earthquake experience: physical injuries evoke stronger empathy than material losses because injuries directly affect human well-being and elicit a visceral emotional response. In contrast, material losses are perceived as more distant and replaceable, resulting in a weaker empathetic response.

In summary, both Hypothesis 1 and Hypothesis 2 are supported. Students who experienced greater personal or family injuries or more severe house damage demonstrate higher levels of giving in the presence of disabled peers, with empathy serving as the likely underlying mechanism.

6.2 Alternative Definition of Disability

The premise that disabled students can enhance empathy among their peers relies on the disability being caused by the earthquake and this cause being known to other students. Alternatively, students may respond to the mere presence of a disabled peer, driven by sympathy rather than empathy, where the cause of the disability becomes irrelevant, and

Table 6: Subsample Analysis by Self/Family Injury

	Low Self/Family Injury		High Self/Family Injury	
	(1) Fixed Effects	(2) DID	(3) Fixed Effects	(4) DID
Panel A: *Haiti*				
Disabled Student in Class	12.16**	4.61	21.92***	14.44**
	(5.58)	(6.12)	(5.12)	(5.41)
Disabled Student in Class × Similar Height		23.49*		33.13**
		(10.22)		(15.29)
WCB p-val (Disabled)	0.27		0.06	
WCB p-val (Disabled × Height)		0.17		0.08
R-squared	0.18	0.19	0.32	0.34
Panel B: *Qinghai*				
Disabled Student in Class	16.18***	11.38**	25.64***	21.49***
	(3.72)	(3.60)	(2.88)	(4.50)
Disabled Student in Class × Similar Height		15.29**		19.44*
		(5.45)		(13.87)
WCB p-val (Disabled)	0.12		0.000	
WCB p-val (Disabled × Height)		0.11		0.21
R-squared	0.24	0.25	0.32	0.33
Panel C: *Poor Student*				
Disabled Student in Class	11.43***	10.13***	23.90***	25.51***
	(2.60)	(2.50)	(6.23)	(5.30)
Disabled Student in Class × Similar Height		4.61		4.81
		(6.79)		(12.55)
WCB p-val (Disabled)	0.06		0.11	
WCB p-val (Disabled × Height)		0.56		0.71
R-squared	0.16	0.18	0.26	0.28
School & Grade & Academic Track Fixed Effect	Yes	Yes	Yes	Yes
Demographic & Loss Control	Yes	Yes	Yes	Yes
Observations	321	321	133	133

$^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. The outcome is the donation amount given to the partner specified in each panel in the dictator game. All regressions include controls for school, grade, and academic track fixed effects, as well as individual characteristics that include ethnicity, sex, age, proxy for wealth, home subsidy, school subsidy, relative injury, own injury, family house damage, and primary school damage. Standard errors are clustered at the class level and reported in parentheses, with Wild Cluster Bootstrapped p-values (WCB p-val) shown at the bottom of each panel.

prosocial behavior stems from general compassion toward the disabled group. To distinguish whether it is the disability itself or its underlying cause that drives prosocial behavior, we broaden the definition of disability from "earthquake-caused disability" to "any-caused disability," encompassing both earthquake-related and other causes. This redefinition increases the sample to include 14 disabled students. Table 8 presents the fixed-effects estimation results under this broader definition. The findings indicate that sharing a classroom with a disabled student significantly increases giving toward all re-

Table 6: Subsample Analysis by Self/Family Injury (Continued)

	Low Self/Family Injury		High Self/Family Injury	
	(1) Fixed Effects	(2) DID	(3) Fixed Effects	(4) DID
Panel D: *Other Schoolmates*				
Disabled Student in Class	4.12	0.62	5.54	7.58*
	(3.71)	(3.02)	(5.97)	(7.26)
Disabled Student in Class × Similar Height		11.74		-7.28
		(7.81)		(17.99)
WCB p-val (Disabled)	0.45		0.07	
WCB p-val (Disabled × Height)		0.32		0.67
R-squared	0.11	0.12	0.23	0.24
Panel E: *Stranger*				
Disabled Student in Class	0.45	-0.68	9.54**	7.19**
	(3.01)	(4.76)	(3.11)	(3.58)
Disabled Student in Class × Similar Height		3.81		13.05*
		(8.69)		(8.77)
WCB p-val (Disabled)	0.92		0.06	
WCB p-val (Disabled × Height)		0.76		0.17
R-squared	0.17	0.17	0.27	0.28
School & Grade & Academic Track Fixed Effect	Yes	Yes	Yes	Yes
Demographic & Loss Control	Yes	Yes	Yes	Yes
Observations	321	321	133	133

$^{\star}p < 0.1, ^{\star\star}p < 0.05, ^{\star\star\star}p < 0.01$. The outcome is the donation amount given to the partner specified in each panel in the dictator game. All regressions include controls for school, grade, and academic track fixed effects, as well as individual characteristics that include ethnicity, sex, age, proxy for wealth, home subsidy, school subsidy, relative injury, own injury, family house damage, and primary school damage. Standard errors are clustered at the class level and reported in parentheses, with Wild Cluster Bootstrapped p-values (WCB p-val) shown at the bottom of each panel.

cipient types except strangers. However, the magnitude of the increase in giving associated with "any-caused disabled students" is notably smaller than that associated with "earthquake-caused disabled students" (see Table 5). For instance, the effect on donations to earthquake victims is halved under the broader definition.

This result suggests that the observed prosocial behavior is primarily driven by *empathy*, rooted in the shared traumatic experience of the earthquake, rather than generalized *sympathy* toward the disabled group as a whole. To further validate the hypothesis that shared experience underlies the relationship between exposure to disability and prosocial behavior, we extend the Fixed Effects Model as follows:

Table 7: Subsample Analysis by Serious House Damage

	No Serious House Damage		Serious House Damage	
	(1) Fixed Effects	(2) DID	(3) Fixed Effects	(4) DID
Panel A: *Haiti*				
Disabled Student in Class	12.85**	8.34	22.45***	15.07**
	(4.97)	(6.49)	(5.04)	(4.89)
Disabled Student in Class × Similar Height		14.15		27.72*
		(11.01)		(12.32)
WCB p-val (Disabled)	0.26		0.10	
WCB p-val (Disabled × Height)		0.30		0.17
R-squared	0.20	0.20	0.31	0.32
Panel B: *Qinghai*				
Disabled Student in Class	17.50***	13.64**	22.72***	20.75***
	(4.42)	(5.07)	(4.91)	(4.27)
Disabled Student in Class × Similar Height		12.19		7.76
		(7.44)		(8.59)
WCB p-val (Disabled)	0.17		0.10	
WCB p-val (Disabled × Height)		0.21		0.32
R-squared	0.19	0.20	0.41	0.41
Panel C: *Poor Students*				
Disabled Student in Class	16.01***	15.06**	14.50**	14.19*
	(1.97)	(3.03)	(5.61)	(5.86)
Disabled Student in Class × Similar Height		4.49		4.87
		(8.18)		(7.89)
WCB p-val (Disabled)	0.01		0.19	
WCB p-val (Disabled × Height)		0.64		0.44
R-squared	0.14	0.16	0.33	0.34
School & Grade & Academic Track Fixed Effect	Yes	Yes	Yes	Yes
Demographic & Loss Control	Yes	Yes	Yes	Yes
Observations	314	314	140	140

$^{\star}p < 0.1, ^{\star\star}p < 0.05, ^{\star\star\star}p < 0.01$. The outcome is the donation amount given to the partner specified in each panel in the dictator game. All regressions include controls for school, grade, and academic track fixed effects, as well as individual characteristics that include ethnicity, sex, age, proxy for wealth, home subsidy, school subsidy, relative injury, own injury, family house damage, and primary school damage. Standard errors are clustered at the class level and reported in parentheses, with Wild Cluster Bootstrapped p-values (WCB p-val) shown at the bottom of each panel.

$$\begin{aligned} Y_{ivsgc} = \alpha + \delta_s + \varphi_v + \eta_g + \theta_k + \beta_1 \text{ OtherCausedDis}_{ckvgs} \\ +\beta_2 \text{ EarthquakeCausedStuDis}_{ckvgs} + \gamma X_{\text{ivckgs}} + \epsilon_{ic}, \end{aligned} \tag{4}$$

In this equation, we define and include two treatment variables: the sixth term indicates whether a student shares a classroom with a disabled peer whose disability was caused by the earthquake, and the seventh term indicates whether a student shares a classroom with a disabled peer whose disability was caused by non-earthquake-related reasons. These

Table 7: Subsample Analysis by Serious House Damage (Continued)

	No Serious House Damage		Serious House Damage	
	(1) Fixed Effects	(2) DID	(3) Fixed Effects	(4) DID
Panel D: *Other Schoolmates*				
Disabled Student in Class	7.32***	6.77***	4.16	0.17
	(1.84)	(1.83)	(3.38)	(5.98)
Disabled Student in Class × Similar Height		2.69		21.28
		(5.72)		(13.10)
WCB p-val (Disabled)	0.06		0.29	
WCB p-val (Disabled × Height)		0.65		0.28
R-squared	0.11	0.12	0.28	0.29
Panel E: *Stranger*				
Disabled Student in Class	5.87*	6.44	-3.00	-3.47
	(2.56)	(4.30)	(4.97)	(5.07)
Disabled Student in Class × Similar Height		-1.86		11.37
		(8.24)		(9.53)
WCB p-val (Disabled)	0.21		0.62	
WCB p-val (Disabled × Height)		0.78		0.23
R-squared	0.16	0.16	0.34	0.37
School & Grade & Academic Track Fixed Effect	Yes	Yes	Yes	Yes
Demographic & Loss Control	Yes	Yes	Yes	Yes
Observations	314	314	140	140

$^{\star}p < 0.1, ^{\star\star}p < 0.05, ^{\star\star\star}p < 0.01$. The outcome is the donation amount given to the partner specified in each panel in the dictator game. All regressions include controls for school, grade, and academic track fixed effects, as well as individual characteristics that include ethnicity, sex, age, proxy for wealth, home subsidy, school subsidy, relative injury, own injury, family house damage, and primary school damage. Standard errors are clustered at the class level and reported in parentheses, with Wild Cluster Bootstrapped p-values (WCB p-val) shown at the bottom of each panel.

treatment variables allow us to separately estimate the effects of earthquake-caused and non-earthquake-caused disabilities on prosocial behavior.

Table 9 presents the results of this analysis. The findings reveal that being in the same classroom as a peer with a disability caused by non-earthquake-related reasons does not lead to any significant increase in giving behavior toward any recipient type. In contrast, exposure to peers with disabilities caused by the earthquake results in a significant increase in giving, particularly toward earthquake victims. This evidence highlights that the shared experience of the earthquake, rather than the general presence of disabled peers, serves as the primary mechanism driving the observed increases in prosocial behavior. These results emphasize the role of empathy stemming from shared traumatic experiences as a key factor in fostering altruistic behavior.

Table 8: Broader category of disability: Any-caused disability

	Fixed Effects	
	(1)	(2)
Panel A: *Haiti*		
Any-caused Disabled Student in Class	8.42*	8.53*
	(4.26)	(4.36)
WCB p-val	0.32	0.33
R-squared	0.11	0.13
Panel B: *Qinghai*		
Any-caused Disabled Student in Class	8.46*	8.29*
	(4.26)	(4.21)
WCB p-val	0.28	0.29
R-squared	0.14	0.16
Panel C: *Poor Student*		
Any-caused Disabled Student in Class	10.09**	10.02**
	(2.94)	(3.18)
WCB p-val	0.13	0.16
R-squared	0.11	0.12
Panel D: *Other Schoolmates*		
Any-caused Disabled Student in Class	5.04**	4.59*
	(1.66)	(2.04)
WCB p-val	0.15	0.18
R-squared	0.09	0.11
Panel E: *Stranger*		
Any-caused Disabled Student in Class	2.93	3.14
	(1.40)	(1.39)
WCB p-val	0.20	0.16
R-squared	0.11	0.14
School & Grade & Academic Track Fixed Effect	Yes	Yes
Demographic & Loss Control		Yes
Observations	445	445

$^{\star}p < 0.1, ^{\star\star}p < 0.05, ^{\star\star\star}p < 0.01$. The outcome is the donation amount given to the partner specified in each panel in the dictator game. All regressions include controls for school, grade, and academic track fixed effects. Demographic and loss controls encompass ethnicity, sex, age, proxy for wealth, home subsidy, school subsidy, relative injury, own injury, family house damage, and primary school damage. Standard errors are clustered at the class level and reported in parentheses, with Wild Cluster Bootstrapped p-values (WCB p-val) shown at the bottom of each panel.

Table 9: Other-caused disability v.s. Earthquake-caused disability

	Fixed Effects	
	(1)	(2)
Panel A: *Haiti*		
Other-caused Disabled Student in Class	-1.54	-1.81
	(4.33)	(4.44)
Earthquake-caused Disabled Student in Class	17.07**	17.75**
	(4.46)	(3.59)
WCB p-val (Earthquake-caused)	0.23	0.16
R-squared	0.13	0.16
Panel B: *Qinghai*		
Other-caused Disabled Student in Class	-1.69	-2.01
	(3.60)	(3.82)
Earthquake-caused Disabled Student in Class	19.44***	19.71***
	(2.84)	(2.18)
WCB p-val (Earthquake-caused)	0.15	0.09
R-squared	0.17	0.20
Panel C: *Poor Student*		
Other-caused Disabled Student in Class	3.95	3.89
	(2.55)	(2.98)
Earthquake-caused Disabled Student in Class	13.90***	14.44***
	(1.45)	(1.32)
WCB p-val (Earthquake-caused)	0.05	0.00
R-squared	0.12	0.13
Panel D: *Other Schoolmates*		
Other-caused Disabled Student in Class	1.98	0.73
	(1.70)	(1.52)
Earthquake-caused Disabled Student in Class	6.52***	7.27***
	(1.65)	(1.83)
WCB p-val (Earthquake-caused)	0.16	0.14
R-squared	0.09	0.12
Panel E: *Stranger*		
Other-caused Disabled Student in Class	1.96	2.08
	(1.57)	(1.45)
Earthquake-caused Disabled Student in Class	4.47**	3.58*
	(1.50)	(1.32)
WCB p-val (Earthquake-caused)	0.22	0.13
R-squared	0.10	0.13
School & Grade & Academic Track Fixed Effect	Yes	Yes
Demographic & Loss Control		Yes
Observations	450	450

$^{\star}p < 0.1, ^{\star\star}p < 0.05, ^{\star\star\star}p < 0.01$. The outcome is the donation amount given to the partner specified in each panel in the dictator game. All regressions include controls for school, grade, and academic track fixed effects. Demographic and loss controls encompass ethnicity, sex, age, proxy for wealth, home subsidy, school subsidy, relative injury, own injury, family house damage, and primary school damage. Standard errors are clustered at the class level and reported in parentheses, with Wild Cluster Bootstrapped p-values (WCB p-val) shown at the bottom of each panel.

7 Robustness Checking

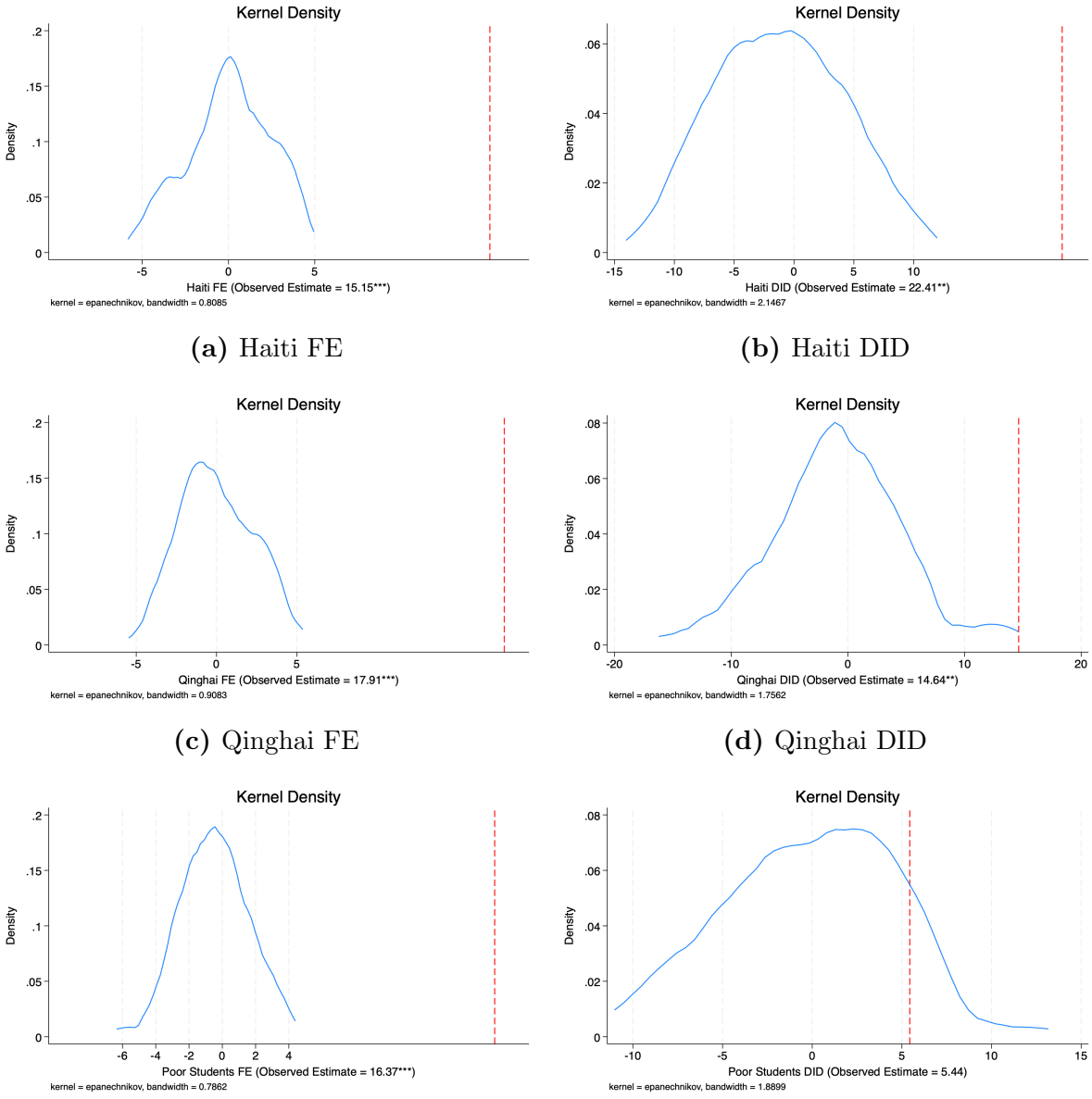
To ensure the robustness of our main empirical results, we conduct a series of additional analyses. First, we implement placebo tests based on the methodologies developed by Pinotti (2017) and Gazze et al. (2024). These tests help rule out the possibility that the observed effects are driven by spurious correlations or estimation bias. Second, we employ an alternative measure of prosocial behavior, specifically contributions to public goods. This allows us to validate whether the observed treatment effects persist across different dimensions of prosociality. Third, to explore potential alternative mechanisms underlying the seemingly empathetic behaviors, we analyze the treatment impacts on individual preferences. This step examines whether the effects are rooted in deeper changes to personal attitudes or motivations. We believe that these robustness checks collectively strengthen the validity of our findings and provide a broader understanding of the mechanisms driving the observed behaviors.

7.1 Placebo Tests

A potential concern is spurious correlation, where disabled students might inadvertently be sorted into peer groups with inherently more prosocial classmates. To address this, we conduct placebo tests similar to those used in Pinotti (2017) and Gazze et al. (2024). Figure 3 displays the results of 50 placebo estimations, in which students are randomly reassigned to classrooms and disabled students are placed in "fake" peer groups. For each iteration, we assess how often the probability of obtaining a placebo estimator exceeds that of the observed estimate. Under the null hypothesis of no treatment effect, these probabilities indicate the likelihood that estimating bias is large enough to account for the magnitude of the observed coefficient. The results from the placebo tests strongly dismiss the possibility of such spurious correlation. Specifically, the probability of placebo estimates being as extreme as, or more extreme than, the observed significant estimates is zero or nearly zero. This finding provides robust evidence that the observed positive and significant effects associated with the presence of disabled students are unlikely to be

driven by spurious correlation.

Figure 3: Placebo Test



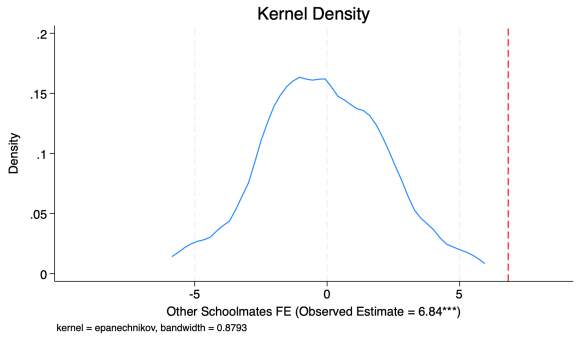
(a) Haiti FE **(b)** Haiti DID

(c) Qinghai FE **(d)** Qinghai DID

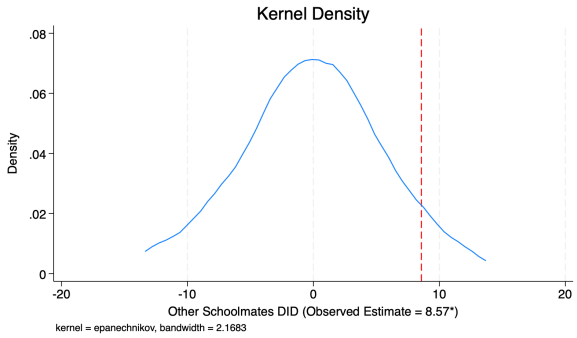
(e) Poor Students FE **(f)** Poor Students DID

The graphs illustrate the distribution of estimated treatment effects from 50 placebo estimations, where disabled students were randomly assigned to "fake" classrooms. Vertical lines indicate the treatment effect estimates from the actual classroom assignments.

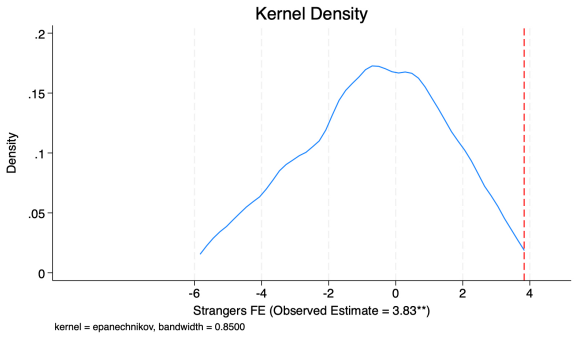
Figure 3: Placebo Test (Continued)



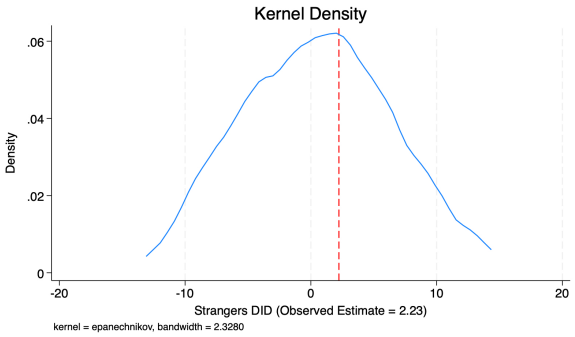
(g) Other Schoolmates FE



(h) Other Schoolmates DID



(i) Strangers FE



(j) Strangers DID

The graphs illustrate the distribution of estimated treatment effects from 50 placebo estimations, where disabled students were randomly assigned to "fake" classrooms. Vertical lines indicate the treatment effect estimates from the actual classroom assignments.

7.2 Public Goods Game

In the public goods game, students participate in two rounds with named classmates and one round with anonymous classmates, offering a unique opportunity to explore how social context influences contributions. Table 10 focuses on the rounds involving named classmates. In addition to the covariates used in the dictator game, these regressions include controls for group-specific variables such as the number of friends, close friends, disliked classmates, classmates from the same elementary school, group size, and game order. The results in columns (4) to (6) of Table 10 reveal that proximity to disabled students, measured by height similarity, significantly increases contributions in the public goods game. This finding suggests that greater exposure to disabled peers enhances

cooperative behavior, particularly when social identities and interpersonal relationships are prominent.

Table 10: Public Goods Game: Named Classmates

	Contribution to Public Goods Game					
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Without Altruism						
Disabled Student in Class	2.67	2.83	-0.20	0.29	0.57	0.32
	(3.52)	(3.43)	(3.69)	(3.72)	(3.81)	(3.69)
Disabled Student in Class × Similar Height			10.71**	9.60*	9.12*	9.48*
			(4.48)	(4.84)	(5.28)	(4.83)
WCB p-val (Disabled)	0.65	0.61				
WCB p-val (Disabled × Height)			0.20	0.24	0.30	0.26
R-squared	0.08	0.09	0.09	0.09	0.09	0.09
Panel B: With Altruism						
Disabled Student in Class	-4.76	-4.82	-5.79	-5.47	-5.28	-5.44
	(2.66)	(2.86)	(3.28)	(3.54)	(3.62)	(3.44)
Disabled Student in Class × Similar Height			4.18	2.90	2.59	2.62
			(3.11)	(3.29)	(3.72)	(3.25)
Altruism	0.12***	0.12***	0.12***	0.12***	0.12***	0.12***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
WCB p-val (Disabled)	0.29	0.32				
WCB p-val (Disabled × Height)			0.31	0.44	0.55	0.47
R-squared	0.21	0.22	0.21	0.22	0.22	0.22
School & Grade & Academic Track Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Game Control	Yes	Yes	Yes	Yes	Yes	Yes
Demographic & Loss Control		Yes		Yes	Yes	Yes
Test Score Control					Yes	
Belief Control						Yes
Observations	896	896	896	896	896	896

$^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. The outcome is the contribution in the public goods game. Columns 1 and 2 present estimates from the fixed effects model, while Columns 3–6 report estimates from the difference-in-differences model. All regressions control for school, grade, academic track fixed effects, and game information. Demographic and loss controls include ethnicity, sex, age, proxy for wealth, home subsidy, school subsidy, relative injury, own injury, family house damage, and primary school damage. Column 5 controls for test scores, with missing values imputed using the single imputation method by replacing them with the mean. Column 6 includes teacher beliefs as a control. Standard errors clustered at the class level are reported in parentheses, with Wild Cluster Bootstrapped p-values (WCB p-val) shown at the bottom of each panel.

To further investigate the underlying mechanism, Panel B of Table 10 includes altruism—measured as total donations in the dictator game—as a control variable. The rationale is that if altruistic motivation explains the observed increase in contributions, controlling for altruism should diminish the effect of proximity to disabled peers.[16]

Table 11: Public Goods Game: Anonymous Classmates

	Contribution to Public Goods Game					
	(1)	(2)	(3)	(4)	(5)	(6)
Without Altruism						
Disabled Student in Class	0.91	0.49	4.08	3.16	4.78	3.12
	(2.87)	(3.13)	(3.03)	(3.72)	(3.44)	(3.67)
Disabled Student in Class × Similar Height			-11.45**	-9.99*	-13.18**	-10.42**
			(4.13)	(5.13)	(4.97)	(4.85)
WCB p-val (Disabled)	0.81	0.88				
WCB p-val (Disabled × Height)			0.18	0.30	0.19	0.26
R-squared	0.11	0.14	0.11	0.14	0.15	0.14
School & Grade & Academic Track Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Game Control	Yes	Yes	Yes	Yes	Yes	Yes
Demographic & Loss Control		Yes		Yes	Yes	Yes
Test Score Control					Yes	
Belief Control						Yes
Observations	446	446	446	446	446	446

$^{\star}p < 0.1, ^{\star\star}p < 0.05, ^{\star\star\star}p < 0.01$. The outcome is the contribution in the public goods game. Columns 1 and 2 present estimates from the fixed effects model, while Columns 3–6 report estimates from the difference-in-differences model. All regressions control for school, grade, academic track fixed effects, and game information. Demographic and loss controls include ethnicity, sex, age, proxy for wealth, home subsidy, school subsidy, relative injury, own injury, family house damage, and primary school damage. Column 5 controls for test scores, with missing values imputed using the single imputation method by replacing them with the mean. Column 6 includes teacher beliefs as a control. Standard errors clustered at the class level are reported in parentheses, with Wild Cluster Bootstrapped p-values (WCB p-val) presented at the bottom.

Consistent with this hypothesis, the coefficient on the interaction term (Disabled Student × Similar Height) decreases substantially—by approximately two-thirds—when altruism is included. This result strongly suggests that altruistic motivations are a primary driver of the observed peer effects. While we cannot directly measure other potential contributing factors, such as reciprocity, social norms, or peer pressure, the contrast between Panels A and B highlights that altruism, rather than these alternative mechanisms, plays a pivotal role in fostering cooperation in the context of named classmates. This finding underscores the importance of altruistic motivations in driving prosocial behavior when social identities are salient.

[16]The public goods game is a variant of the multi-person prisoner's dilemma. In the context of a trust game, another variant of the prisoner's dilemma, Cox (2004) argues that without controlling for altruism, it is impossible to distinguish actions motivated by trust from those driven by other-regarding preferences, such as unconditional altruism.

The findings from the round with anonymous classmates reveal a striking contrast: proximity to disabled peers is associated with lower contributions. At first glance, this result may seem contradictory to the altruism-driven effects observed in the named classmates context. However, it is consistent with the concept of conditional cooperation: in the absence of social recognition, individuals adjust their contributions based on their perceptions of their peers' cooperative tendencies. As shown in Table 2, disabled students contribute significantly less than their classmates. In the anonymous setting, students sitting closer to disabled peers may infer that their potential partners are less likely to cooperate. This perception diminishes their motivation to contribute, as conditional cooperation implies that individuals align their behavior with the expected contributions of others. Although this mechanism cannot be directly tested with the available data, the results underscore the critical role of social context in eliciting altruism and empathy. In settings where social identities and interactions are prominent, such as the named classmates context, proximity to disabled peers fosters altruistic and empathetic behavior. In contrast, the absence of social recognition in the anonymous context shifts behavior toward conditional cooperation, highlighting the importance of perceived peer characteristics.

These results may also be explained through the framework of particularized trust and generalized trust, as proposed by (Yamagishi & Yamagishi 1994). In this framework, particularized trust refers to trust that is directed toward specific individuals with whom one has a social connection or identifiable relationship, aligning with the named classmates context. In contrast, generalized trust reflects trust in others in the absence of personal connections, corresponding to the anonymous context. In the named classmates context, particularized trust is likely to be stronger, as students have identifiable relationships with their peers. This trust, combined with social recognition, enhances altruism and cooperation, particularly when disabled peers are present. On the other hand, in the anonymous context, where generalized trust dominates, contributions may be influenced more by perceptions of peer tendencies rather than direct social bonds. The proximity to disabled peers, coupled with their lower contributions (as shown in Table 2), might reduce students' expectations of cooperative behavior, leading to lower contribu-

tions overall. This distinction between particularized and generalized trust provides an additional lens through which to interpret the contrasting results across the two contexts, further emphasizing the role of social connections and recognition in shaping prosocial behavior.

7.3 Individual Preferences

As Schechter (2007) observed among experimental subjects of trust games in rural Paraguay, prosociality levels may be influenced by individual preferences such as risk aversion and time discounting. Accordingly, we analyze the treatment impacts on these individual preferences. Panel A of Table 12 presents the estimated results from the risk aversion regression. Both the fixed-effects and difference-in-differences models reveal that students become significantly less risk-averse, with results statistically significant at the 5% level. These findings suggest a negative spillover effect: not only do disabled students exhibit greater risk tolerance compared to their peers (as shown in Table 2), but their interactions with peers also lead the latter to adopt more risk-loving behavior. This shift in risk preferences may, in turn, induce seemingly prosocial behavior, as individuals become more willing to engage in actions that involve greater uncertainty but potentially benefit others.

Panel B of Table 12 reports the results of the time discounting experiments. The average discount rate among all students is 0.30. Within the treatment group, the average discount rate is 0.31, compared to 0.30 in the control group—a difference of 0.01 (Table 2). However, this difference is not statistically significant, as confirmed by the regression analysis.

8 Discussion and Concluding Remarks

By examining the impact of having a mentally disordered peer on middle school students' social preferences following the 2008 Sichuan earthquake in China, we leverage random classroom assignments, height-based seating arrangements, and lab-in-the-field

Table 12: Individual Preferences

	Individual Preference Parameters					
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Risk Aversion						
Disabled Student in Class	-0.25**	-0.27**	-0.17*	-0.20*	-0.15*	-0.21*
	(0.10)	(0.10)	(0.11)	(0.11)	(0.10)	(0.11)
Disabled Student in Class × Similar Height			-0.30**	-0.27**	-0.33***	-0.26**
			(0.10)	(0.10)	(0.09)	(0.10)
WCB p-val (Disabled)	0.22	0.18				
WCB p-val (Disabled × Height)			0.22	0.19	0.08	0.21
R-squared	0.13	0.14	0.14	0.15	0.16	0.16
Observations	457	457	457	457	457	457
Panel B: Time Discount						
Disabled Student in Class	0.00	-0.01	0.01	0.01	0.00	0.01
	(0.05)	(0.04)	(0.05)	(0.05)	(0.05)	(0.05)
Disabled Student in Class × Similar Height			-0.06	-0.07	-0.05	-0.06
			(0.09)	(0.08)	(0.08)	(0.08)
WCB p-val (Disabled)	0.97	0.90				
WCB p-val (Disabled × Height)			0.60	0.49	0.59	0.52
R-squared	0.07	0.11	0.07	0.11	0.11	0.11
Observations	441	441	441	441	441	441
School & Grade & Academic Track Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Demographic & Loss Control		Yes		Yes	Yes	Yes
Test Score Control					Yes	
Belief Control						Yes

$^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Columns 1 and 2 present estimates from the fixed effects model, while Columns 3–6 report estimates from the difference-in-differences model. All regressions control for school, grade, academic track fixed effects, and game information. Demographic and loss controls include ethnicity, sex, age, proxy for wealth, home subsidy, school subsidy, relative injury, own injury, family house damage, and primary school damage. Column 5 controls for test scores, with missing values imputed using the single imputation method by replacing them with the mean. Column 6 includes teacher beliefs as a control. Standard errors clustered at the class level are reported in parentheses, with Wild Cluster Bootstrapped p-values (WCB p-val) shown at the bottom of each panel.

experiments to identify an arguably causal relationship: having a disabled peer enhances altruistic behavior. This effect, driven by empathy, is particularly pronounced among students who share traumatic experiences and directly observe mental disabilities. Our study offers several important implications.

First, our findings contribute to the literature on peer influence by demonstrating that peer effects extend beyond cognitive and non-cognitive outcomes to encompass shifts in individual and social preferences. A key takeaway is that prior research, by focusing predominantly on behavioral problems, may have underestimated the broader scope of

peer effects. Moreover, we also caution that our results may be downward-biased due to potential cross-classroom contamination.

Second, our study reveals a self-recovery mechanism embedded in human nature that may help mitigate secondary trauma and generate positive welfare impacts. For instance, as shown in Tables A6a and A6b, the difference-in-differences model indicates significant improvements in mental health (CES-D) and self-esteem (Rosenberg). These findings underscore how peer effects in post-disaster contexts can foster social cohesion and prosocial behavior, providing valuable insights for designing educational strategies and recovery policies. While it is challenging to assess whether these influences are inherently positive or negative, policymakers must recognize that peer effects shape social stratification in ways that extend far beyond cognitive test scores and teenage behavioral issues.

Third, our results shed light on community dynamics in post-disaster settings, offering causal evidence of second-order peer and disaster effects. The observed increase in altruism among students suggests a silver lining, underscoring the potential for policy interventions to expand beyond providing consulting services for disabled students to also include support for their peers.

Finally, while our findings are context-specific and should not be generalized without caution, they suggest that institutional settings play a critical role in shaping how peer effects influence individual and social preferences. The interaction between shocks and institutional frameworks warrants further exploration. Moreover, we are left with the unresolved question of whether empathy arises from contextual or endogenous factors, as natural experiments typically involve both simultaneously. We acknowledge our limitations in clearly disentangling these effects, which opens promising avenues for future research Akerlof (1997).

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9 Appendix A

Table A1: Questions from the Center for Epidemiological Studies Depression Scale (CES-D)

Item	Question
a	I do not want to eat, my appetite is bad.
b	I feel depressed.
c	I feel hard to do anything.
d	I cannot sleep well.
e	I feel very happy.
f	I feel lonely.
g	People are unfriendly to me.
h	I enjoy my life.
i	I feel sad.
j	I think people hate me.
k	I think people don't like me.
l	I can't make any progress on anything.

CESD questions were obtained from the student questionnaire conducted after the experiment.

Table A2: Questions from the Strengths and Difficulties Questionnaire (SDQ)

Item	Question
a	I am very angry and throw tantrums.
b	Usually, I do what people tell me to do.
c	I often fight.
d	People often say that I lie or cheat.
e	I once took others' things.
f	I usually like to be alone.
g	I have at least one close friend.
h	Basically, people my age like me.
i	People younger than me make fun of me.
j	I get along better with older people than with people my age.

SDQ questions were obtained from the student questionnaire conducted after the experiment.

Table A3: Questions from the Rosenberg Self-Esteem Scale Assessment

Item	Question
a	Overall, I am satisfied with myself.
b	Sometimes, I feel I'm not good at everything.
c	I think I have a lot of advantages.
d	I feel I can do as good as most people.
e	I feel like I have nothing to be proud of.
f	Sometimes, I really feel I'm useless.
g	I think I'm valuable, at least as valuable as others.
h	I wish I had more self-respect.
i	Overall, I tend to feel that I'm a loser.
j	I have a positive evaluation of myself.

Rosenberg questions were obtained from the student questionnaire conducted after the experiment.

Table A4: Exogeneity of Control Variables in Fixed Effects Models

	Fixed Effect Model: Class with any disabled student (T) v.s. Class without any disabled student (C)		
	Mean of Control Group	Difference Between T and C	Model p-value
Earthquake-caused disability & Other-caused disability			
Height	158.67	0.21	0.84
Age	15.32	-0.34	0.32
Female	0.57	-0.06	0.20
Proxy for Wealth	0.23	-0.07	0.17
Other-caused disability: Mental Deficiency			
Height	158.77	-0.45	0.11
Age	15.38	-0.22**	0.01**
Female	0.57	-0.01	0.73
Proxy for Wealth	0.22	-0.02	0.21
Other-caused disability: Blind or Half Blind			
Height	158.48	0.15	0.65
Age	15.24	0.07	0.61
Female	0.57	0.01	0.67
Proxy for Wealth	0.21	-0.02	0.35
Other-caused disability: Deaf or Half Deaf			
Height	158.48	-0.12	0.52
Age	15.24	-0.11	0.14
Female	0.57	-0.02	0.16
Proxy for Wealth	0.21	0.01	0.65
Other-caused disability: Other Disabilities			
Height	158.48	-0.02	0.92
Age	15.24	-0.04	0.55
Female	0.57	-0.01	0.27
Proxy for Wealth	0.21	-0.03***	0.00***

This table compares the average characteristics of students in classes with a disabled student to those in classes without a disabled student of a specific disability. The "Mean of control group" column reports the predicted mean of each characteristic for the control group, based on regressions of the characteristics on the treatment indicator and covariates, including classroom academic track and school fixed effects. The "Difference between T and C" column presents the estimated coefficient on the treatment indicator, with the corresponding p-value shown in the "Model p-value" column. Ethnicity is excluded from the comparison because over 90% of students in each class are of Qiang ethnicity.

Table A6a: Psychological Measures: Depression (CES-D)

	Fixed Effects		DID		Ex-post Controls	
	(1)	(2)	(3)	(4)	(5)	(6)
Disabled Student in Class	-0.18*	-0.20*	-0.38**	-0.42**	-0.44**	-0.42**
	(0.06)	(0.07)	(0.05)	(0.08)	(0.08)	(0.08)
Disabled Student in Class × Similar Height			0.63**	0.66**	0.69**	0.67**
			(0.15)	(0.17)	(0.17)	(0.17)
WCB p-val (Disabled)	0.03	0.02				
WCB p-val (Disabled × Height)			0.13	0.09	0.08	0.08
R-squared	0.08	0.10	0.09	0.11	0.12	0.11
School & Grade & Academic Track Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Demographic & Loss Control		Yes		Yes	Yes	Yes
Test Score Control					Yes	
Belief Control						Yes
Observations	443	443	443	443	443	443

$^{\star}p < 0.1, ^{\star\star}p < 0.05, ^{\star\star\star}p < 0.01$. Higher outcome values reflect better psychological conditions. All other specifications are consistent with those in Table 5. Standard errors clustered at the class level are reported in parentheses, with Wild Cluster Bootstrapped p-values (WCB p-val) presented at the bottom.

Table A6b: Psychological Measures: Rosenberg Self-Esteem (Rosenberg)

	Fixed Effects		DID		Ex-post Controls	
	(1)	(2)	(3)	(4)	(5)	(6)
Disabled Student in Class	-0.37**	-0.34**	-0.55***	-0.50***	-0.49***	-0.49***
	(0.10)	(0.10)	(0.09)	(0.10)	(0.11)	(0.11)
Disabled Student in Class × Similar Height			0.56**	0.51**	0.49**	0.49**
			(0.12)	(0.15)	(0.14)	(0.16)
WCB p-val (Disabled)	0.18	0.18				
WCB p-val (Disabled × Height)			0.03	0.09	0.09	0.15
R-squared	0.18	0.20	0.19	0.21	0.21	0.21
School & Grade & Academic Track Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Demographic & Loss Control		Yes		Yes	Yes	Yes
Test Score Control					Yes	
Belief Control						Yes
Observations	450	450	450	450	450	450

$^{\star}p < 0.1, ^{\star\star}p < 0.05, ^{\star\star\star}p < 0.01$. Higher outcome values reflect better psychological conditions. All other specifications are consistent with those in Table 5. Standard errors clustered at the class level are reported in parentheses, with Wild Cluster Bootstrapped p-values (WCB p-val) presented at the bottom.

Table A6c: Psychological Measures: Strengths and Difficulties (SDQ)

	Fixed Effects		DID		Ex-post Controls	
	(1)	(2)	(3)	(4)	(5)	(6)
Disabled Student in Class	-0.24	-0.24	-0.43*	-0.42*	-0.37*	-0.43*
	(0.15)	(0.14)	(0.18)	(0.18)	(0.15)	(0.18)
Disabled Student in Class × Similar Height			0.64	0.58	0.50	0.59
			(0.24)	(0.23)	(0.21)	(0.24)
WCB p-val (Disabled)	0.30	0.25				
WCB p-val (Disabled × Height)			0.18	0.18	0.18	0.18
R-squared	0.08	0.13	0.08	0.14	0.14	0.14
School & Grade & Academic Track Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Demographic & Loss Control		Yes		Yes	Yes	Yes
Test Score Control					Yes	
Belief Control						Yes
Observations	450	450	450	450	450	450

$^{\star}p < 0.1, ^{\star\star}p < 0.05, ^{\star\star\star}p < 0.01$. Higher outcome values reflect better psychological conditions. All other specifications are consistent with those in Table 5. Standard errors clustered at the class level are reported in parentheses, with Wild Cluster Bootstrapped p-values (WCB p-val) presented at the bottom.

Appendix B: Answer Sheets in the Lab Experiments (English translation)

Test answer sheets of students in Sichuan （Mao Class X）

Hello everyone! Welcome to the test project of students in Sichuan, held by Renmin University of China. This project is voluntary; in order to make more accurate research, we hope you get involved. All of your answers in the research will be kept strictly confidential. We will not tell anyone your answer.

Do not turn to this part of the content before we tell you to do so.

the game chosen for the payment ☐

The amount of payment ☐

Basic information of student

（All questions are one-choice questions）

Date of test: _____year ___month ___day

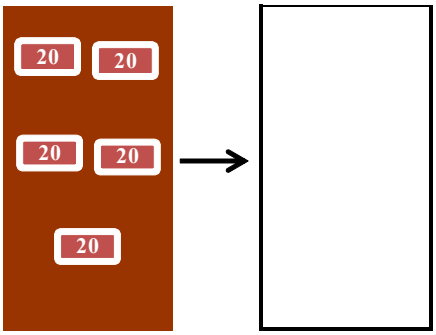
1. County Name 1. Wenchuan_____2. Mao_____
2. School name_____ school code_____
   （Bayi middle school 21; Minzu middle schoo22; Tumen middle school 23）
3. Grade_____Class_____
4. Name _____ Student ID _____
5. Sex: 1. Male_____2. Female_____
6. Date of birth _____Year____month
7. Classroom carried on the test 1. Our classroom_____ 2. Another classroom____

In Game 1， group number of the first time ☐

group number of the second time ☐

Game1

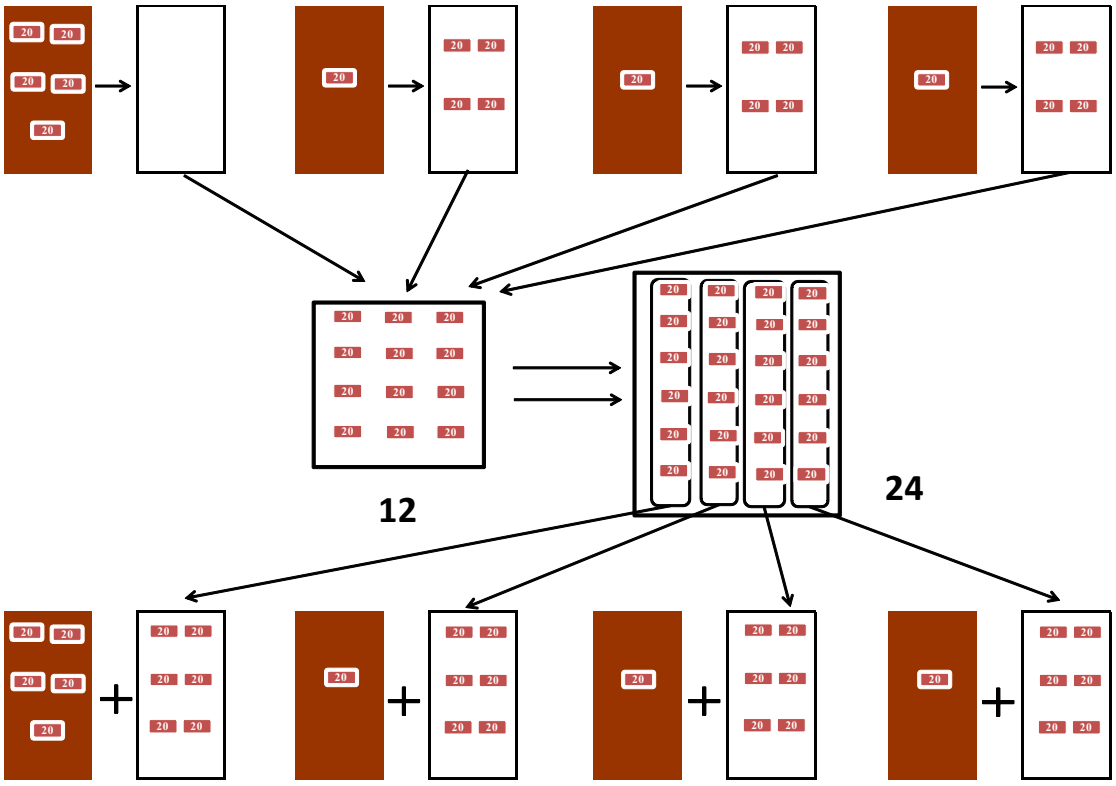
First of all, this game will be played three times, the group name list of the first two times are already in your hands. At the beginning of each game, you will have 100 yuan which consists of five 20-yuan bills. You will decide how to distribute these five bills between "your own money" and your group's "mutual money".



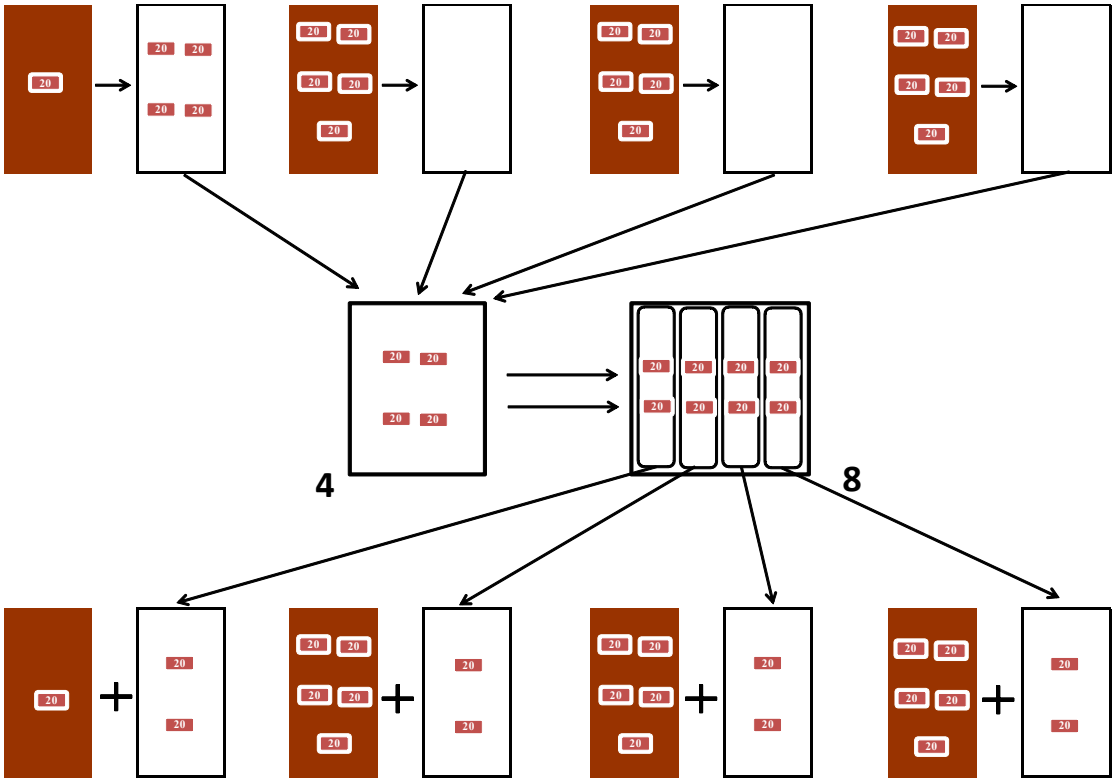
The money that you keep for yourself will be yours. At the same time, the group's mutual money is distributed as follows: we will sum up the money which is assigned to the mutual money by each group member, double the amount, and then divide it into four, and give to the four members of the group. In this way, you will get a quarter of the money no matter how much you contribute to this group's mutual money. The game will end there. Then how much would you contribute to the mutual money?

Let's see some examples.

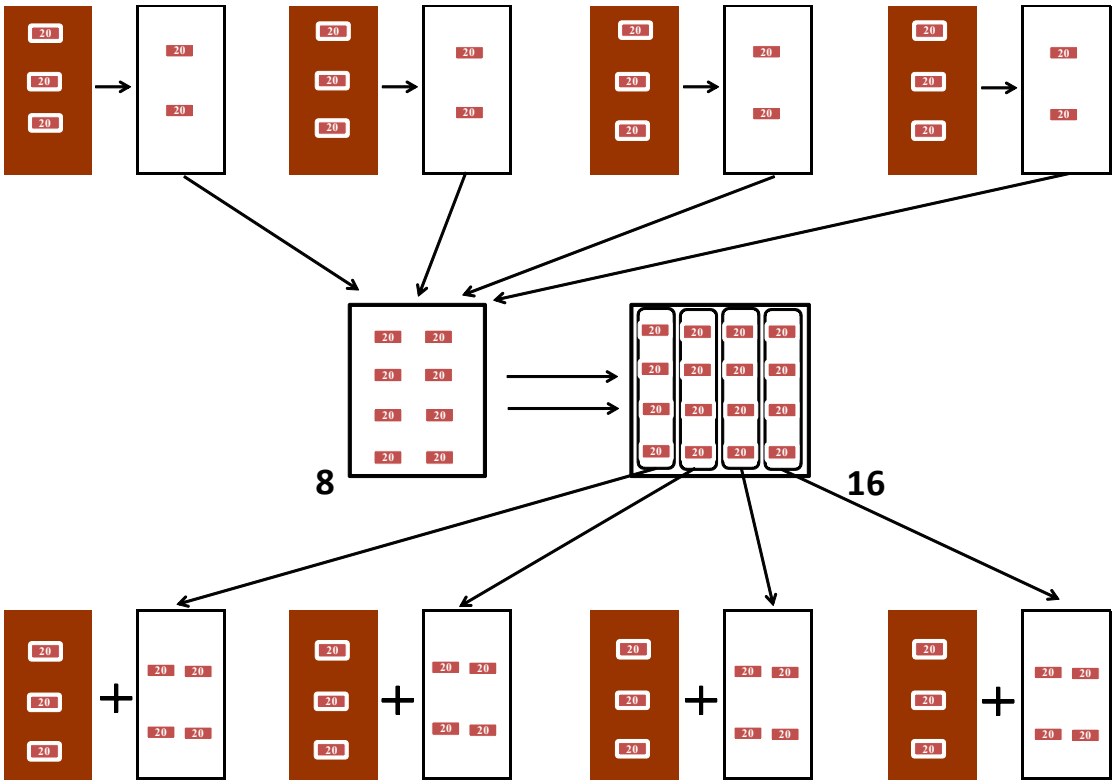
1. Example 1



2. Example 2



3. Example 3



Here are three questions to test whether you have fully understood the rules.

a. if all the four members in your group give all your 100 yuan (5 notes) to the group mutual money, then how much money you can get at last?

b. If you give all five bills (100 yuan) to the group mutual money, but other three members don't give any money to group mutual money, then how much money you can get at last?

c. If other three members except you give all their five bills (100 yuan) to the group mutual money, but you don't give any money to group mutual money, then how much money you can get at last?

According to the grouping of each time, please make a choice and write your answer in the blank cells.

Group number	Other members	Your choose from	choice
	（1-1）The first grouping （Please fill in the other members' names） member1： member2： member3：	A. I will keep 0 yuan for myself and give the group 100 yuan. B. I will keep 20 yuan for myself and give the group 80 yuan. C. I will keep 40 yuan for myself and give the group 60 yuan D. I will keep 60 yuan for myself and give the group 40 yuan E. I will keep 80 yuan for myself and give the group 20 yuan F. I will keep 100 yuan for myself and give the group 0 yuan. G. unable to form the group, cannot play.	
	（1-2）The second grouping （Please fill in the other members' names） member1： member2： member3：	A. I will keep 0 yuan for myself and give the group 100 yuan. B. I will keep 20 yuan for myself and give the group 80 yuan. C. I will keep 40 yuan for myself and give the group 60 yuan D. I will keep 60 yuan for myself and give the group 40 yuan E. I will keep 80 yuan for myself and give the group 20 yuan F. I will keep 100 yuan for myself and give the group 0 yuan. G. unable to form the group, cannot play.	
	（1-3）Classmates, but you do not know their names	A. I will keep 0 yuan for myself and give the group 100 yuan. B. I will keep 20 yuan for myself and give the group 80 yuan. C. I will keep 40 yuan for myself and give the group 60 yuan D. I will keep 60 yuan for myself and give the group 40 yuan E. I will keep 80 yuan for myself and give the group 20 yuan F. I will keep 100 yuan for myself and give the group 0 yuan. G. unable to form the group, cannot play.	

Game 2

Suppose that you have 100 yuan (five 20-yuan bills). You will decide how to assign 100 yuan between your partner and yourself. You can keep 4 notes for yourself and give the remaining one note to your partner. Or you can also keep 2 notes for yourself and give 3 notes to your partner. You can give your partner 0,1,2,3,4,5 note(s) to your partner. The more notes you give to your partner, the less you can save for yourself and the more your partner can get. After the money is transferred, the game will end**. Please make a choice from the following and fill the answer.**

Your partner	You choose from	Your choice
（2-1）Survivors in Haiti Earthquake （After the test, we will give the money to Haiti earthquake disaster area through the international rescue committee）	A**.** I will keep 0 yuan for myself and give 100 yuan to my partner B. I will keep 20 yuan for myself and give 80 yuan to my partner C. I will keep 40 yuan for myself and give 60 yuan to my partner D. I will keep 60 yuan for myself and give 40 yuan to my partner E. I will keep 80 yuan for myself and give 20 yuan to my partner F. I will keep 100 yuan for myself and give 0 yuan to my partner	
（2-2）Survivors in Qinghai Earthquake （After the test, we will give the money to Qinghai earthquake disaster area through China Red Cross foundation）	A**.** I will keep 0 yuan for myself and give 100 yuan to my partner B. I will keep 20 yuan for myself and give 80 yuan to my partner C. I will keep 40 yuan for myself and give 60 yuan to my partner D. I will keep 60 yuan for myself and give 40 yuan to my partner E. I will keep 80 yuan for myself and give 20 yuan to my partner F. I will keep 100 yuan for myself and give 0 yuan to my partner	
（2-3）Randomly selected stranger	A**.** I will keep 0 yuan for myself and give 100 yuan to my partner B. I will keep 20 yuan for myself and give 80 yuan to my partner C. I will keep 40 yuan for myself and give 60 yuan to my partner D. I will keep 60 yuan for myself and give 40 yuan to my partner E. I will keep 80 yuan for myself and give	

	20 yuan to my partner F. I will keep 100 yuan for myself and give 0 yuan to my partner	
（2-4）Poor student in your school （After the test, we will give the money to the poor student in school according to the school's records）	A. I will keep 0 yuan for myself and give 100 yuan to my partner B. I will keep 20 yuan for myself and give 80 yuan to my partner C. I will keep 40 yuan for myself and give 60 yuan to my partner D. I will keep 60 yuan for myself and give 40 yuan to my partner E. I will keep 80 yuan for myself and give 20 yuan to my partner F. I will keep 100 yuan for myself and give 0 yuan to my partner	
（2-5）A student in other class （After the test, we will randomly select a student in other classes and give him/her the money.）	A. I will keep 0 yuan for myself and give 100 yuan to my partner B. I will keep 20 yuan for myself and give 80 yuan to my partner C. I will keep 40 yuan for myself and give 60 yuan to my partner D. I will keep 60 yuan for myself and give 40 yuan to my partner E. I will keep 80 yuan for myself and give 20 yuan to my partner F. I will keep 100 yuan for myself and give 0 yuan to my partner	

Help victims in Qinghai Earthquake

In April 2010, 2700 people were killed and 12,000 were injured in the Yushu Earthquake in Qinghai Province. We will give your donation to the survivors in this earthquake through the China Red Cross Foundation to help them rebuild their homes.

Help victims in Haiti Earthquake

In January 2010, more than 20 million people were killed in the Haiti Earthquake in Central America. We will give your donation to survivors in this earthquake through the International Rescue Committee to help them rebuild their homes.

Game 3

Each question has two choices A and B. For each problem, you should choose a choice. If any question in this game is chosen for the payment, we will ask you to roll the dice, whose faces are numbered from 1 to 10. The number you get from the dice and your choice of A or B will together decide the payment amount for you. Please make a choice A or B to each question.

	Choice A		Choice B	
Question 3-1				
I choose (check✓):	Choice A ☐		Choice B ☐	
Dice number:	1	2-10	1	2-10
You receive:	100 yuan	80 yuan	190 yuan	5 yuan
Question 3-2				
I choose (check✓)	Choice A ☐		Choice B ☐	
Dice number:	1-2	3-10	1-2	3-10
You receive:	100 yuan	80 yuan	190 yuan	5 yuan
Question 3-3				
I choose (check✓)	Choice A ☐		Choice B ☐	
Dice number:	1-3	4-10	1-3	4-10
You receive:	100 yuan	80 yuan	190 yuan	5 yuan
Question 3-4				
I choose (check✓)	Choice A ☐		Choice B ☐	
Dice number:	1-4	5-10	1-4	5-10
You receive:	100 yuan	80 yuan	190 yuan	5 yuan
Question 3-5				
I choose (check✓)	Choice A ☐		Choice B ☐	
Dice number:	1-5	6-10	1-5	6-10
You receive:	100 yuan	80 yuan	190 yuan	5 yuan
Question 3-6				
I choose (check✓)	Choice A ☐		Choice B ☐	
Dice number:	1-6	7-10	1-6	7-10
You receive:	100 yuan	80 yuan	190 yuan	5 yuan
Question 3-7				
I choose (check✓)	Choice A ☐		Choice B ☐	
Dice number:	1-7	8-10	1-7	8-10
You receive:	100 yuan	80 yuan	190 yuan	5 yuan
Question 3-8				
I choose (check✓)	Choice A ☐		Choice B ☐	
Dice number:	1-8	9-10	1-8	9-10
You receive:	100 yuan	80 yuan	190 yuan	5 yuan
Question 3-9				
I choose (check✓)	Choice A ☐		Choice B ☐	
Dice number:	1-9	10	1-9	10
You receive:	100 yuan	80 yuan	190 yuan	5 yuan
Question 3-10				
I choose (check✓)	Choice A ☐		Choice B ☐	
Dice number:	1-10		1-10	
You receive:	100 yuan		190 yuan	

✓ The game part is over. Please continue answering the following questions.

Questionnaire Part: Please make your choices by putting a tick "√"

1. In the first game, how was the relationship between you and other members in the first group?

   1. How many people were there in your group (including yourself)? _____
   2. In the group, how many people were your friends? _____
      In these friends, how many were your close friends? _____
   3. In the group, how many people were your schoolmates from primary school? _____
   4. In the group, how many people did you dislike? _____
   5. In the group, how many people were your playmates? _____

2. In the second game, how was the relationship between you and other members in the first group?

   1. How many people were there in your group (including yourself)? _____
   2. In the group, how many people were your friends? _____
      In these friends, how many were your close friends? _____
   3. In the group, how many people were your schoolmates from primary school? _____
   4. In the group, how many people did you dislike? _____
   5. In the group, how many people were your playmates? _____

From now on, we would like you to answer some questions. The amount of money mentioned here are all hypothesis, we just want you to make true judgments. Please make a truthful answer for our research, thank you.

Situation 1

Here are four questions to understand your time preferences. You can choose today or a month later to receive a sum of money.

3. Please choose one from these two choices:
   A. Receive 200 yuan today
   B. Receive 230 yuan a month later (If you choose B, please skip to question 7)

4. Please choose one from these two choices:
   A. Receive 200 yuan today
   B. Receive 260 yuan a month later (If you choose B, please skip to question 7)

5. Please choose one from these two options:
   A. Receive 200 yuan today
   B. Receive 300 yuan a month later (If you choose B, please skip to question 7)

6. Then how much money do you need so that you would give up getting 200 yuan today and receiving that amount of money a month later? _____yuan

Questionnaire Part:

7. Your ethnic group：1. Qiang _____2. Tibetan _____3. Han _____4. Hui _____
5. Others (Please indicate) _____

8. What is your height? _____ cm

9. Do you live in campus? 1.Yes_____ 2.No_____

10. Other than classes, you learn _____ hours a day (Not including the self-study courses)

11. Your scores of the last semester final exams: Math _____ points; Chinese _____ points

12. Have you made the following donation?

Donation object	Donation	Donation Amount (yuan)	Who decided how much money to donate?
Did you donate to people with disabilities over the past year	1Yes 2 No		1.myself, 2.parents, 3.discussed with parents, 4.donate according to the requests
Did you donate to the victims in Qinghai Earthquake	1Yes 2 No		1.myself, 2.parents, 3.discussed with parents, 4.donate according to the requests
Did you do other donation over the past year?	1Yes 2 No		
Other donation 1: (Please describe the donated objects)			1.myself, 2.parents, 3.discussed with parents, 4.donate according to the requests
Other donation 2: (Please describe the donated objects)			1.myself, 2.parents, 3.discussed with parents, 4.donate according to the requests
Other donation 3: (Please describe the donated objects)			1.myself, 2.parents, 3.discussed with parents, 4.donate according to the requests

13. The following is a description of feelings that you may have now or had recently. Please recall the frequency that you have these feelings in the past week and check "√" after the corresponding option.

a. I do not want to eat, my appetite is bad.	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____
b. I feel depressed.	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____
c. I feel hard to do anything	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____
d. I cannot sleep well.	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____
e. I feel very happy	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____
f. I feel lonely.	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____
g. People are unfriendly to me.	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____
h. I enjoy my life.	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____
i. I feel sad.	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____
j. I think people hate me.	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____
k. I think people don't like me.	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____
l. I can't make any progress on anything	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____

14.For the following some statements, please check " √ " the corresponding options according to your status in the last 6 months.

a. I am very angry and throw tantrums	1.Wrong_____ 2.Partly Right_____3 Quite right_____
b. Usually, I do what people tell me to do.	1.Wrong_____ 2.Partly Right_____3 Quite right_____
c. I often fight.	1.Wrong_____ 2.Partly Right_____3 Quite right_____
d. People often say that I lie or cheat.	1.Wrong_____ 2.Partly Right_____3 Quite right_____
e. I once took others' things .	1.Wrong_____ 2.Partly Right_____3 Quite right_____
f. I usually like to be alone.	1.Wrong_____ 2.Partly Right_____3 Quite right_____
G I have at least one close friend.	1.Wrong_____ 2.Partly Right_____3 Quite right_____
h. Basically, people in my age like me.	1.Wrong_____ 2.Partly Right_____3 Quite right_____
i. People younger than I make fun of me.	1.Wrong_____ 2.Partly Right_____3 Quite right_____
j. I get along better with older people than with people in my age.	1.Wrong_____ 2.Partly Right_____3 Quite right_____

15. The following are some sentences regarding your feelings about yourself. Please check " √ " the corresponding options according to your status.

a. Overall, I am satisfied with myself.	1.Strongly disagree___ 2.Disagree___3.Agree___4. Strongly agree___
b. Sometimes, I feel I'm not good at everything.	1.Strongly disagree___ 2.Disagree___3.Agree___4. Strongly agree___
c. I think I have a lot of advantages.	1.Strongly disagree___ 2.Disagree___3.Agree___4. Strongly agree___
d. I feel I can do as good as most people.	1.Strongly disagree___ 2.Disagree___3.Agree___4. Strongly agree___
e. I feel like I have nothing to be proud of.	1.Strongly disagree___ 2.Disagree___3.Agree___4. Strongly agree___
f. Sometimes, I really feel I'm useless.	1.Strongly disagree___ 2.Disagree___3.Agree___4. Strongly agree___
g. I think I'm valuable, at least as valuable as others.	1.Strongly disagree___ 2.Disagree___3.Agree___4. Strongly agree___
h. I wish I had more self-respect	1.Strongly disagree___ 2.Disagree___3.Agree___4. Strongly agree___
i. Overall, I tend to feel that I'm a loser.	1.Strongly disagree___ 2.Disagree___3.Agree___4. Strongly agree___
j. I have a positive evaluation of myself.	1.Strongly disagree___ 2.Disagree___3.Agree___4. Strongly agree___

16. When the earthquake happened in 2008, were you attending school?

1.Yes_____

2.No_____（please skip to Question20）

17. From September 2007 to July 2008, which school were you in?

1. Elementary school_____ 2. Junior high school_____ 3. Senior high school_____

18. From September 2007 to July 2008, your grade_____Class_____

19. From September 2007 to July 2008, the name of your school was_____

20. In the earthquake in 2008, how was the damage of the classroom in your school?

1. Completely collapsed _____ 2. Serious damaged and became dangerous building _____3. Partly collapsed_____ 4. Minor damaged_____ 5.No damage at all_____

21. From September 2008 to July 2009, were you attending school?

1.Yes_____

2.No_____（please skip to Question29）

22. From September 2008 to July 2009, which school were you in?

1. Elementary school_____ 2. Junior high school_____ 3. Senior high school_____

23. From September 2008 to July 2009, your grade was_____Class was_____

24. From September 2008 to July 2009, the name of your school was_____(the name of your own school)

25. From September 2008 to July 2009, did you live in campus? 1.Yes_____ 2.No_____

26. Where was the school?

1.Your village； _____

2.Other village in your township； _____

3.town in your township； _____

4.other township in your country； _____（town name_____）

5.city in your country； _____

6.Other places in your province；_____（City/Town name_____）

7.Other province _____ (province name_____； City/town name_____)

27. Compared to the school before the earthquake, how was the learning environment for students from September 2008 to July 2009?

1. much better_____ 2.better_____ 3.same_____ 4.worse_____ 5.much worse_____

28. Compared to the school before the earthquake, how was the living environment for students from September 2008 to July 2009?

1.much better_____ 2.better_____ 3.same_____ 4.worse_____ 5.much worse_____

28. Compared to the school before the earthquake, how were the sports and cultural education facilities in school for students from September 2008 to July 2009?

1.much better_____ 2.better_____ 3.same_____ 4.worse_____ 5.much worse_____

Losses and casualties in the earthquake

30. Did anyone in your family die in the earthquake?

1.Yes_____ =====》 Who died in your family（Multiple-choice）?

1.Father_____ 2.Mother_____ 3.Brothers_____ 4.Sisters____

5. Grandparents_____ 6.Others（please write specifically）_____

2.No_____

31. Did anyone in your family get injured in the earthquake?

1.Yes_____ =====》 Who injured in your family（Multiple-choice）?

1.Father_____ 2.Mother_____ 3.Brothers_____ 4.Sisters____

5. Grandparents_____ 6.Others（please write specifically）_____

2.No_____

32. Did you get injured in the earthquake?

1. Seriously injured _____ 2. Minor injury_____ 3. No injuries _____

33. Are you disabled?

1.Yes_____ =====》 What kind of disability（Multiple-choice）?

1. Physical disability_____ 2. Brain damaged_____

3. Mental deficiency_____ 4. Blind or half blind_____ 5. Deaf or half deaf_____6. Dumb or serious stuttering_____ 7. Other disabilities（please write specifically）_____

2.No_____

34. If you are disabled, is it because of the earthquake? 1. Yes_____ 2.No_____

35. How was the damage of your house in the earthquake?

1. Completely collapsed _____ 2. Serious damaged and became dangerous building _____3. Partly collapsed_____ 4. Minor damaged_____ 5.No damage at all_____

36. Did your family live in makeshift house after the earthquake?

1.Yes_____ =====》 Does your family still live in makeshift house after the earthquake?

1. Yes_____ 2.No_____

2.No_____

37. Did your family members lose their job after the earthquake?

1.Yes_____ =====》 Who lost job in your family after the earthquake（Multiple-choice）?

1.Father_____ 2.Mother_____ 3.Brothers_____ 4.Sisters____

5. Grandparents_____ 6.Others（please write specifically）_____

2.No_____

38. Before the earthquake, did your family have the following durable consumer items? (please check " √ " after the corresponding answers)

a. television	1.Yes_____ 2.No_____
b. refrigerator	1.Yes_____ 2.No_____
c. washing machine	1.Yes_____ 2.No_____
d. computer	1.Yes_____ 2.No_____
e. telephone, cellphone	1.Yes_____ 2.No_____
f. car	1.Yes_____ 2.No_____
g. autobike	1.Yes_____ 2.No_____
h. air conditioner	1.Yes_____ 2.No_____
i. camera	1.Yes_____ 2.No_____

39. After the earthquake, Did your family receive any of the following donations? (Please check"√" the right item)

1. Tent_____
2. Food _____
3. Drinking water _____
4. Clothes _____
5. Medicine _____
6. Furniture _____
7. Television _____
8. Refrigerator _____
9. Washing machine _____
10. Computer _____
11. Housing subsidies _____

40. After the earthquake, did you receive any of the following donations? (Please check"√" the right item)

1. Stationery _____
2. Books _____
3. Clothes _____
4. Schoolbag _____

41. In general, if a student around you donated a large sum of money to the survivors of the earthquake in Qinghai, do you think that the teacher will have a better impression of him/her?

1. Yes _____
2. No _____

✓ **The research is over, thank you for your cooperation!**

Test answer sheets of students in Sichuan
（Mao Class Y）

Hello everyone! Welcome to the test project of students in Sichuan, held by Renmin University of China. This project is voluntary; in order to make more accurate research, we hope you get involved. All of your answers in the research will be kept strictly confidential. We will not tell anyone your answer.

Do not turn to this part of the content before we tell you to do so.

the game chosen for the payment ☐

The amount of payment ☐

Basic information of student

（All questions are one-choice questions）

Date of test: _____year ___month ___day

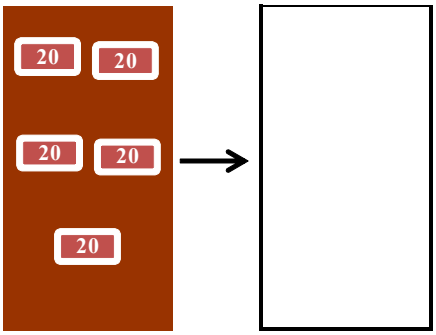
1. County Name 1. Wenchuan_____2. Mao_____
2. School name_____ school code_____
（Bayi middle school 21; Minzu middle schoo22; Tumen middle school 23）
3. Grade_____Class_____
4. Name _____ Student ID _____
5. Sex: 1. Male_____2. Female_____
6. Date of birth _____Year____month
7. Classroom carried on the test 1. Our classroom_____ 2. Another classroom____

In Game 1，group number of the first time ☐

group number of the second time ☐

Game1

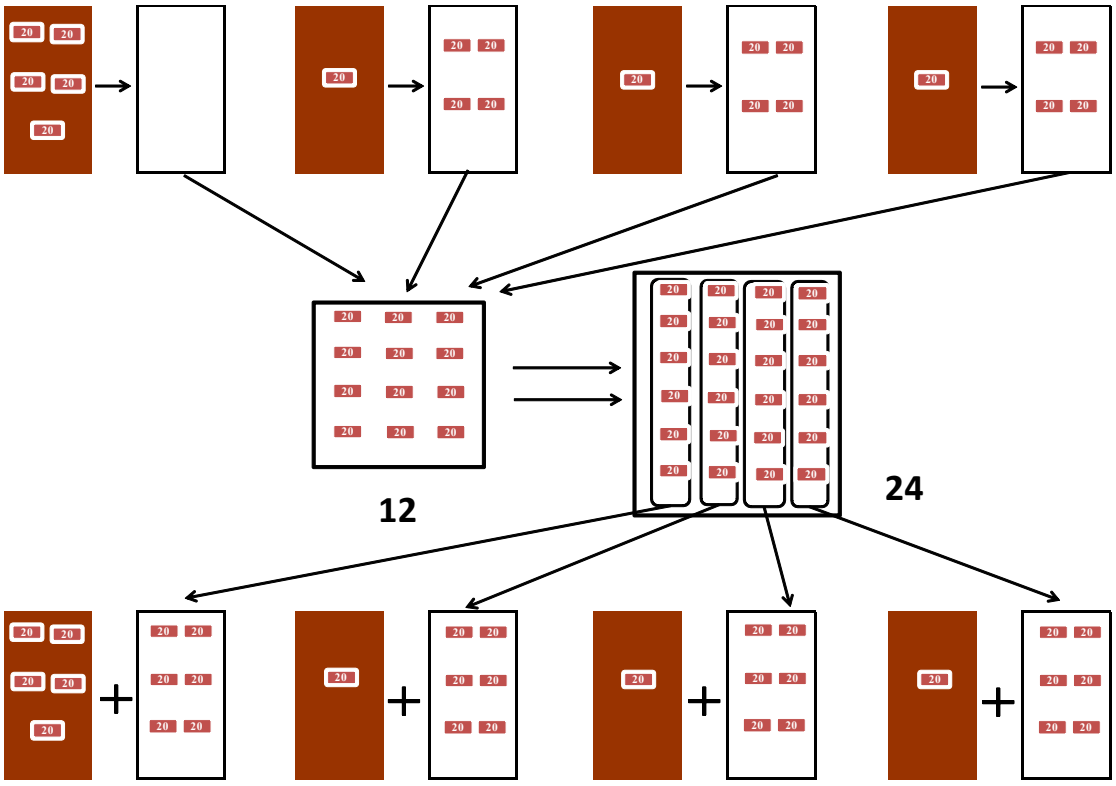
First of all, this game will be played three times, the group name list of the first two times are already in your hands. At the beginning of each game, you will have 100 yuan which consists of five 20-yuan bills. You will decide how to distribute these five bills between "your own money" and your group's "mutual money".



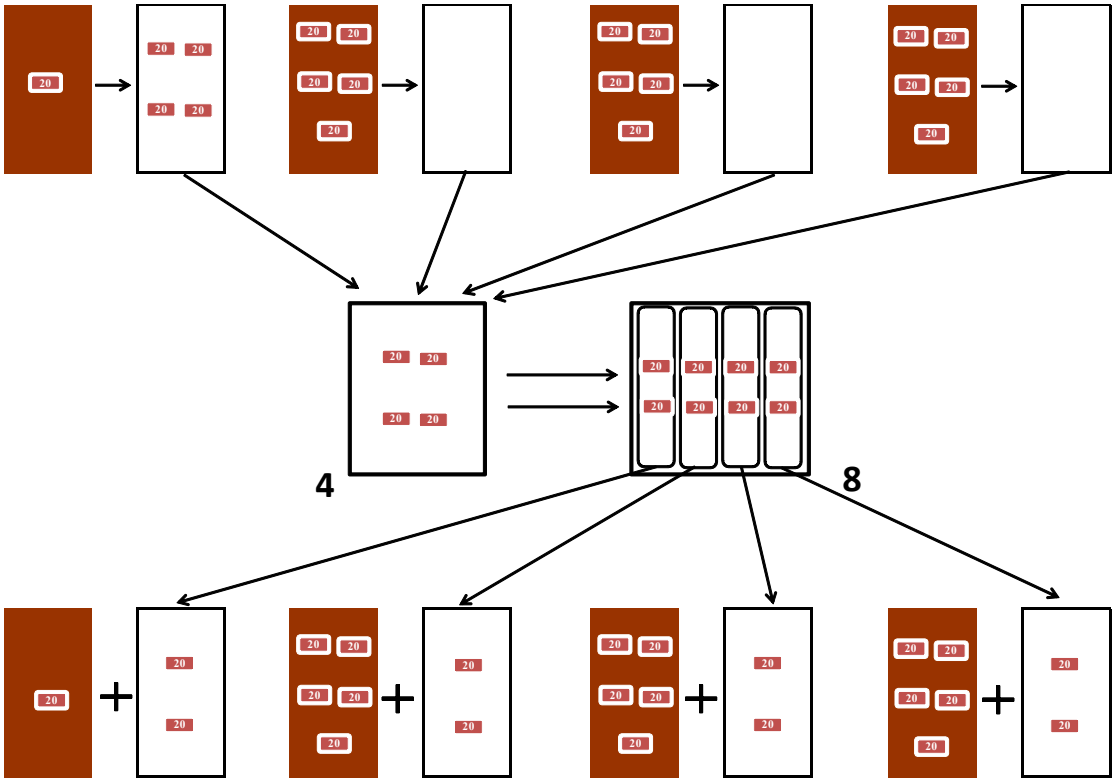
The money that you keep for yourself will be yours. At the same time, the group's mutual money is distributed as follows: we will sum up the money which is assigned to the mutual money by each group member, double the amount, and then divide it into four, and give to the four members of the group. In this way, you will get a quarter of the money no matter how much you contribute to this group's mutual money. The game will end there. Then how much would you contribute to the mutual money?

Let's see some examples.

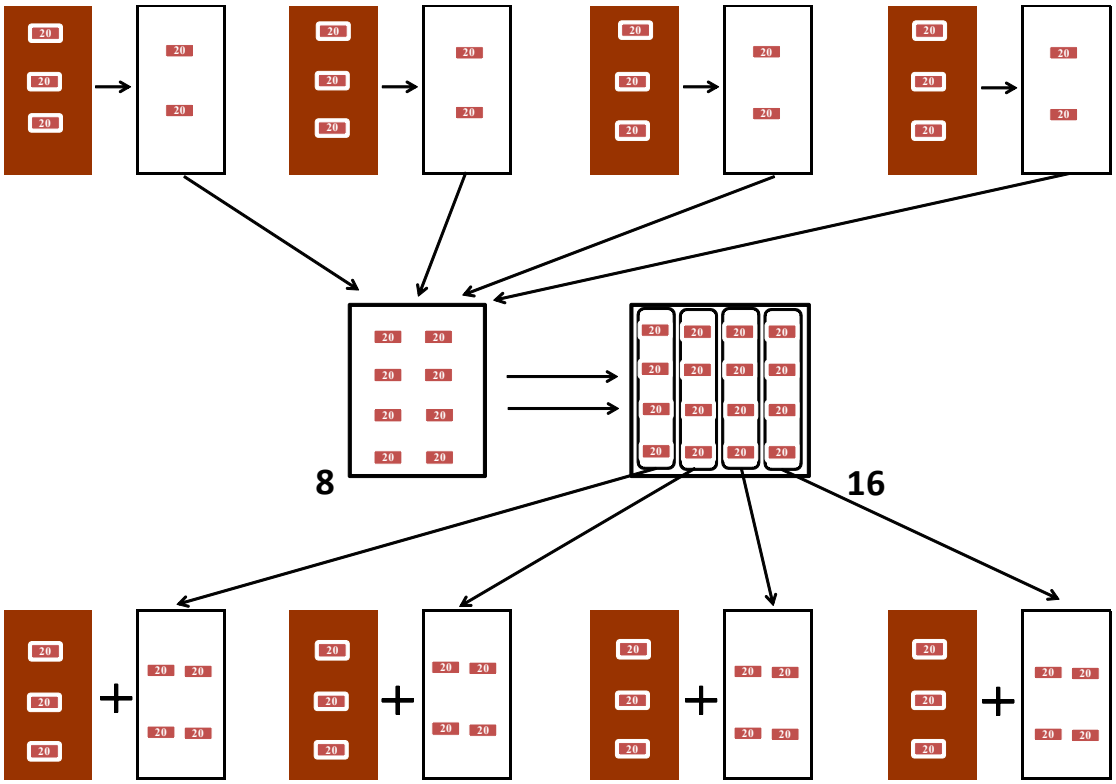
4. Example 1



5. Example 2



6. Example 3



Here are three questions to test whether you have fully understood the rules.

a. if all the four members in your group give all your 100 yuan (5 notes) to the group mutual money, then how much money you can get at last?

b. If you give all five bills (100 yuan) to the group mutual money, but other three members don't give any money to group mutual money, then how much money you can get at last?

c. If other three members except you give all their five bills (100 yuan) to the group mutual money, but you don't give any money to group mutual money, then how much money you can get at last?

According to the grouping of each time, please make a choice and write your answer in the blank cells.

Group number	Other members	Your choose from	choice
[redacted]	（1-1）Classmates, but you do not know their names	A. I will keep 0 yuan for myself and give the group 100 yuan. B. I will keep 20 yuan for myself and give the group 80 yuan. C. I will keep 40 yuan for myself and give the group 60 yuan D. I will keep 60 yuan for myself and give the group 40 yuan E. I will keep 80 yuan for myself and give the group 20 yuan F. I will keep 100 yuan for myself and give the group 0 yuan. G. unable to form the group, cannot play.	
	（1-2）The first grouping （Please fill in the other members' names） member1： member2： member3：	A. I will keep 0 yuan for myself and give the group 100 yuan. B. I will keep 20 yuan for myself and give the group 80 yuan. C. I will keep 40 yuan for myself and give the group 60 yuan D. I will keep 60 yuan for myself and give the group 40 yuan E. I will keep 80 yuan for myself and give the group 20 yuan F. I will keep 100 yuan for myself and give the group 0 yuan. G. unable to form the group, cannot play.	
	（1-3）The second grouping （Please fill in the other members' names） member1： member2： member3：	A. I will keep 0 yuan for myself and give the group 100 yuan. B. I will keep 20 yuan for myself and give the group 80 yuan. C. I will keep 40 yuan for myself and give the group 60 yuan D. I will keep 60 yuan for myself and give the group 40 yuan E. I will keep 80 yuan for myself and give the group 20 yuan F. I will keep 100 yuan for myself and give the group 0 yuan. G. unable to form the group, cannot play.	

Game 2

Suppose that you have 100 yuan (five 20-yuan bills). You will decide how to assign 100 yuan between your partner and yourself. You can keep 4 notes for yourself and give the remaining one note to your partner. Or you can also keep 2 notes for yourself and give 3 notes to your partner. You can give your partner 0,1,2,3,4,5 note(s) to your partner. The more notes you give to your partner, the less you can save for yourself and the more your partner can get. After the money is transferred, the game will end**. Please make a choice from the following and fill the answer.**

Your partner	You choose from	Your choice
（2-1）A student in other class （After the test, we will randomly select a student in other classes and give him/her the money.）	A**.** I will keep 0 yuan for myself and give 100 yuan to my partner B. I will keep 20 yuan for myself and give 80 yuan to my partner C. I will keep 40 yuan for myself and give 60 yuan to my partner D. I will keep 60 yuan for myself and give 40 yuan to my partner E. I will keep 80 yuan for myself and give 20 yuan to my partner F. I will keep 100 yuan for myself and give 0 yuan to my partner	
（2-2）Poor student in your school （After the test, we will give the money to the poor student in school according to the school's records）	A**.** I will keep 0 yuan for myself and give 100 yuan to my partner B. I will keep 20 yuan for myself and give 80 yuan to my partner C. I will keep 40 yuan for myself and give 60 yuan to my partner D. I will keep 60 yuan for myself and give 40 yuan to my partner E. I will keep 80 yuan for myself and give 20 yuan to my partner F. I will keep 100 yuan for myself and give 0 yuan to my partner	
（2-3）Randomly selected stranger	A**.** I will keep 0 yuan for myself and give 100 yuan to my partner B. I will keep 20 yuan for myself and give 80 yuan to my partner C. I will keep 40 yuan for myself and give 60 yuan to my partner D. I will keep 60 yuan for myself and give 40 yuan to my partner E. I will keep 80 yuan for myself and give	

	20 yuan to my partner F. I will keep 100 yuan for myself and give 0 yuan to my partner	
（2-4）Survivors in Qinghai Earthquake （After the test, we will give the money to Qinghai earthquake disaster area through China Red Cross foundation）	A. I will keep 0 yuan for myself and give 100 yuan to my partner B. I will keep 20 yuan for myself and give 80 yuan to my partner C. I will keep 40 yuan for myself and give 60 yuan to my partner D. I will keep 60 yuan for myself and give 40 yuan to my partner E. I will keep 80 yuan for myself and give 20 yuan to my partner F. I will keep 100 yuan for myself and give 0 yuan to my partner	
（2-5）Survivors in Haiti Earthquake （After the test, we will give the money to Haiti earthquake disaster area through the international rescue committee）	A. I will keep 0 yuan for myself and give 100 yuan to my partner B. I will keep 20 yuan for myself and give 80 yuan to my partner C. I will keep 40 yuan for myself and give 60 yuan to my partner D. I will keep 60 yuan for myself and give 40 yuan to my partner E. I will keep 80 yuan for myself and give 20 yuan to my partner F. I will keep 100 yuan for myself and give 0 yuan to my partner	

Help victims in Qinghai Earthquake

In April 2010, 2700 people were killed and 12,000 were injured in the Yushu Earthquake in Qinghai Province. We will give your donation to the survivors in this earthquake through the China Red Cross Foundation to help them rebuild their homes.


Help victims in Haiti Earthquake

In January 2010, more than 20 million people were killed in the Haiti Earthquake in Central America. We will give your donation to survivors in this earthquake through the International Rescue Committee to help them rebuild their homes.


Game 3

Each question has two choices A and B. For each problem, you should choose a choice. If any question in this game is chosen for the payment, we will ask you to roll the dice, whose faces are numbered from 1 to 10. The number you get from the dice and your choice of A or B will together decide the payment amount for you. Please make a choice A or B to each question.

	Choice A		Choice B	
Question 3-1				
I choose (check✓):	Choice A ☐		Choice B ☐	
Dice number:	1	2-10	1	2-10
You receive:	100 yuan	80 yuan	190 yuan	5 yuan
Question 3-2				
I choose (check✓)	Choice A ☐		Choice B ☐	
Dice number:	1-2	3-10	1-2	3-10
You receive:	100 yuan	80 yuan	190 yuan	5 yuan
Question 3-3				
I choose (check✓)	Choice A ☐		Choice B ☐	
Dice number:	1-3	4-10	1-3	4-10
You receive:	100 yuan	80 yuan	190 yuan	5 yuan
Question 3-4				
I choose (check✓)	Choice A ☐		Choice B ☐	
Dice number:	1-4	5-10	1-4	5-10
You receive:	100 yuan	80 yuan	190 yuan	5 yuan
Question 3-5				
I choose (check✓)	Choice A ☐		Choice B ☐	
Dice number:	1-5	6-10	1-5	6-10
You receive:	100 yuan	80 yuan	190 yuan	5 yuan
Question 3-6				
I choose (check✓)	Choice A ☐		Choice B ☐	
Dice number:	1-6	7-10	1-6	7-10
You receive:	100 yuan	80 yuan	190 yuan	5 yuan
Question 3-7				
I choose (check✓)	Choice A ☐		Choice B ☐	
Dice number:	1-7	8-10	1-7	8-10
You receive:	100 yuan	80 yuan	190 yuan	5 yuan
Question 3-8				
I choose (check✓)	Choice A ☐		Choice B ☐	
Dice number:	1-8	9-10	1-8	9-10
You receive:	100 yuan	80 yuan	190 yuan	5 yuan
Question 3-9				
I choose (check✓)	Choice A ☐		Choice B ☐	
Dice number:	1-9	10	1-9	10
You receive:	100 yuan	80 yuan	190 yuan	5 yuan
Question 3-10				
I choose (check✓)	Choice A ☐		Choice B ☐	
Dice number:	1-10		1-10	
You receive:	100 yuan		190 yuan	

✓ The game part is over. Please continue answering the following questions.

Questionnaire Part: Please make your choices by putting a tick "√"

1. In the first game, how was the relationship between you and other members in the first group?

3. How many people were there in your group (including yourself)? _____
4. In the group, how many people were your friends? _____
   In these friends, how many were your close friends? _____
3. In the group, how many people were your schoolmates from primary school? _____
4. In the group, how many people did you dislike? _____
5. In the group, how many people were your playmates? _____

2. In the second game, how was the relationship between you and other members in the first group?

1. How many people were there in your group (including yourself)? _____
2. In the group, how many people were your friends? _____
   In these friends, how many were your close friends? _____
3. In the group, how many people were your schoolmates from primary school? _____
4. In the group, how many people did you dislike? _____
5. In the group, how many people were your playmates? _____

From now on, we would like you to answer some questions. The amount of money mentioned here are all hypothesis, we just want you to make true judgments. Please make a truthful answer for our research, thank you.

Situation 1

Here are four questions to understand your time preferences. You can choose today or a month later to receive a sum of money.

3. Please choose one from these two choices:
   A. Receive 200 yuan today
   B. Receive 230 yuan a month later (If you choose B, please skip to question 7)

4. Please choose one from these two choices:
   A. Receive 200 yuan today
   B. Receive 260 yuan a month later (If you choose B, please skip to question 7)

5. Please choose one from these two options:
   A. Receive 200 yuan today
   B. Receive 300 yuan a month later (If you choose B, please skip to question 7)

6. Then how much money do you need so that you would give up getting 200 yuan today and receiving that amount of money a month later? _____yuan

Questionnaire Part:

7. Your ethnic group：1. Qiang _____2. Tibetan _____3. Han _____4. Hui _____
5. Others (Please indicate) _____

8. What is your height? _____ cm

9. Do you live in campus? 1.Yes_____ 2.No_____

10. Other than classes, you learn _____ hours a day (Not including the self-study courses)

11. Your scores of the last semester final exams: Math _____ points; Chinese _____ points

12. Have you made the following donation?

Donation object	Donation	Donation Amount (yuan)	Who decided how much money to donate?
Did you donate to people with disabilities over the past year	1Yes 2 No		1.myself, 2.parents, 3.discussed with parents, 4.donate according to the requests
Did you donate to the victims in Qinghai Earthquake	1Yes 2 No		1.myself, 2.parents, 3.discussed with parents, 4.donate according to the requests
Did you do other donation over the past year?	1Yes 2 No		
Other donation 1: (Please describe the donated objects)			1.myself, 2.parents, 3.discussed with parents, 4.donate according to the requests
Other donation 2: (Please describe the donated objects)			1.myself, 2.parents, 3.discussed with parents, 4.donate according to the requests
Other donation 3: (Please describe the donated objects)			1.myself, 2.parents, 3.discussed with parents, 4.donate according to the requests

13. The following is a description of feelings that you may have now or had recently. Please recall the frequency that you have these feelings in the past week and check "√" after the corresponding option.

a. I do not want to eat, my appetite is bad.	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____
b. I feel depressed.	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____
c. I feel hard to do anything	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____
d. I cannot sleep well.	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____
e. I feel very happy	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____
f. I feel lonely.	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____
g. People are unfriendly to me.	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____
h. I enjoy my life.	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____
i. I feel sad.	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____
j. I think people hate me.	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____
k. I think people don't like me.	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____
l. I can't make any progress on anything	1.Never_____2.Occasionally____3.Sometimes_____4.Often_____

14.For the following some statements, please check " √ " the corresponding options according to your status in the last 6 months.

a. I am very angry and throw tantrums	1.Wrong_____ 2.Partly Right_____3 Quite right_____
b. Usually, I do what people tell me to do.	1.Wrong_____ 2.Partly Right_____3 Quite right_____
c. I often fight.	1.Wrong_____ 2.Partly Right_____3 Quite right_____
d. People often say that I lie or cheat.	1.Wrong_____ 2.Partly Right_____3 Quite right_____
e. I once took others' things .	1.Wrong_____ 2.Partly Right_____3 Quite right_____
f. I usually like to be alone.	1.Wrong_____ 2.Partly Right_____3 Quite right_____
G I have at least one close friend.	1.Wrong_____ 2.Partly Right_____3 Quite right_____
h. Basically, people in my age like me.	1.Wrong_____ 2.Partly Right_____3 Quite right_____
i. People younger than I make fun of me.	1.Wrong_____ 2.Partly Right_____3 Quite right_____
j. I get along better with older people than with people in my age.	1.Wrong_____ 2.Partly Right_____3 Quite right_____

15. The following are some sentences regarding your feelings about yourself. Please check " √ " the corresponding options according to your status.

a. Overall, I am satisfied with myself.	1.Strongly disagree___ 2.Disagree___3.Agree___4. Strongly agree___
b. Sometimes, I feel I'm not good at everything.	1.Strongly disagree___ 2.Disagree___3.Agree___4. Strongly agree___
c. I think I have a lot of advantages.	1.Strongly disagree___ 2.Disagree___3.Agree___4. Strongly agree___
d. I feel I can do as good as most people.	1.Strongly disagree___ 2.Disagree___3.Agree___4. Strongly agree___
e. I feel like I have nothing to be proud of.	1.Strongly disagree___ 2.Disagree___3.Agree___4. Strongly agree___
f. Sometimes, I really feel I'm useless.	1.Strongly disagree___ 2.Disagree___3.Agree___4. Strongly agree___
g. I think I'm valuable, at least as valuable as others.	1.Strongly disagree___ 2.Disagree___3.Agree___4. Strongly agree___
h. I wish I had more self-respect	1.Strongly disagree___ 2.Disagree___3.Agree___4. Strongly agree___
i. Overall, I tend to feel that I'm a loser.	1.Strongly disagree___ 2.Disagree___3.Agree___4. Strongly agree___
j. I have a positive evaluation of myself.	1.Strongly disagree___ 2.Disagree___3.Agree___4. Strongly agree___

16. When the earthquake happened in 2008, were you attending school?

1.Yes_____

2.No_____（please skip to Question20）

17. From September 2007 to July 2008, which school were you in?

1. Elementary school_____ 2. Junior high school_____ 3. Senior high school_____

18. From September 2007 to July 2008, your grade_____Class_____

19. From September 2007 to July 2008, the name of your school was_____

20. In the earthquake in 2008, how was the damage of the classroom in your school?

1. Completely collapsed _____ 2. Serious damaged and became dangerous building _____3. Partly collapsed_____ 4. Minor damaged_____ 5.No damage at all_____

21. From September 2008 to July 2009, were you attending school?

1.Yes_____

2.No_____（please skip to Question29）

22. From September 2008 to July 2009, which school were you in?

1. Elementary school_____ 2. Junior high school_____ 3. Senior high school_____

23. From September 2008 to July 2009, your grade was_____Class was_____

24. From September 2008 to July 2009, the name of your school was_____(the name of your own school)

25. From September 2008 to July 2009, did you live in campus? 1.Yes_____ 2.No_____

26. Where was the school?

1.Your village； _____

2.Other village in your township； _____

3.town in your township； _____

4.other township in your country； _____（town name_____）

5.city in your country； _____

6.Other places in your province；_____（City/Town name_____）

7.Other province _____ (province name_____； City/town name_____)

27. Compared to the school before the earthquake, how was the learning environment for students from September 2008 to July 2009?

1. much better_____ 2.better_____ 3.same_____ 4.worse_____ 5.much worse_____

28. Compared to the school before the earthquake, how was the living environment for students from September 2008 to July 2009?

1.much better_____ 2.better_____ 3.same_____ 4.worse_____ 5.much worse_____

29. Compared to the school before the earthquake, how were the sports and cultural education facilities in school for students from September 2008 to July 2009?

1.much better_____ 2.better_____ 3.same_____ 4.worse_____ 5.much worse_____

Losses and casualties in the earthquake

30. Did anyone in your family die in the earthquake?

1.Yes_____ =====》 Who died in your family（Multiple-choice）?

1.Father_____ 2.Mother_____ 3.Brothers_____ 4.Sisters____

5. Grandparents_____ 6.Others（please write specifically）_____

2.No_____

31. Did anyone in your family get injured in the earthquake?

1.Yes_____ =====》 Who injured in your family（Multiple-choice）?

1.Father_____ 2.Mother_____ 3.Brothers_____ 4.Sisters____

5. Grandparents_____ 6.Others（please write specifically）_____

2.No_____

32. Did you get injured in the earthquake?

1. Seriously injured _____ 2. Minor injury_____ 3. No injuries _____

33. Are you disabled?

1.Yes_____ =====》 What kind of disability（Multiple-choice）?

1. Physical disability_____ 2. Brain damaged_____

3. Mental deficiency_____ 4. Blind or half blind_____ 5. Deaf or half deaf_____6. Dumb or serious stuttering_____ 7. Other disabilities（please write specifically）_____

2.No_____

34. If you are disabled, is it because of the earthquake? 1. Yes_____ 2.No_____

35. How was the damage of your house in the earthquake?

1. Completely collapsed _____ 2. Serious damaged and became dangerous building _____3. Partly collapsed_____ 4. Minor damaged_____ 5.No damage at all_____

36. Did your family live in makeshift house after the earthquake?

1.Yes_____ =====》 Does your family still live in makeshift house after the earthquake?

1. Yes_____ 2.No_____

2.No_____

37. Did your family members lose their job after the earthquake?

1.Yes_____ =====》 Who lost job in your family after the earthquake（Multiple-choice）?

1.Father_____ 2.Mother_____ 3.Brothers_____ 4.Sisters____

5. Grandparents_____ 6.Others（please write specifically）_____

2.No_____

38. Before the earthquake, did your family have the following durable consumer items? (please check " √ " after the corresponding answers)

j.	television	1.Yes_____ 2.No_____
k.	refrigerator	1.Yes_____ 2.No_____
l.	washing machine	1.Yes_____ 2.No_____
m.	computer	1.Yes_____ 2.No_____
n.	telephone, cellphone	1.Yes_____ 2.No_____
o.	car	1.Yes_____ 2.No_____
p.	autobike	1.Yes_____ 2.No_____
q.	air conditioner	1.Yes_____ 2.No_____
r.	camera	1.Yes_____ 2.No_____

39. After the earthquake, Did your family receive any of the following donations? (Please check"√" the right item)

1. Tent_____
2. Food _____
3. Drinking water _____
4. Clothes _____
5. Medicine _____
6. Furniture _____
7. Television _____
8. Refrigerator _____
9. Washing machine _____
10. Computer _____
11. Housing subsidies _____

40. After the earthquake, did you receive any of the following donations? (Please check"√" the right item)

1. Stationery _____
2. Books _____
3. Clothes _____
4. Schoolbag _____

41. In general, if a student around you donated a large sum of money to the survivors of the earthquake in Qinghai, do you think that the teacher will have a better impression of him/her?

1. Yes _____
2. No _____

✓ **The research is over, thank you for your cooperation!**