Fairness or Efficiency? The Effect of Completion Motivation on Prosocial Behavior Preference

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Abstract

In prosocial behavior, helpers typically face a trade-off between fairness and efficiency. Previous research has found that when fairness and efficiency cannot be simultaneously satisfied, people often neglect the efficiency of helping a minority and tend to distribute donated resources equally among more recipients. The present study, through six experiments, finds that completion motivation helps increase individuals' focus on helping efficiency. Specifically, when requests for help do not involve survival needs, in scenarios where the difficulties of all recipients cannot be fully resolved, helpers exhibit a stronger preference for fairness; however, in scenarios where the difficulties of a minority of recipients can be completely resolved, helpers' preference for fairness decreases while their preference for efficiency increases, with this shift in choice preference mediated by individual completion motivation. Moreover, individual completion motivation can effectively enhance donation amounts in broader charitable contexts that do not involve fairness considerations. This finding advances the further development of effective altruism theory and provides potential interventions for achieving effective altruism.

Full Text

Preamble

Equity or Efficiency? Impact of Completion Motivation on Prosocial Behavior Preferences

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Abstract

In prosocial behavior, helpers often face a trade-off between equity and efficiency. Previous research has found that when equity and efficiency cannot be simultaneously satisfied, people tend to neglect the efficiency of helping a minority and prefer to distribute donated resources equally among more recipients. Through six experiments, this paper demonstrates that completion motivation can enhance individuals' focus on helping efficiency. Specifically, when the appeal does not involve survival needs, helpers in situations where no recipients' difficulties can be fully resolved show stronger preference for equity; however, in situations where a minority of recipients' difficulties can be completely resolved, helpers' preference for equity decreases while their preference for efficiency increases. This shift in choice preferences is mediated by individuals' completion motivation. Furthermore, individual completion motivation can also effectively increase donation amounts in broader giving contexts that do not involve equity considerations. These findings advance effective altruism theory and provide potential interventions for achieving effective altruism.

Keywords: donation behavior, equity, efficiency, completion motivation
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1. Introduction

Prosocial behavior refers to all actions that conform to social expectations and benefit others or groups (Lin et al., 2024; Schroeder & Graziano, 2015). Donation behavior is a typical form of prosocial behavior, typically manifested as voluntarily giving one' s wealth or resources to others to benefit them (Dovidio et al., 2006; Penner et al., 2005). However, in real life, due to limited resources, people often need to weigh different resource allocation schemes when making donation decisions (Sharps & Schroeder, 2019). Imagine you have a box of painkillers to donate to chronic pain patients: would you donate the entire box to one patient or distribute it equally among four patients? And if the donation were a box of effective medication that could cure one patient when used for them but only provide partial relief when shared among four patients, how would you choose? Both scenarios involve two core factors in resource allocation: equity and efficiency.

As the *Analects* states, "The head of a state or a family worries not about scarcity but about inequality." In prosocial behavior, equity is often a prioritized factor. Research has found that when allocating helping resources, people tend to prefer relatively equitable distribution strategies over more efficient helping schemes (Karni et al., 2007). This neglect of efficiency is not uncommon in prosocial behavior (Caviola et al., 2021; Jaeger & Vugt, 2022). The effective altruism movement therefore proposes that people should focus on the effects of prosocial behavior to promote benefits for more people and to a greater degree (MacAskill, 2015). Notably, when the helping effects for individuals are consistent across two options, there is no conflict between equity and efficiency, and choosing to benefit

more people constitutes effective altruism. For example, spending $50,000 can either replace the retina for one blind person in a developed country or provide surgery for 500 trachoma patients in a developing country. Both options have consistent helping effects for individual patients—restoring vision and enabling self-care—but the latter not only achieves broader equity but also represents a more efficient altruistic choice (Caviola et al., 2021; Jaeger & Vugt, 2022).

But when the helping effects for recipients are inconsistent across options (i.e., choosing between helping more people with poorer effects or fewer people with better effects), do people in prosocial behavior choose equity for the majority or efficiency for the minority? Some research suggests that the desire to complete a goal event (completion motivation) may weaken people' s adherence to equity principles (Gino & Pierce, 2009). Therefore, we hypothesize that when individual helping effects are inconsistent across options, people' s choices may be influenced by the completability of the helping behavior. That is, when the helping effects for a minority can reach 100%, transforming the helping situation into a completable one, the desire to complete help for some recipients may change people' s prosocial behavior preferences. To test our hypothesis, this study designs different helping situations, focusing on people' s prosocial behavior preferences when equity and efficiency are in conflict, and attempts to explore their underlying causes, providing new evidence for identifying potential facilitators of effective altruism.

1.1 Equity and Efficiency in Prosocial Behavior

The trade-off between equity and efficiency widely exists in various human decision-making processes (Gordon-Hecker et al., 2020). Typically, in resource allocation, people show stronger preference for equitable options (Kahneman et al., 1986). For example, research has found that people would rather provide less effective screening tests for all Medicaid-eligible populations than provide more effective screening tests for 50% of the population (Ubel et al., 1996), and this preference for equitable allocation persists even when explicitly told to prioritize the "most effective" allocation strategy (Shine et al., 2022).

However, this preference for equity is not absolute. When equity means that no beneficiary can receive any additional benefit, people are often willing to deviate from equity to pursue higher overall efficiency (Gordon-Hecker et al., 2020). Additionally, research has found that when relatively equitable options cannot benefit everyone, people are also willing to deviate from equity and choose distribution schemes that are more efficient for individuals. For instance, if forced to choose between providing less effective screening tests to 50% of Medicaid-eligible populations or more effective screening tests to 25% of the population, people generally prefer the latter (Ubel et al., 2000). This emphasis on efficiency in resource allocation is considered a result of cognitive development (Xie et al., 2019), with some research proposing that equity relies on intuitive thinking, while attention to efficiency often comes from deliberation (Persson & Tinghög, 2023).

The neglect of efficiency is particularly evident in prosocial behavior (Caviola et al., 2021). Research has found that donors are typically unaware of and do not actively pay attention to the efficiency of charitable organizations, often choosing less efficient charities over more efficient ones (Berman et al., 2018), even when information about these charities' efficiency is explicitly provided (Bergh & Reinstein, 2021; Karlan & Wood, 2017). From an individual differences perspective, this phenomenon may be related to helpers' personal emotions, beliefs, and cognitive limitations (Bergh & Reinstein, 2021; Caviola et al 2021); from an evolutionary perspective, parochialism, status concerns, and conformist psychological motivations are also believed to promote ineffective altruism (Jaeger & Vugt, 2022).

In situations where efficiency and equity conflict, altruists also tend to emphasize equity and neglect helping efficiency (Sharps & Schroeder, 2019). For example, in donation situations involving scarce resources (transplant organs), individuals often emphasize the equity of resource allocation rather than efficiency when making donations (Colby et al., 2015); in donation behaviors toward in-groups, even when told that donating to one child could increase the number of food provisions compared to average donations to multiple children, 75.7% of individuals still choose to donate equally to multiple children out of equity motivation (Hsu et al., 2008; Sharps & Schroeder, 2019; Yu et al., 2021). Some research suggests that people' s preferences for efficiency and equity in prosocial behavior may reflect their endorsement of utilitarianism and deontology (Wang et al., 2024). Specifically, utilitarianism aims to maximize welfare (Gillon, 1985), emphasizing that people' s behavior should focus on maximizing benefits as the core goal and evaluating its moral value based on final outcomes (Huang et al., 2020); whereas deontology emphasizes human equality, believing that under no circumstances should others' interests be sacrificed to achieve certain goals (Gregor, 1998; Van Staveren, 2007), and 主张 people' s behavior should follow social moral norms rather than focusing on behavioral outcomes (Gawronski et al., 2017). People' s preference for equity in prosocial behavior when equity and efficiency conflict is considered to stem from adherence to moral norms, reflecting deontological moral principles to some extent (Wang et al., 2024).

However, this preference based on moral principles is not immutable and is regulated by situational factors. Research has found that compared to when help-seekers are in survival situations (where the type of need is survival-related, such as emergency assistance), when they are in development situations (where the type of need is development-related, such as educational support), helpers show higher preference for efficiency (Wang et al., 2024). In fact, situational factors have broad impacts on prosocial behavior (Morvinski, 2022): for example, loss-frame situations (negative descriptions, such as preventing death) can better stimulate individual donation behavior than gain-frame situations (positive descriptions, such as saving lives) (Metzger & Günther, 2019); situations providing donation feedback can significantly increase individuals' donation willingness (Merchant et al., 2010). These findings indicate that situational factors can influence individuals' prosocial decisions through various psychological mechanisms

and regulate their trade-off between equity and efficiency.

In prosocial behavior, the setting of helping efficiency can also bring about situational changes. Specifically, when helping behavior cannot completely solve any recipient's difficulties (the helping efficiency for any individual is less than 100%), it constitutes a non-completable helping situation; when helping behavior can completely solve some recipients' difficulties (the helping efficiency for some recipients reaches 100%), it constitutes a completable helping situation. Previous research has found that the completability of a target event significantly affects people' s decisions. When a target event is not completable, people easily develop negative behaviors such as procrastination (Dewitte & Schouwenburg, 2002); when a target event can be completed, people' s behavior tends to be more positive (Converse et al., 2023), and they may even abandon adherence to equity principles to complete the goal (Schweitzer et al., 2004). In prosocial behavior, due to limited resources, helpers are usually in non-completable helping situations and thus tend to prefer more equitable solutions. However, when helping resources can be concentrated on one or a few help-seekers, transforming the helping efficiency situation into a completable one, will people reduce their preference for equity to complete the helping behavior?

1.2 The Facilitating Effect of Completion Motivation on Prosocial Behavior

People often have an intrinsic desire to complete or finish something (Gu et al., 2018), known as completion motivation. Completing a task can yield material and spiritual rewards, while leaving an unsolved problem incurs psychological costs (Moskowitz, 2002). Therefore, being able to complete something or achieve a goal is a positive intrinsic incentive for individuals (Ruan et al., 2024). Based on this "approach reward and avoid punishment" intrinsic mechanism, completion motivation widely influences people' s behavior. For example, when people cannot complete a set goal due to external interference, the desire for completion can motivate them to pursue other completable goals (Kupor et al., 2014); compared to completing important but non-urgent tasks, people are more willing to first complete urgent but unimportant tasks (Zhu et al., 2018). Some research has found that people even have a sense of impatience about completing something, willing to pay extra costs and time to complete it earlier (Roberts et al., 2024).

Goal gradient theory posits that completion motivation shows an increasing trend as the distance to the goal shortens, meaning the closer to goal completion, the stronger the individual' s motivation to complete the goal (Jensen et al., 2013). Progress notification is a primary way to indicate goal distance. Research has found that progress notification can improve task completion rates by changing individuals' perceptions of task difficulty and duration (Conrad et al., 2010). For example, when needing to collect 10 stamps, customers who receive a 12-stamp coffee card (with 2 stamps pre-stamped) complete 10 purchases faster than those who receive a 10-stamp coffee card (Kivetz et al., 2006).

In prosocial behavior, progress notification has also been found to effectively promote individuals' altruistic decisions (Wang, 2024). For example, when the amount raised for a charity project approaches its fundraising goal, individuals tend to increase their donation willingness for that project (Kuppuswamy & Bayus, 2017). Additionally, the degree of completion of helping behavior affects helpers' predictions of recipients' gratitude: when only partial help is provided, helpers predict significantly lower recipient gratitude compared to when complete help is provided (Wang & Xie, 2020). This suggests that perceiving whether one' s helping behavior contributes to completely solving others' difficulties influences people' s prosocial behavior to some extent, which we suspect may be related to individuals' completion motivation.

Furthermore, completion motivation can also weaken individuals' adherence to equity to some extent (Gino & Pierce, 2009). Research has found that people may choose to cheat to complete goals (Schweitzer et al., 2004). Therefore, we further speculate that when equity and efficiency conflict—that is, when individuals need to weigh equity for the majority against efficiency for the minority—the desire to completely help a few help-seekers (completion motivation) may reduce people' s preference for equitable options and make them favor efficient options more.

In summary, we hypothesize that in prosocial situations where equity and efficiency are in conflict, when the helping efficiency for some help-seekers can reach 100%, transforming the helping situation from non-completable to completable, people may reduce their preference for equity based on completion motivation and tend to choose more efficient donation schemes. Additionally, in broader prosocial contexts that do not involve equity-efficiency trade-offs, individual completion motivation may also effectively promote donation behavior.

1.3 Alternative Explanations

In completable helping situations, individuals' preference for high-efficiency (100%) options may be driven either by completion motivation or simply by their natural preference for high-efficiency options. To clarify whether individuals' preference for efficiency-oriented options in completable helping situations is influenced by completion motivation rather than a preference for higher efficiency, in Study 2 we set up efficiency-oriented options with different efficiency levels (20% vs. 80%) in non-completable helping situations to exclude this potential confounding factor.

Additionally, when individuals completely solve help-seekers' difficulties, this helping behavior may also induce psychological ownership of the helping outcomes. Psychological ownership is considered a state where individuals feel that a target object or event belongs to them (Pierce et al., 2003). Previous research has found that psychological ownership can increase individuals' sense of influence, and increased influence perception can effectively improve people' s intention to engage in prosocial behavior (Cai et al., 2025; Edwards et al.,

2024). Therefore, in Study 5b, we simultaneously examined the effects of completion motivation and psychological ownership on individual donation behavior to exclude this potential confounding variable.

1.4 Overview of Studies

This study investigates the impact of helping situations (completable vs. non-completable) on individual prosocial behavior preferences and their underlying mechanisms through five studies (six experiments). Study 1 reveals how the completability of helping situations affects individuals' decision-making preferences between equity and efficiency by manipulating helping situations (completable vs. non-completable). Study 2 further examines the role of different levels of efficiency-oriented options in non-completable situations to help exclude confounding effects that may arise from higher-efficiency options. Based on the results of Studies 1-2, Study 3 further explores the internal mechanisms underlying changes in individual helping preferences triggered by situational completability, highlighting the mediating role of relative completion motivation. Additionally, since the appeal situations in Studies 1-3 all belong to development contexts, and research has found that helpers' preference for efficiency options decreases when help-seekers are in survival contexts compared to development contexts (Wang et al., 2024), Study 4 adopts a survival context to clarify whether there are contextual boundaries for the impact of completion motivation on individual prosocial behavior preferences. Finally, to further explore whether the promoting effect of completion motivation on donation behavior has broader applicability (general prosocial contexts not involving equity-efficiency trade-offs), Study 5 sets up progress reminders to activate individuals' completion motivation, aiming to clarify the positive impact of completion motivation on individual donation amounts (Study 5a) and exclude potential interference from psychological ownership (Study 5b).

2. Study 1: Impact of Helping Situation (Completable or Not) on Individual Helping Preferences

Study 1 aims to explore whether individuals' preferences for equity and efficiency differ between non-completable and completable helping situations by manipulating helping situations.

2.1 Participants

Using G*Power 3.1 to calculate the required sample size (w = 0.3; = 0.05), the results showed that when the statistical power of the chi-square test reached 0.8, the study required a sample size of 88. This study recruited 206 participants through an online platform (Brain Island). After removing 12 participants who failed attention check questions (example: "For this question, please select the third option" ; the same below), 194 valid responses were retained (141 females; age: M = 30.89 years, SD = 7.14).

2.2 Materials and Procedure

Study 1 used a single-factor between-subjects design (helping situation: non-completable vs. completable). Participants were randomly divided into two groups, with 107 in the non-completable helping situation group and 87 in the completable helping situation group. To improve measurement stability, two types of helping behaviors were provided under each helping situation: student study tour funding requests and elderly physiotherapy fee requests, with each type repeated three times (consistent situational information but different request amounts). Therefore, each participant had to respond to 6 helping behaviors (see Appendix), with the presentation order randomized.

Situation Setting: Based on Sharps and Schroeder (2019) and combined with real charitable donation events, Study 1' s situation settings were as follows (underlined text indicates completable situation descriptions, bracketed text indicates non-completable situation descriptions):

Situation Example 1: "Imagine that a school in a remote area plans to organize a city study tour for students to broaden their horizons. However, the activity requires students to pay their own expenses, preventing many children who want to participate from attending. This study tour lasts for 10 days [This study tour lasts for 20 days]. You now have a sum of money for donation that can cover the cost for one student for 10 days."

Situation Example 2: "Imagine that you learn a welfare home plans to provide health care for elderly people over 60 in the community to improve their physical fitness and quality of life. However, due to rising care costs, many elderly people cannot receive care. It is estimated that each elderly person needs 10 care sessions to complete physiotherapy [It is estimated that each elderly person needs 20 care sessions to complete physiotherapy]. You now have a sum of money for donation that can cover the cost of 10 care sessions."

Helping Preference Measurement: After reading the above situational information, participants needed to choose between an equity-oriented option (example: provide 1 day of study tour funding for 10 students/pay for 1 care session for 10 elderly people) and an efficiency-oriented option (example: provide 10 days of study tour funding for 1 student/pay for 10 care sessions for 1 elderly person). The presentation positions of the two options were balanced between participants.

Situation Manipulation Check: After completing their choices, participants' perception of the completability of the helping situation was measured through the following item: "In the above donation situation, a particular student' s/elderly person' s request (receiving funding to complete the study tour/physiotherapy) can be completely solved by you." Ratings used a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree).

2.3 Results

Manipulation Check Results for Situational Completability: Single-sample t-tests found that in both helping behaviors, participants in the completable group perceived the situation' s completability as significantly higher than the neutral value of 4 (student study tour funding request: M = 5.90, SD = 1.33, t(86) = 13.30, p < 0.001, Cohen' s d = 1.43, 95% CI = [1.61, 2.18]; elderly physiotherapy fee request: M = 6.15, SD = 1.08, t(86) = 18.50, p < 0.001, Cohen' s d = 1.99, 95% CI = [1.92, 2.38]), while participants in the non-completable group perceived the situation' s completability as significantly lower than the neutral value of 4 (student study tour funding request: M = 3.55, SD = 1.82, t(106) = -2.55, p = 0.012, Cohen' s d = -0.25, 95% CI = [-0.80, -0.10]; elderly physiotherapy fee request: M = 3.21, SD = 1.77, t(106) = -4.59, p < 0.001, Cohen' s d = -0.45, 95% CI = [-1.12, -0.45]).

Additionally, independent-sample t-tests found that participants in the non-completable group perceived the situation's completability as significantly lower than the completable group (student study tour funding request: t(189.88) = -10.34, p < 0.001, Cohen' s d = -1.47, 95% CI = [-2.79, -1.90]; elderly physiotherapy fee request: t(179.32) = -14.19, p < 0.001, Cohen' s d = -2.00, 95% CI = [-3.34, -2.53]).

These results indicate that participants' perception of completability in completable helping situations was significantly higher than in non-completable situations. Moreover, in completable helping situations, participants were more inclined to believe that the difficulties of a minority of help-seekers could be completely solved, while in non-completable helping situations, participants believed that no individual help-seeker' s difficulties could be completely solved, demonstrating that Study 1' s manipulation of helping situation completability was effective.

Helping Preference Results: Overall, in non-completable helping situations, individuals chose efficiency-oriented options in 19.78% of helping events and preferred equity-oriented options in 80.22% of events; in completable helping situations, individuals preferred efficiency-oriented options in 39.46% of events and chose equity-oriented options in 60.54% of events (as shown in Figure 1

A). Chi-square test results showed that helping situation (completable or not) significantly affected individuals' helping preferences, $^{2}(1) = 54.61$, $p < 0.001$, $= 0.22$. Specifically, in non-completable helping situations, people tended to choose equity-oriented options, while in completable helping situations, people' s preference for equity-oriented options decreased significantly.

To further clarify whether helping situation (completable or not) had the same effect on participants' choices in both types of helping behavior, we analyzed the data separately for the student study tour funding request situation and the elderly physiotherapy fee request situation.

In the student study tour funding request situation, in non-completable helping

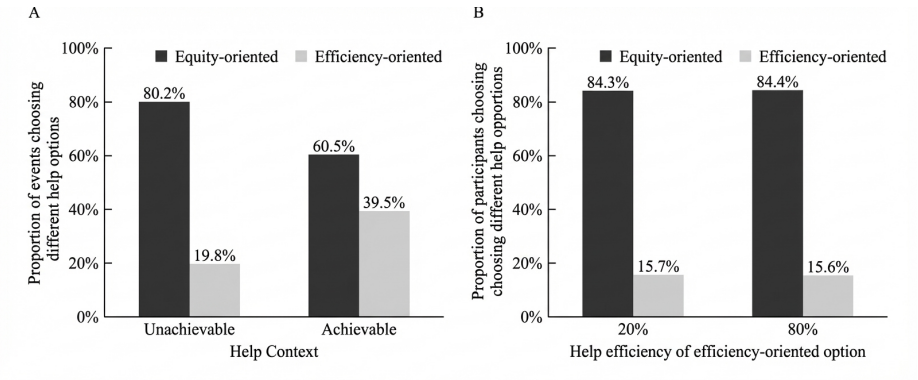

Figure 1: Figure 1

situations, individuals preferred efficiency-oriented options in 25.23% of donation events and equity-oriented options in 74.77% of events; in completable helping situations, individuals preferred efficiency-oriented options in 39.08% of donation events and equity-oriented options in 60.92% of events. Chi-square test results showed that helping situation (completable or not) significantly affected individuals' helping preferences, $^{2}(1) = 12.80$, $p < 0.001$, $= 0.15$.

In the elderly physiotherapy fee request situation, we found the same effect. Specifically, in non-completable helping situations, individuals preferred efficiency-oriented helping choices in 14.33% of donation events and equity-oriented helping choices in 85.67% of events; in completable helping situations, individuals preferred efficiency-oriented helping choices in 39.85% of donation events and equity-oriented helping choices in 60.15% of events. Chi-square test results showed that helping situation (completable or not) also significantly affected individuals' helping preferences, $^{2}(1) = 48.99$, $p < 0.001$, $= 0.29$.

2.4 Discussion

The results of Study 1 initially validated our hypothesis: when individuals cannot completely solve any help-seeker' s difficulties due to limited resources, they tend to choose to help more people, even when the helping efficiency is lower for each help-seeker; when individuals can completely solve some people' s difficulties, their preference for helping more people equitably shifts. This result was validated across different types of helping behavior situations.

However, the effect of helping situation (completable or not) on individual helping preferences could be caused either by situational changes (because the helping efficiency for some help-seekers in efficiency-oriented options reaches 100%, transforming non-completable helping situations into completable ones) or simply by individuals' natural preference for higher helping efficiency. If we set up two efficiency-oriented options with large efficiency differences in

non-completable helping situations, but both have helping efficiencies below 100% (e.g., helping efficiencies of 20% and 80% respectively), would individuals' preference for equity-oriented options still weaken when facing higher-efficiency options? To exclude this potential confounding factor, in Study 2 we set up different levels of helping efficiency for a minority in non-completable helping situations to further clarify the potential mechanisms underlying the impact of helping situation (completable or not) on individual helping preferences.

3. Study 2: Impact of Helping Efficiency on Individual Helping Preferences in Non-Completable Helping Situations

Study 2 manipulates the helping efficiency of efficiency-oriented options in non-completable helping situations, setting two levels (20% and 80%) to explore whether the level of helping efficiency in efficiency-oriented options affects individuals' helping preferences, thereby excluding potential confounding effects.

3.1 Situation Material Assessment

Study 2 adopted a new type of helping behavior (student nutritional lunch fee requests) to set up situational background information. To ensure that participants perceived the situation as a non-completable helping situation under both efficiency conditions (efficiency-oriented option at 20% or 80% level), we first recruited 111 participants through the Credamo platform (79 females; age: M = 31.86 years, SD = 9.77, with 53 in the 20% efficiency-oriented option situation and 58 in the 80% efficiency-oriented option situation) and measured their perception of the completability of the corresponding helping behavior.

Situation Setting (underlined text indicates situation description for 20% efficiency-oriented option, bracketed text indicates situation description for 80% efficiency level): "Imagine that you learn a school in a backward mountainous area is building a cafeteria. The cafeteria construction requires 20 days, and during this period, the school can only provide the simplest meals for students, leaving children' s nutrition unprotected. You now have a sum of money that can be used to provide 4 nutritious lunches [can be used to provide 16 nutritious lunches]."

Situation Manipulation Check: The following item was used to measure individuals' perception of completability: "In the above donation situation, a particular student' s request (receiving nutritious lunches throughout the cafeteria construction period) can be completely solved by you." Ratings used a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree).

Manipulation Check Results for Situational Completability: Single-sample t-test analysis found that under both efficiency levels, participants' perception of the situation' s completability was significantly lower than the neutral value of 4 (20% efficiency option: M = 3.45, SD = 1.83, t(52) = -2.18, p = 0.034,

Cohen's d = -0.30, 95% CI = [-1.05, -0.04]; 80% efficiency option: M = 3.40, SD = 1.83, t(57) = -2.52, p = 0.015, Cohen' s d = -0.33, 95% CI = [-1.08, -0.12]). Additionally, independent-sample t-test results showed no significant difference in participants' perception of helping behavior completability between the two efficiency conditions, t(109) = 0.16, p = 0.871, 95% CI = [-0.63, 0.74]. This indicates that regardless of the helping efficiency level in efficiency-oriented options, participants perceived the corresponding situation as a non-completable helping situation. Therefore, in Study 2' s formal experiment, we adopted the same situation settings as in 3.1.

3.2 Participants

The formal experiment used G*Power 3.1 to calculate the required sample size (w = 0.3; = 0.05), showing that when the statistical power of the chi-square test reached 0.8, the study required a sample size of 88. Using the same participant recruitment criteria as in 3.1, Study 2 recruited 139 participants through Wenjuanxing platform. After removing 20 participants who failed attention check questions, 3 psychology majors, and 1 participant with excessively short response time (average response time per item below 5 seconds), 115 valid responses were retained (67 females), with participants aged 18 to 30 years.

3.3 Design and Procedure

The formal experiment used a single-factor two-level between-subjects design (efficiency level in efficiency-oriented options: 20% vs. 80%), with situation settings identical to 3.1.

Helping Preference Measurement: Participants were randomly divided into two groups, with 51 in the 20% efficiency level situation and 64 in the 80% efficiency level situation. The helping efficiency of equity-oriented options in both situations was 5%.

In the 20% efficiency level situation, participants chose between "providing 1 nutritious lunch for each of 4 children" and "providing 4 nutritious lunches for 1 child" ; in the 80% efficiency level situation, they chose between "providing 1 nutritious lunch for each of 16 children" and "providing 16 nutritious lunches for 1 child." The presentation positions of the two options were balanced between participants.

3.4 Results

In the 20% efficiency level helping situation, 15.69% of individuals chose the efficiency-oriented option (providing 4 nutritious lunches for 1 child), while 84.31% chose the equity-oriented option (providing 1 nutritious lunch for each of 4 children). Similarly, in the 80% efficiency level helping situation, 15.63% of individuals chose the efficiency-oriented option (providing 16 nutritious lunches for 1 child), while 84.38% chose the equity-oriented option (providing 1 nutritious lunch for each of 16 children) (as shown in Figure 1B).

Chi-square test results showed no significant difference in the proportion of people choosing efficiency-oriented options between the 20% and 80% efficiency level helping situations, $^{2}(1) = 0.01$, $p = 0.993$. This indicates that in non-completable helping situations, the efficiency level of efficiency-oriented options does not affect individuals' helping preferences; even when facing relatively higher helping efficiency (e.g., 80%), most individuals still prefer relatively more equitable helping strategies.

3.5 Discussion

Study 2 results show that in non-completable helping situations, the level of helping efficiency in efficiency-oriented options does not affect individuals' helping preferences. Even when facing relatively higher helping efficiency (e.g., 80%), the vast majority of individuals still prefer relatively more equitable helping strategies. This means that the shift in participants' choice preferences found in Study 1 is not caused by the relatively higher helping efficiency in efficiency-oriented options but is more likely due to helping efficiency reaching 100%, which changes the situation—that is, transforming a non-completable helping situation into a completable one.

Previous research has found that completion motivation (the motivation to complete or end something) has an incentive effect on people' s behavior (Ruan et al., 2024), while equity motivation prompts individuals to prefer equitable options (Sharps & Schroeder, 2019). We suspect that compared to equity motivation, situations where helping efficiency for some help-seekers reaches 100% may evoke stronger completion motivation, thereby promoting their preference for efficiency-oriented options. To further clarify the psychological mechanisms underlying individuals' trade-off between equity and efficiency in the two situations (completable vs. non-completable), Study 3 simultaneously measured their equity motivation and completion motivation after participants completed the decision task to explore the impact of the two motivations on individual choice preferences.

4. Study 3: The Mediating Role of Completion Motivation

4.1 Participants

Using G*Power 3.1 to calculate the required sample size ($w = 0.3$; $= 0.05$), the results showed that when the statistical power of the chi-square test reached 0.8, the study required a sample size of 88. Study 3 recruited 168 participants through the Credamo platform. After removing 4 participants who failed attention checks, 164 valid responses were retained (101 females; age: $M = 31.57$ years, $SD = 9.18$).

4.2 Materials and Procedure

Study 3 used a single-factor two-level between-subjects design (helping situation: non-completable vs. completable). Participants were randomly divided into two groups, with 80 in the non-completable helping situation group and 84 in the completable helping situation group. The situation settings were identical to Situation Example 1 in Study 1 (student study tour funding request, see Section 2.2 Situation Setting). After participants completed their helping decisions, their completion motivation and equity motivation were measured through three items each. Ratings used a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree).

Completion Motivation Measurement Items: "The reason for this choice is that I believe it allows me to maximize the resolution of difficulties for a minority of help-seekers." "The reason for this choice is that I have a desire to help a minority of help-seekers completely solve their difficulties." "The reason for this choice is that I really want to completely finish helping a minority of help-seekers."

Equity Motivation Measurement Items: "The reason for this choice is that I believe this choice is more equitable." "The reason for this choice is that I believe more help-seekers should receive equal helping resources to ensure fairness." "The reason for this choice is that I believe only when more help-seekers receive equal resources is it fair."

Given the high internal consistency of the above completion motivation (= 0.87) and equity motivation (= 0.91) measurements, we used the mean of each scale' s items for subsequent analyses.

Situation Manipulation Check: After participants completed the above items, we measured their perception of the completability of helping behavior using the same items as in Study 1 (see Section 2.2 Situation Manipulation Check).

4.3 Results

Manipulation Check Results for Situational Completability: Single-sample t-test analysis found that participants' perception of helping behavior completability in completable helping situations (M = 5.83, SD = 1.26) was significantly higher than the neutral value of 4, $t(83) = 13.34$, $p < 0.001$, Cohen's d = 1.45, 95% CI = [1.56, 2.11]; while participants' perception in non-completable helping situations (M = 3.56, SD = 1.85) was significantly lower than the neutral value of 4, $t(79) = -2.12$, $p = 0.037$, Cohen' s d = -0.24, 95% CI = [-0.85, -0.03]. Additionally, independent-sample t-test analysis found that participants' perception of helping behavior completability in non-completable helping situations was significantly lower than in completable helping situations, $t(138.57) = -9.15$, $p < 0.001$, Cohen' s d = -1.41, 95% CI = [-2.76, -1.78]. This indicates that Study 3' s manipulation of situational completability was effective.

In non-completable helping situations, 17.50% of individuals chose efficiency-oriented options, while 82.50% chose equity-oriented options; in completable helping situations, 48.81% of individuals chose efficiency-oriented options, while 51.19% chose equity-oriented options (as shown in Figure 2

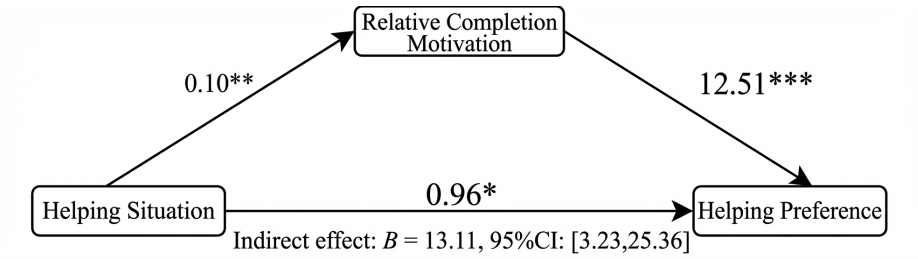

Figure 2: Figure 2

A). Chi-square test results showed that helping situation (completable or not) significantly affected individuals' helping preferences, $^{2}(1) = 18.02$, $p < 0.001$, $= 0.33$. Specifically, in non-completable helping situations, more people tended to choose equity options, while in completable helping situations, people' s preference for equity-oriented options decreased, and their preference for efficiency-oriented options increased significantly.

Mediating Role of Completion Motivation and Equity Motivation: When making decisions, individuals' choices may be simultaneously driven by completion motivation and equity motivation. Specifically, when individuals' completion motivation is relatively stronger, they may be prompted to choose to help a minority of people to a greater extent, while when equity motivation is relatively stronger, they may be prompted to help more people with lower efficiency. Therefore, after participants made their choices, we further measured their completion motivation and equity motivation to explore the impact of helping situations on the two motivations.

Repeated measures ANOVA results found a significant interaction between helping situation (completable vs. non-completable) and motivation type (completion vs. equity) on measurement scores ($F(1, 162) = 8.04$, $p = 0.005$, $^{2} = 0.05$). Specifically, in completable helping situations, there was no significant difference between individuals' completion motivation ($M = 5.14$, $SD = 1.39$) and equity motivation ($M = 5.03$, $SD = 1.54$) ($F(1, 162) = 0.22$, $p = 0.636$); while in non-completable situations, individuals' equity motivation ($M = 5.70$, $SD = 1.03$) was significantly higher than their completion motivation ($M = 4.85$, $SD = 1.33$, $F(1, 162) = 12.26$, $p = 0.001$, $^{2} = 0.07$) (as shown in Figure 2B). This suggests that differences in choice preferences between different helping situations (completable vs. non-completable) may be caused by different degrees of completion motivation and equity motivation evoked by the helping situations.

To verify this hypothesis, we first calculated participants' "relative completion

motivation" in the two helping situations, that is, (completion motivation - equity motivation) / (completion motivation + equity motivation). Independent-sample t-test results found that individuals' relative completion motivation in completable situations (M = 0.02, SD = 0.28) was significantly higher than in non-completable situations (M = -0.09, SD = 0.21), t(156.02) = -2.70, p = 0.008, Cohen' s d = -0.42, 95% CI = [-0.18, -0.03].

Further, with situation type as the independent variable (0 = non-completable, 1 = completable), relative completion motivation as the mediator, and helping preference as the dependent variable (0 = equity-oriented, 1 = efficiency-oriented), we conducted a mediation analysis using the RMediation package in RStudio. The results showed that relative completion motivation mediated the effect of helping situation (completable or not) on helping preferences (Indirect Effect = 13.11, SE = 5.66, 95% CI = [3.23, 25.36]) (as shown in Figure 3

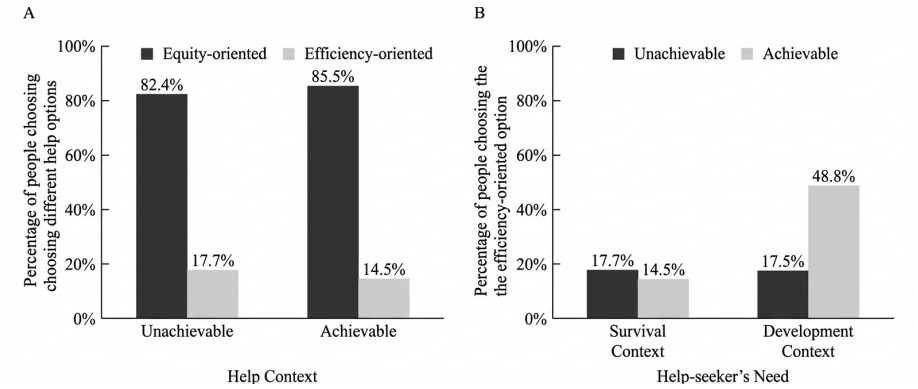

Figure 3: Figure 3

). This indicates that compared to non-completable helping situations, the increased proportion of efficiency-oriented options chosen by individuals in completable helping situations was caused by increased relative completion motivation.

To control for potential interference from situational background information (such as characteristics of help-seekers), we selected the "elderly physiotherapy fee request" situation from Study 1 (Situation Example 2, specific experimental settings see Section 2.2) to replicate and verify Study 3's findings (see Appendix). The results again supported Study 3' s discoveries, confirming the robustness of its results.

4.4 Discussion

Study 3 results further revealed the roles of completion motivation and equity motivation between helping situation (completable or not) and helping preferences. Specifically, in non-completable helping situations, higher levels of

equity motivation (compared to completion motivation) prompted individuals to choose equity-oriented options more often, while in completable helping situations, higher levels of completion motivation reduced individuals' preference for equity and motivated them to choose efficiency-oriented options more often.

However, the needs of help-seekers in Studies 1-3 were all limited to developmental needs (such as educational support, health physiotherapy, and improved nutrition) rather than survival needs (such as emergency assistance). Research has found that in prosocial behavior, the type of need significantly affects individuals' trade-off between equity and efficiency. Specifically, when helping behavior involves survival needs, helpers show higher preference for equity compared to developmental needs (Wang et al., 2024). Therefore, to further clarify whether the results from Study 3 only exist in developmental contexts (where helping behavior belongs to developmental needs), Study 4 examined the impact of helping behavior completability on individual helping preferences in survival contexts (where helping behavior belongs to survival needs).

5. Study 4: Boundary Conditions—The Impact of Helping Situation (Completable or Not) in Survival Contexts

5.1 Situation Material Assessment

To confirm that the appeal situations in Studies 1-3 were all developmental contexts, we separately measured participants' perception of the type of need in the helping behaviors involved in Studies 1-3. The measurement item was: "In the above donation situation, whether the help-seeker can receive help will directly affect their ability to survive." Ratings used a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree).

Among them, the student study tour funding request situation used in Studies 1 and 3 collected data from 358 participants (242 females; age: M = 31.20 years, SD = 8.14), the elderly physiotherapy fee request situation collected data from 340 participants (237 females; age: M = 30.61 years, SD = 7.28); the student nutritional lunch request situation used in Study 2 collected data from 111 participants (79 females; age: M = 31.86 years, SD = 9.77).

Single-sample t-test analysis showed that in all three appeal situations, participants' perception scores of the type of need were significantly lower than the neutral value of 4 (student study tour funding request situation: M = 2.90, SD = 1.71, t(357) = -12.18, $p < 0.001$, Cohen' s d = -0.64, 95% CI = [-1.28, -0.92]; elderly physiotherapy fee request situation: M = 3.67, SD = 1.72, t(339) = -3.51, p = 0.001, Cohen' s d = -0.19, 95% CI = [-0.51, -0.14]; student nutritional lunch request situation: M = 3.13, SD = 1.67, t(110) = -5.52, $p < 0.001$, Cohen' s d = -0.52, 95% CI = [-1.19, -0.56]). These results indicate that in the three types of helping behaviors involved in Studies 1-3, participants tended to believe that the help-seekers' requests did not involve survival needs.

5.2 Participants

Using G*Power 3.1 to calculate the required sample size (w = 0.3; = 0.05), the results showed that when the statistical power of the chi-square test reached 0.8, the study required a sample size of 88. Study 4 recruited 171 participants through the Credamo platform. After removing 3 participants who failed attention checks, 168 valid responses were retained (106 females; age: M = 28.16 years, SD = 7.14).

5.3 Materials and Procedure

Study 4 used a single-factor two-level between-subjects design (helping situation: non-completable vs. completable). Participants were randomly divided into two groups, with 85 in the non-completable helping situation and 83 in the completable helping situation.

Situation Setting: Participants in both groups read the following story situation (underlined text indicates completable situation description, bracketed text indicates non-completable situation description): "Imagine that you learn a severe flood disaster has suddenly occurred in a certain area. The rescue team is carrying out rescue operations, but during the rescue period, food and drinking water resources for the disaster-affected people cannot be guaranteed. It is now estimated that the rescue will take 10 days to complete [It is now estimated that the rescue will take 20 days to complete]. You now have a sum of money for donation that can provide 10 days of food and drinking water for one affected person."

Helping Preference Measurement: After reading the corresponding situational information, participants needed to choose between two donation methods (providing 10 days of food and drinking water for 1 person or providing 1 day of food and drinking water for 10 people). The presentation positions of the two options were balanced between participants.

Situation Manipulation Check: After making donation decisions, participants rated their perception of the completability of helping behavior and the type of need in the corresponding situation.

Perception of Helping Behavior Completability: "In the above donation situation, a particular disaster-affected person' s request (receiving food and drinking water throughout the entire rescue period) can be completely solved by you."

Perception of Help-Seeker' s Need Type: "In the above donation situation, whether the help-seeker can receive help will directly affect their ability to survive."

All ratings used a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree).

5.4 Results

Manipulation Check Results: Manipulation check analysis for the completability of the corresponding situation found that participants' perception of helping behavior completability in completable helping situations (M = 5.57, SD = 1.24) was significantly higher than the neutral value of 4, t(82) = 11.49, p < 0.001, Cohen' s d = 1.27, 95% CI = [1.30, 1.84]; while participants' perception in non-completable helping situations (M = 3.60, SD = 1.73) was significantly lower than the neutral value of 4, t(84) = -2.14, p = 0.036, Cohen' s d = -0.23, 95% CI = [-0.77, -0.03]. Additionally, independent-sample t-test analysis found that participants' perception of helping behavior completability in non-completable helping situations was significantly lower than in completable helping situations, t(152.66) = -8.49, p < 0.001, Cohen' s d = -1.31, 95% CI = [-2.42, -1.51]. This indicates that Study 4' s manipulation of situational completability was effective.

Manipulation check analysis for participants' perception of help-seekers' need type using single-sample t-test found that participants' perception scores of need type were significantly higher than the neutral value of 4 (M = 5.60, SD = 1.09), t(167) = 19.06, p < 0.001, Cohen' s d = 1.47, 95% CI = [1.43, 1.76]. This indicates that in Study 4' s appeal situation, participants tended to believe that the help-seekers' requests involved survival needs.

In non-completable helping situations, 17.65% of individuals chose efficiency-oriented options, while 82.35% chose equity-oriented options; in completable helping situations, 14.46% of individuals chose efficiency-oriented options, while 85.54% chose equity-oriented options (as shown in Figure 4 [FIGURE:4]A). Chi-square test results found that helping situation (completable or not) had no significant effect on individuals' helping preferences, $^{2}(1) = 0.32$, p = 0.574, indicating that when help-seekers were in survival situations, regardless of whether the helping behavior was completable, most individuals preferred more equitable helping solutions.

To further clarify whether there is an interactive effect between help-seekers' need type (survival vs. development) and helping situation (completable vs. non-completable) on individuals' choice preferences, we pooled the data from Studies 4 and 3 and conducted a chi-square analysis with the proportion of individuals choosing efficiency-oriented options as the dependent variable. The results found that the effect of helping situation (completable or not) on individual helping preferences was moderated by help-seekers' need type, $^{2}(1) = 8.08$, p = 0.004, = 0.29. Specifically, when helping behavior involved survival needs, the difference in individuals' preference for efficiency options between the two helping situations (non-completable vs. completable) was smaller, while when helping behavior involved developmental needs, individuals' preference for efficiency options in completable situations was significantly higher than in non-completable situations (as shown in Figure 4B).

5.5 Discussion

Study 4 results show that when help-seekers are in survival situations, regardless of whether the helping situation is completable, individuals prefer equity-oriented options. This result clarifies the boundary conditions for the impact of helping situation (completable or not) on individual prosocial preferences—that is, the increased preference for efficiency only exists in development-related helping contexts, not in survival-related contexts.

Although Studies 1-4 have confirmed that completion motivation significantly affects individuals' trade-off between equity and efficiency in developmental appeal situations, in daily life, due to lack of information, individuals often cannot directly compare donation effects. So, can completion motivation effectively promote individuals' donation behavior in broader, more general developmental contexts that do not involve equity-efficiency trade-offs? Previous research has found that when approaching fundraising goals, progress reminders typically increase people's donation willingness (Dai & Zhang, 2019). Therefore, we suspect that in broader developmental appeal contexts, progress reminders may evoke individuals' "completion effect" (Liang, 2021)—that is, by increasing individuals' completion motivation to promote their donation behavior. Therefore, in Study 5, we set up progress reminders in helping situations to attempt to activate individuals' completion motivation, aiming to causally clarify the promoting effect of completion motivation on individuals' general donation behavior.

6. Study 5: The Promoting Effect of Completion Motivation on General Donation Behavior

6.1 Study 5a: The Impact of Progress Reminders on Completion Motivation and Donation Amount

6.1.1 Participants Using G*Power 3.1 to calculate the required sample size (d = 0.5; = 0.05), the results showed that when the statistical power of the independent-sample t-test reached 0.8, the study required a sample size of 128. Study 5a recruited 135 participants through the Credamo platform. Two participants were excluded for failing attention checks, leaving 133 valid responses (95 females; age: M = 30.09 years, SD = 8.53).

6.1.2 Materials and Procedure Study 5a used a single-factor two-level between-subjects design (progress reminder: present vs. absent). Participants were randomly divided into two groups, with 67 in the progress reminder group and 66 in the no progress reminder group.

Situation Setting: The situation settings for Study 5a were as follows:

Progress Reminder Present: "Safe Guardian is a charity project assisted by the China Red Cross Foundation, dedicated to training children to respond to risks in various threat scenarios. The project requires funding to purchase teaching materials and other supplies. After a period of fundraising, charitable

donations for this project have reached 99% of the target plan, with only 1% left to complete the project successfully."

No Progress Reminder: "Safe Guardian is a charity project assisted by the China Red Cross Foundation, dedicated to training children to respond to risks in various threat scenarios. The project requires funding to purchase teaching materials and other supplies."

Donation Amount: After reading the corresponding situational information, participants needed to answer the following question: "If we give you 100 RMB, you can donate some or all of it to help the 'Safe Guardian' project, keeping the remainder for yourself. In this situation, how much money would you choose to donate?"

Completion Motivation and Sense of Responsibility Measurement: Since sense of responsibility may also promote prosocial behavior to some extent, this study simultaneously measured individuals' completion motivation and sense of responsibility through the following items:

Completion Motivation: "I really want to help complete the 'Safe Guardian' charity project."

Sense of Responsibility: "I feel a sense of responsibility for the 'Safe Guardian' charity project."

All ratings used a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree).

6.1.3 Results Independent-sample t-test analysis found that progress reminders significantly affected individuals' donation amounts, t(129.77) = -2.05, p = 0.042, Cohen' s d = -0.36, 95% CI = [-21.21, -0.37]. Specifically, individuals' donation amounts under progress reminders (M = 62.63, SD = 32.04) were significantly higher than without progress reminders (M = 51.83, SD = 28.62) (as shown in Figure 5 [FIGURE:5]A).

Separate independent-sample t-tests on completion motivation and sense of responsibility found that progress reminders significantly increased individuals' completion motivation (progress reminder: M = 5.34, SD = 0.71; no progress reminder: M = 4.80, SD = 0.96), t(119.27) = -3.68, p < 0.001, Cohen' s d = -0.64, 95% CI = [-0.83, -0.24], but did not affect individuals' sense of responsibility (progress reminder: M = 4.64, SD = 0.93; no progress reminder: M = 4.59, SD = 1.11), t(131) = -0.29, p = 0.775, 95% CI = [-0.42, 0.30] (as shown in Figure 5B).

With progress reminder as the independent variable (0 = no progress reminder, 1 = progress reminder), completion motivation as the mediator, and donation amount as the dependent variable, we conducted a mediation analysis using Model 4 in the PROCESS 3.5 plugin for SPSS. The results showed that completion motivation mediated the effect of progress reminders on donation amounts

(Indirect Effect = 6.87, SE = 2.40, 95% CI = [2.67, 11.98]) (as shown in Figure 6 [FIGURE:6]). This indicates that compared to helping situations without progress reminders, the increase in individuals' donation amounts in situations with progress reminders was caused by increased completion motivation.

6.1.4 Discussion

Study 5a results show that activating completion motivation can effectively promote individuals' donation amounts. This indicates that the promoting effect of completion motivation on prosocial behavior efficiency is not only reflected in the trade-off process between equity and efficiency but also exists in broader, more general donation contexts. However, some research suggests that individuals may also be affected by psychological ownership when completing a task (Edwards et al., 2024). Under progress reminder conditions, individuals' psychological ownership of helping outcomes may also increase donation amounts, thereby prompting them to completely solve help-seekers' difficulties. Therefore, Study 5b further explores the relationship between completion motivation, psychological ownership, and individual donation behavior to exclude the potential influence of psychological ownership on the results of Study 5a.

6.2 Study 5b: Excluding the Influence of Psychological Ownership

6.2.1 Participants Using the pwr package in RStudio to calculate the required sample size ($f^2 = 0.15$; $= 0.05$), the results showed that when the statistical power of linear regression analysis reached 0.8, the required sample size was 97. Study 5b recruited 125 participants through the Credamo platform. After removing 2 participants who failed attention checks, 123 valid responses were retained (92 females; age: M = 28.67 years, SD = 7.41).

6.2.2 Design and Procedure **Situation Setting**: "Ningyuan Village is a remote rural area. The village school is organizing a city study tour, but students need to pay 2000 RMB out of pocket. Student Wu Nanyi really wants to participate in this study tour but cannot afford the full cost. It is understood that after deducting some funds Wu Nanyi has saved, there is still a final shortfall of 300 RMB to pay for the study tour."

Donation Amount: After reading the situational information, participants needed to answer the following question about donation amount: "If we now provide you with 500 RMB, you can donate some or all of it to student Wu Nanyi, keeping the remainder for yourself. In this situation, how much money would you choose to donate?"

Completion Motivation and Psychological Ownership Measurement: To examine the effects of completion motivation and psychological ownership on individual donation behavior, after completing the donation behavior, participants rated completion motivation and psychological ownership through the following items:

Completion Motivation: "I have a desire to help Wu Nanyi complete the study tour fundraising as soon as possible."

Psychological Ownership: "I have a sense of ownership over the final helping outcome (Wu Nanyi getting the study tour opportunity)."

All ratings used a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree).

Social Desirability Measurement: To control for the interference of social desirability effects on experimental results, we measured participants' social desirability tendency using the Social Desirability Scale developed by Crowne and Marlowe (1960). The scale contains 33 items, such as "I sometimes find it difficult to continue my work without encouragement," and participants needed to choose between "yes" and "no." Participants received 1 point for choosing socially desirable responses, with total scores ranging from 0 to 33, where higher scores indicate stronger social desirability tendency.

6.2.3 Results With donation amount (M = 314.23, SD = 109.31, range 50-500) as the dependent variable, completion motivation (M = 5.68, SD = 1.08, range 3-7) and psychological ownership (M = 4.63, SD = 1.64, range 1-7) as predictor variables, and individuals' social desirability tendency (M = 18.94, SD = 7.16, range 2-33), gender, age, and monthly disposable income as control variables, we established a linear regression analysis model. Regression analysis results found that after controlling for irrelevant variables such as individuals' social desirability levels, completion motivation significantly positively predicted individuals' donation amounts (= 0.57, t = 6.14, $p < 0.001$, 95% CI = [39.18, 76.52]), while psychological ownership had no significant effect on individuals' donation amounts (= -0.01, t = -0.15, p = 0.884, 95% CI = [-12.21, 10.54]). This indicates that in completable helping situations, psychological ownership cannot predict individuals' donation behavior, and after controlling for the effects of psychological ownership and social desirability tendency, individuals' completion motivation can significantly positively predict their donation amounts.

6.2.4 Discussion Study 5b results show that in completable helping situations, completion motivation evoked by progress reminders significantly predicted individuals' donation amounts, while psychological ownership had no significant predictive effect on donation amounts. This result excludes the potential confounding effect of psychological ownership on the promoting effect of progress reminders on individual donation behavior, clarifying the positive impact of completion motivation on individual donation behavior under progress reminders.

7. General Discussion

In prosocial behavior, due to limited resources, people often face a trade-off between equity and efficiency: should they distribute resources equally among

more people or concentrate resources to help a minority? Influenced by concepts such as "impartiality" and "unbiasedness," people often prioritize equity over efficiency when facing this choice (Jaeger & Vugt, 2022). However, the emerging effective altruism movement advocates that helpers should pay more attention to the actual effects of prosocial behavior to promote benefits for more people and to a greater degree (MacAskill, 2015). So, how can we promote people's attention to helping efficiency?

This study systematically examined the impact of completion motivation on individual prosocial behavior preferences through six experiments. The findings show that in developmental appeal situations, completion motivation can significantly promote individuals' attention to helping efficiency. Specifically, in situations where no one's help can be completely finished (helping efficiency for any help-seeker is less than 100%), individuals are driven by equity motivation and tend to distribute limited resources equally among more recipients; in situations where a minority's difficulties can be completely resolved (helping efficiency for a minority reaches 100%), individuals' relative completion motivation increases, prompting them to reduce their preference for equity-oriented options and tend to choose more efficient help for the minority.

Notably, when helping efficiency for a minority reaches 100%, the relative increase in individuals' completion motivation is not simply driven by the improvement in helping efficiency level. When helping efficiency for a minority improves but still cannot completely solve anyone's difficulties (e.g., helping efficiency increases to 80%), individuals still adhere to equitable distribution principles. This result seems to reveal a special preference for helping efficiency reaching 100%. Interestingly, a similar "100% effect" also exists in the consumption domain (Li & Chapman, 2009; Li & Chapman, 2013; Li & Pandelaere, 2024). For example, when evaluating product value, consumers' perceived value difference between 100% pure products (e.g., 100% wool products) and non-pure products (e.g., 80% wool + 20% cotton) is significantly greater than that between two non-pure products with equivalent component differences (e.g., 80% wool + 20% cotton vs. 60% wool + 40% cotton) (Li & Pandelaere, 2024); when choosing discount schemes for coffee purchases, getting 100% discount on 10% of days in a year is far more attractive than getting 50% discount on 20% of days, even though the amount saved is the same for consumers (Li & Chapman, 2009). Some researchers believe this phenomenon may stem from a categorical cognitive mechanism, where people tend to view 100% as a significant psychological reference point (Fisher & Mormann, 2022; Li & Chapman, 2009), thus considering below 100% as low level and 100% as high level. In this paper, helping efficiency reaching the 100% level may trigger a similar categorical cognitive pattern, prompting individuals' perception of the helping situation to change qualitatively (from "non-completable" to "completable"), and this categorical perception of helping situations may be the key to triggering increased completion motivation.

Although increased relative completion motivation has been proven to promote

individuals' preference for efficiency in prosocial behavior, our research simultaneously reveals that this promoting effect is constrained by specific situational factors. The results show that when help-seekers are in developmental need situations, completion motivation can indeed effectively enhance individuals' preference for efficient solutions; however, when facing survival needs, this promoting effect significantly weakens or even disappears, and individuals still tend to choose equitable distribution solutions. We speculate this may be because survival-related appeal situations can often evoke helpers' moral perception of helping behavior (Tobler et al., 2008), making them believe they have a moral obligation to help all help-seekers (Daunizeau et al., 2016), and when unable to provide assistance, strong negative moral emotions are evoked (Kreps & Monin, 2011). Therefore, compared to developmental need appeal situations, individuals in survival need appeal situations may be more inclined to follow deontological principles (Gregor, 1998; Van Staveren, 2007), focusing on the equity of helping solutions (Wang et al., 2024). Additionally, survival appeal situations often have some time urgency, which to some extent helps evoke individuals' intuitive responses (Frey et al., 2010), and individuals' intuitive responses are usually considered deontology-based behaviors (Fahrenwaldt et al., 2025). In contrast, because social norms do not mandate that people help others achieve better development (Wang et al., 2024), developmental appeal situations allow people to think more fully about the effects of behavior, thereby promoting attention to utilitarianism-related factors such as efficiency (Ghoshal, 2005; Kouchaki et al., 2013), creating conditions for completion motivation to play a role.

Furthermore, in developmental appeal situations, the activation of completion motivation not only affects individuals' choices between equity and efficiency but also significantly increases individuals' donation amounts in situations not constrained by equity-efficiency trade-offs, revealing the universal promoting effect of completion motivation on prosocial behavior. Previous research has found that setting goal progress reminders for charity projects can effectively motivate individuals' donation behavior (Wang, 2024), with high-level progress reminders (e.g., 85%) increasing donors' donation amounts more than low-level progress reminders (e.g., 10%) (Cryder et al., 2013). Some research attributes this phenomenon to individuals' increased perception of the impact of their donation behavior (Kuppuswamy & Bayus, 2017), while others attribute it to charity projects under high-level progress reminders having stronger inherent appeal (Jhang & Lynch, 2015). Although these explanations have some validity, they fail to fully reveal the core psychological mechanisms behind this phenomenon. According to goal gradient theory (Jensen et al., 2013), this study approaches from a motivational perspective, finding that in prosocial situations not involving equity factors, setting progress reminders for donation projects can effectively activate individuals' completion motivation, thereby promoting their prosocial behavior. This finding not only verifies the applicability of the goal gradient effect in the prosocial domain but more importantly clarifies the psychological pathway through which progress reminders promote prosocial behavior by activating completion motivation, providing new theoretical foundations and

empirical evidence for deeply understanding the motivational basis of prosocial behavior.

Overall, this study not only expands our understanding of the mechanisms influencing prosocial behavior but also provides practical insights for further promoting effective altruism. In previous research, situational factors were considered to have broad impacts on individual prosocial behavior (Penner et al., 2005). For example, when helpers perceive themselves to be in emergency situations, their willingness to help others may decrease (Darley & Batson, 1973); conversely, when helpers perceive help-seekers to be in emergency situations or perceive third-party observation, their prosocial willingness significantly increases (Haley & Fessler, 2005; Shi et al., 2020). This study finds that individuals' perception of helping situation completability can promote their attention to helping efficiency by increasing completion motivation, opening a new dimension and providing new ideas for deeply revealing situational factors that influence prosocial behavior. Additionally, in previous research, completion motivation was often used to explain people' s negative behaviors (Jhang & Lynch, 2015; Roberts et al., 2024; Zhang & Feng, 2020). For example, research has found that individuals with procrastination tendencies prefer to complete more work later rather than less work earlier (Zhang & Feng, 2020); and when a work task is close to completion, people are even willing to reduce their personal work compensation to ensure they can complete the task before starting a new one (Jhang & Lynch, 2015). This study extends the psychological mechanism of completion motivation to the prosocial behavior domain, focusing on examining the impact of completion motivation on individuals' prosocial preferences when they face choices between equity and efficiency, providing potential interventions for promoting attention to prosocial behavior efficiency and helping advance the effective altruism movement (Gainsburg et al., 2023).

This study also has certain limitations. First, in Studies 1-4, we only focused on the impact of efficiency level settings on prosocial behavior preferences when equity and efficiency were in conflict, without examining helpers' pursuit of overall efficiency when the total amount of donation resources is unlimited. Future research can set up richer helping situations to further clarify and improve the mechanism through which completion motivation promotes helping efficiency. Second, the impact of helping situation (completable or not) on helping preferences may be influenced by other psychological factors (such as well-being, empathy, etc.). For example, research shows that refusing to help some help-seekers reduces helpers' well-being (Aknin et al., 2016); larger numbers of help-seekers reduce helpers' empathy (Weng et al., 2015; Markowitz et al., 2023). Therefore, future research can also explore the psychological mechanisms through which helping situation (completable or not) affects helping preferences from other perspectives. Third, this study was based on participants' hypothetical situations, and future research can further verify these conclusions in real donation situations. Finally, this study' s examination of individual donation behavior was limited to monetary donations, and future research can also explore whether similar effects exist for other resource forms (such as time resources) (Chen et

al., 2019).

8. Conclusion

This study can draw the following conclusions: First, helping situation (completable or not) significantly affects individuals' preferences regarding equity and efficiency in prosocial behavior. Specifically, in non-completable situations, individuals prefer equity-oriented options; in completable situations, individuals' preference for equity-oriented options decreases while their preference for efficiency-oriented options increases. Second, relative completion motivation plays a mediating role between helping situation and individuals'prosocial behavior preferences. Specifically, individuals'preference for equity in non-completable situations is influenced by equity motivation, while their increased preference for efficiency in completable situations is influenced by completion motivation. Third, the impact of helping situation (completable or not) on individual helping preferences has contextual boundaries—that is, the increased preference for helping efficiency only exists in developmental appeal contexts, not survival appeal contexts. Finally, when equity factors are not involved, activating completion motivation can still effectively motivate individuals' donation behavior.

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Equity or Efficiency? Impact of Completion Motivation on Prosocial Behavior Preferences

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In prosocial behavior, helpers often face a trade-off between equity and efficiency due to limited resources. Previous research has shown that individuals are prone to prioritize equitable resource distribution when faced with incompatibility between fairness and efficiency. This tendency indicates that helpers frequently overlook the efficiency of aid provided to a minority in favor of equal assistance to a large group. This study hypothesizes that when the efficiency of assisting a few individuals reaches 100%, helpers may be prompted by completion motivation, resulting in a change in their decision-making regarding equity and efficiency.

We conducted six experiments to validate our hypothesis. Experiment 1 (N = 194) examined individual prosocial decision-making preferences in situations where assistance could not be fully provided (non-completable situations; inefficient help for all) as opposed to situations where complete assistance could be provided for a few beneficiaries (completable situations; efficient help for minority). Experiment 2 (N = 115) explored how different levels of efficiency in options influence individual helping preferences in non-completable situations, thus controlling for potential confounding effects of preference for high efficiency. Based on the results of Experiments 1 and 2, Experiment 3 (N = 164) further explored the mechanisms underlying the differences in helping preferences in these scenarios, thereby highlighting the mediating role of relative completion motivation. To investigate the contextual boundaries of completion motivation in

shaping prosocial behavior preferences, Experiment 4 (N = 168) employed a refined experimental design that categorized helping contexts into survival-related and development-related situations. Building upon these findings, Experiment 5 (N = 133) examined whether completion motivation could enhance donation behaviors in broader prosocial contexts not constrained by fairness-efficiency trade-offs. Afterward, Experiment 6 (N = 123) was conducted to eliminate potential confounding effects of psychological ownership, thus strengthening the robustness of the observed relationship between completion motivation and prosocial behavior.

The six experiments revealed that when the difficulties of all of the beneficiaries could not be completely resolved, participants displayed a strong preference for fairness. Conversely, when the difficulties of a few beneficiaries could be fully addressed, they showed a decreased inclination toward fairness and an increased inclination toward efficiency (Experiment 1). This notable shift in decision-making was significantly mediated by individual completion motivation (Experiment 3), rather than by a general preference for higher-efficiency options (Experiment 2). Specifically, in non-completable situations, a high motivation for fairness drove individuals to choose fair options. Conversely, in completable situations, an increased motivation for completion prompted more individuals to prefer efficiency options. Moreover, the stimulating effect of completion motivation on the preference for efficiency was observed solely in development-related helping contexts while proving ineffective in survival-related situations (Experiment 4). In addition, individual completion motivation had a significant positive influence on donation amounts in broader contexts where fairness considerations were absent (Experiment 5), after controlling for potential confounding effects of psychological ownership (Experiment 6).

This study significantly enhances our understanding of the relationship between equity and efficiency in prosocial behavior by highlighting the critical role of completion motivation. The findings suggest that helpers are apt to prioritize fairness when no one can benefit completely; however, they shift toward efficiency when some individuals can be fully assisted. These insights have practical implications for designing interventions aimed at promoting effective altruism, underscoring the importance of helping efficiency while considering the psychological motivations that influence individuals' prosocial decisions.

Keywords: Donation behavior, Fairness, Efficiency, Completion motivation

Appendix

1. Situation Settings and Results in Study 1

All experimental situations and results in Study 1 (underlined text indicates completable situation descriptions, bracketed text indicates non-completable situation descriptions).

Situation 1-1: "Imagine that a school in a remote area plans to organize a

city study tour for students to broaden their horizons. However, the activity requires students to pay their own expenses, preventing many children who want to participate from attending. This study tour lasts for 7 days [This study tour lasts for 20 days]. You now have a sum of money for donation that can cover the cost for one student for 7 days."

Chi-square test results showed that helping situation (completable or not) significantly affected individuals' helping preferences, $^{2}(1) = 3.57$, p = 0.059, = 0.14. In non-completable helping situations, 24.30% of individuals preferred efficiency-oriented helping choices, while 75.70% preferred equity-oriented helping choices; in completable helping situations, 36.78% of individuals preferred efficiency-oriented helping choices, while 63.22% preferred equity-oriented helping choices.

Situation 1-2: "Imagine that a school in a remote area plans to organize a city study tour for students to broaden their horizons. However, the activity requires students to pay their own expenses, preventing many children who want to participate from attending. This study tour lasts for 10 days [This study tour lasts for 20 days]. You now have a sum of money for donation that can cover the cost for one student for 10 days."

Chi-square test results showed that helping situation (completable or not) significantly affected individuals' helping preferences, $^{2}(1) = 5.02$, p = 0.025, = 0.16. In non-completable helping situations, 26.17% of individuals preferred efficiency-oriented helping choices, while 73.83% preferred equity-oriented helping choices; in completable helping situations, 41.38% of individuals preferred efficiency-oriented helping choices, while 58.62% preferred equity-oriented helping choices.

Situation 1-3: "Imagine that a school in a remote area plans to organize a city study tour for students to broaden their horizons. However, the activity requires students to pay their own expenses, preventing many children who want to participate from attending. This study tour lasts for 14 days [This study tour lasts for 20 days]. You now have a sum of money for donation that can cover the cost for one student for 14 days."

Chi-square test results showed that helping situation (completable or not) significantly affected individuals' helping preferences, $^{2}(1) = 4.27$, p = 0.039, = 0.15. In non-completable helping situations, 25.23% of individuals preferred efficiency-oriented helping choices, while 74.77% preferred equity-oriented helping choices; in completable helping situations, 39.08% of individuals preferred efficiency-oriented helping choices, while 60.92% preferred equity-oriented helping choices.

Situation 2-1: "Imagine that you learn a welfare home plans to provide health care for elderly people over 60 in the community to improve their physical fitness and quality of life. However, due to rising care costs, many elderly people cannot receive care. It is estimated that each elderly person needs 6 care sessions to complete physiotherapy [It is estimated that each elderly person needs 20 care

sessions to complete physiotherapy]. You now have a sum of money for donation that can cover the cost of 10 care sessions."

Chi-square test results showed that helping situation (completable or not) significantly affected individuals' helping preferences, $^{2}(1) = 21.26$, $p < 0.001$, $= 0.33$. In non-completable helping situations, 14.02% of individuals preferred efficiency-oriented helping choices, while 85.98% preferred equity-oriented helping choices; in completable helping situations, 43.68% of individuals preferred efficiency-oriented helping choices, while 56.32% preferred equity-oriented helping choices.

Situation 2-2: "Imagine that you learn a welfare home plans to provide health care for elderly people over 60 in the community to improve their physical fitness and quality of life. However, due to rising care costs, many elderly people cannot receive care. It is estimated that each elderly person needs 10 care sessions to complete physiotherapy [It is estimated that each elderly person needs 20 care sessions to complete physiotherapy]. You now have a sum of money for donation that can cover the cost of 10 care sessions."

Chi-square test results showed that helping situation (completable or not) significantly affected individuals' helping preferences, $^{2}(1) = 13.32$, $p < 0.001$, $= 0.26$. In non-completable helping situations, 15.89% of individuals preferred efficiency-oriented helping choices, while 84.11% preferred equity-oriented helping choices; in completable helping situations, 39.08% of individuals preferred efficiency-oriented helping choices, while 60.92% preferred equity-oriented helping choices.

Situation 2-3: "Imagine that you learn a welfare home plans to provide health care for elderly people over 60 in the community to improve their physical fitness and quality of life. However, due to rising care costs, many elderly people cannot receive care. It is estimated that each elderly person needs 15 care sessions to complete physiotherapy [It is estimated that each elderly person needs 20 care sessions to complete physiotherapy]. You now have a sum of money for donation that can cover the cost of 10 care sessions."

Chi-square test results showed that helping situation (completable or not) significantly affected individuals' helping preferences, $^{2}(1) = 14.90$, $p < 0.001$, $= 0.28$. In non-completable helping situations, 13.08% of individuals preferred efficiency-oriented helping choices, while 86.92% preferred equity-oriented helping choices; in completable helping situations, 36.78% of individuals preferred efficiency-oriented helping choices, while 63.22% preferred equity-oriented helping choices.

2. Procedure and Results of Replication Experiment in Study 3

2.1 Participants Using G*Power 3.1 to calculate the required sample size ($w = 0.3$; $= 0.05$), the results showed that when the statistical power of the chi-square test reached 0.8, the study required a sample size of 88. Through the

Credamo platform, 148 participants were recruited. After removing 2 participants who failed attention checks, 146 valid responses were retained (96 females; age: M = 31.86 years, SD = 9.77).

2.2 Materials and Procedure A single-factor two-level between-subjects design was used (helping situation: non-completable vs. completable). The situation settings were identical to Situation Example 2 in Study 1 (elderly physiotherapy fee request; specific situation setting information see Section 2.2). Participants were randomly divided into two groups, with 74 in the non-completable helping situation group and 72 in the completable helping situation group.

2.3 Results Manipulation Check Results for Situational Completability: Single-sample t-test analysis found that participants' perception of helping behavior completability in completable helping situations (M = 5.25, SD = 1.60) was significantly higher than the neutral value of 4, t(71) = 6.63, p = 0.002, Cohen' s d = 0.78, 95% CI = [0.87, 1.63]; while participants' perception in non-completable helping situations (M = 3.31, SD = 1.88) was significantly lower than the neutral value of 4, t(73) = -3.16, p = 0.002, Cohen' s d = -0.45, 95% CI = [-1.12, -0.25]. Additionally, independent-sample t-test analysis found that participants' perception of helping behavior completability in non-completable helping situations was significantly lower than in completable helping situations, t(141.50) = -6.72, p < 0.001, Cohen' s d = -1.11, 95% CI = [-2.51, -1.37]. This indicates that the manipulation of situational completability was effective.

In non-completable helping situations, 14.86% of individuals chose efficiency-oriented options, while 85.14% chose equity-oriented options; in completable helping situations, 36.11% of individuals chose efficiency-oriented options, while 63.89% chose equity-oriented options. Chi-square test results showed that helping situation (completable or not) significantly affected individuals' helping preferences, $^{2}(1) = 8.71$, p = 0.003, = 0.24. This indicates that in non-completable situations, individuals prefer equity-oriented distribution solutions, while in completable situations, individuals' preference for equity-oriented options decreases and their preference for efficiency-oriented options increases.

Mediating Role of Completion Motivation and Equity Motivation: Given that the internal consistency coefficient ( ) for completion motivation measurement items was 0.83 and for equity motivation measurement items was 0.91, both were represented by item means. Repeated measures ANOVA results found a significant interaction between helping situation (completable vs. non-completable) and motivation type (completion vs. equity) on motivation scores (F(1, 144) = 8.50, p = 0.004, ^{2} = 0.06). Specifically, in completable helping situations, there was no significant difference between individuals' completion motivation (M = 5.01, SD = 1.40) and equity motivation (M = 5.04, SD = 1.65) (F(1, 144) = 0.01, p = 0.916), while in non-completable situations, individuals' equity motivation (M = 5.78, SD = 1.10) was significantly higher than their

completion motivation (M = 4.68, SD = 1.41; F(1, 144) = 18.15, p < 0.001, ^{2} = 0.11). This finding replicates Study 3' s result, suggesting that differences in choice preferences between different helping situations (completable vs. non-completable) may be caused by different degrees of completion motivation and equity motivation evoked by the helping situations.

Additionally, independent-sample t-test on individuals' relative completion motivation in the two helping situations found that relative completion motivation in completable situations (M = 0.01, SD = 0.28) was significantly higher than in non-completable situations (M = -0.11, SD = 0.24), t(144) = -2.80, p = 0.006, Cohen' s d = -0.46, 95% CI = [-0.20, -0.03].

Further, with situation type as the independent variable (0 = non-completable, 1 = completable), relative completion motivation as the mediator, and helping preference as the dependent variable (0 = equity-oriented, 1 = efficiency-oriented), we conducted a mediation analysis using the RMediation package in RStudio. The results showed that relative completion motivation mediated the effect of helping situation (completable or not) on individual helping preferences (Indirect Effect = 13.11, SE = 5.55, 95% CI = [3.51, 25.17]). This result is identical to Study 3, indicating that compared to non-completable helping situations, the increased preference for efficiency-oriented options in completable helping situations was caused by increased completion motivation perception and decreased equity motivation perception.