

The Influence of Time Perspective on Interethnic Helping Behavior*

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Abstract

Cross-ethnic intergroup helping behavior is an important social behavior that promotes intergroup integration. This study preliminarily expanded time perception orientation from the traditional three perspectives of the “small self” (self-past, self-present, and self-future) to five perspectives of the “large self” that include “self-ancestors” and “self-descendants.” Through four experiments ($N = 1159$), it examined the effects of different time perception orientations on cross-ethnic intergroup helping behavior and their mechanisms. The results showed that all five time perception orientations enhanced cross-ethnic intergroup helping behavior, with the self-ancestors orientation showing a particularly stronger facilitative effect. Past self-continuity played a mediating role, and the direction of ethnic mutual assistance played a moderating role: the mediating effect of the self-ancestors orientation on cross-ethnic intergroup helping behavior through past self-continuity was significant only in the context of Han Chinese helping ethnic minorities, but not in the context of ethnic minorities helping Han Chinese. This study provides an exploratory supplement to the theoretical perspective of time perception orientation, extends the application of continuity motivation theory to the field of cross-ethnic intergroup helping behavior, and offers important practical implications for strengthening cross-ethnic friendships and promoting interaction, exchange, and integration among ethnic groups.

Full Text

The Influence of Time Perspective on Interethnic Helping Behavior*

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Abstract Interethnic helping behavior is an important social behavior that promotes intergroup integration. This study preliminarily extends time perspective from the traditional “small self” triadic perspective (past self, present self, future self) to a “large self” five-perspective framework that includes “self’s predecessors” and “self’s descendants.” Through four experiments ($N = 1159$), it examined the influence and mechanism of different time perspectives on interethnic helping behavior. The results showed that all five time perspectives could enhance interethnic helping behavior, with the facilitating effect of the self’s predecessors perspective being especially superior. Past self-continuity played a mediating role in this process, and the direction of ethnic mutual help played a moderating role: the mediating effect of the self’s predecessors perspective on interethnic helping behavior through past self-continuity was significant only in the con-

text of Han people helping ethnic minorities, but not in the context of ethnic minorities helping Han people. This study provides an exploratory supplement to the theoretical perspectives of time perspective, while also extending the application of continuity motivation theory to the domain of interethnic helping behavior, offering important practical implications for strengthening interethnic friendship and promoting interaction, exchange, and integration among ethnic groups.

Keywords time perspective, self's predecessors, self-continuity, interethnic helping behavior, direction of ethnic mutual help

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1 Introduction

Interethnic helping behavior refers to altruistic behavior in which members of one ethnic group actively provide material or non-material assistance to members of other ethnic groups (Wright & Richard, 2009). This behavior helps enhance individuals' sense of well-being (Peak & McGarty, 2024), promotes interaction, communication, and integration among ethnic groups, and strengthens national identity and social cohesion (Rambaud et al., 2021). It is therefore an important practical pathway for forging a strong sense of community for the Chinese nation. Accordingly, how to effectively promote individuals' sustained and proactive interethnic helping behavior is a pressing real-world issue requiring attention.

Previous studies have mostly drawn on theoretical frameworks such as intergroup contact theory, social identity theory, and the empathy-altruism hypothesis, emphasizing that individuals' interethnic helping behavior can be promoted by reducing intergroup prejudice and strengthening emotional bonds (Destro et al., 2024; Rambaud et al., 2021). Less attention, however, has been paid to the psychological temporal factors behind such behavioral decisions. Psychological temporal factors—for example, time orientation—are important variables influencing human behavioral decision-making (Chen Lanshuang et al., 2025). Studies have shown that individuals' perceptions, preferences, and attitudes toward the past, present, and future systematically affect their social judgments and behavioral choices (Bi Cuihua, Qi Huaiyuan, 2022; Li Aimei et al., 2025). On this basis, it is necessary to explore the influence of time orientation on interethnic helping behavior from the perspective of psychological time. As one important representational form of psychological time, time orientation emphasizes how individuals allocate attention to, and the relative importance they attach to, each

temporal segment, reflecting preferences in individuals' thoughts and behaviors with respect to temporal orientation (Mello et al., 2013; Shipp et al., 2009). Existing studies have preliminarily shown that time orientation can affect interethnic helping behavior. For example, Guan Jian and Zhou Mengfei (2024) found that both self-past orientation and self-future orientation can promote individuals' provision of monetary and time help to members of other ethnic groups. Chen Lanshuang et al. (2025) further pointed out that time orientation may influence individuals' intergroup helping behavior through self-continuity. This indicates a close connection between time orientation and interethnic helping behavior. However, existing research still has limitations. First, direct empirical evidence on the influence of time orientation on interethnic helping behavior remains limited. Although Guan Jian and Zhou Mengfei (2024) simultaneously examined the facilitating effects of self-past and self-future orientations, they did not include self-present orientation, nor did they systematically compare multiple time orientations within the same research context. This may make it impossible to determine which time orientation has the greatest facilitating effect on interethnic helping behavior. Second, current research on intergroup helping behavior has mostly focused on intergroup identities such as different genders (Merrilees et al., 2018), regions, and countries (Borinca et al., 2020), and has paid relatively little attention to intergroup helping behavior in the specific context of different ethnic groups. This greatly limits understanding of social issues such as how to enhance interethnic friendship and promote interaction, communication, and integration among ethnic groups.

Based on this, the present study intends to examine the effects of different time orientations on individuals' interethnic helping behavior, with the aim of identifying the optimal time orientation and, on this basis, further revealing its internal mechanisms and boundary conditions. It is hoped that this will provide new theoretical perspectives and practical implications for promoting ethnic unity and forging a strong sense of community for the Chinese nation. It is worth noting that time orientation ...

...can be divided into the individual level and the collective level (Chen Lanshuang et al., 2025); at present, the relationships between these two types of levels and interethnic helping behavior have not been systematically discussed. As an initial exploration, research on temporal perspective at the individual level not only has independent practical value, but can also lay the groundwork for subsequent related research on the collective level. Therefore, the present study mainly focuses on temporal perspective at the individual level.

1.1 Temporal Perspective

Temporal perspective at the individual level can generally be divided into self-past, self-present, and self-future, which correspond respectively to individuals' preferences regarding their own past, present, and future time periods (Cottle, 1976; Graham, 1981). Self-past refers to the time in one's own past that individuals relatively value; it particularly concerns past memories and behavioral

habits, and its ideas and behavioral norms can have a major influence on individuals' present and future lives. Self-present refers to the time in one's present that individuals relatively value; it particularly concerns current life and feelings, and its values and behavioral habits can have an important influence on individuals' present and future lives. Self-future refers to the time in one's own future that individuals relatively value; it particularly concerns future life and goals, and its thinking and planning can influence individuals' current lifestyle and behavioral decisions (Hao Haiping et al., 2023; Mello et al., 2022).

Temporal perspective is inseparable from the self; in particular, temporal perspective at the individual level takes the self as the reference point for perceiving time (Chen Lanshuang et al., 2025; Hao Haiping et al., 2023). To further understand individual temporal perspective in the context of Chinese culture, it is first necessary to clarify cultural differences in self-construal. Temporal perspective from the perspective of Western culture includes only the three stages of the self's life course (self-past, self-present, and self-future), locating the self within the individual entity. This division is rooted in an individualistic view of the self and may have difficulty encompassing self-construals in non-Western cultural contexts. For example, in traditional Chinese culture, the self does not exist independently but is embedded in networks of social relationships; the presentation of the self is closely related to interpersonal relationships with the outside world (Yang Guoshu & Lu Luo, 2009; Yang Zhongfang, 2009). Self-construal theory proposes that collectivist cultures emphasize interconnections between people, value relationships with others and harmonious coexistence, and that most Chinese people tend toward an interdependent self-construal (Markus & Kitayama, 1991). In addition, studies have found that when Chinese people are presented with adjectives about the self and the mother, both can activate the medial prefrontal cortex (Zhu et al., 2007). This indicates that Chinese people's self-representations are closely related to such significant others as their parents. Based on cultural differences between China and the West in self-construal, the classification of temporal perspective should also take the Chinese cultural context into account. Tao Rui and Zheng Rui (2023) proposed that self-past, present, and future reflect only the temporal perspective at the level of the "small self," whereas temporal perspective in the Chinese cultural context should also point to the "larger self"—that is, in addition to one's own life course, it should also include others who are of important significance to the individual, especially descendants. In other words, "self-descendants" should be incorporated into the temporal perspective of the "larger self," referring to the extent to which individuals value and attend to the living conditions of their descendants. The distinction between self-descendants and self-future lies in the fact that the latter concerns the period that individuals can foresee or may experience in the future, whereas the former emphasizes a period that the individual self cannot experience or see with their own eyes, but that their descendants will experience.

Since temporal perspective can extend toward descendants, it should likewise be able to trace back toward ancestors. Tracing back toward ancestors, then,

Figure 1. Individual temporal perceptual orientation

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form a “self-ancestral” orientation, referring to an individual’s relative emphasis on and concern for the lives and experiences of ancestors. It should be noted that self-ancestry and the self-past do not overlap in time—the time point of a self-ancestral orientation lies before the individual’s birth. The temporal orientation of “tracing back to one’s ancestors” has deep practical roots in the Chinese cultural context. Chinese people’s concern with the “past” in temporal perception is hierarchical: it includes not only the closer “small-self” self-past of the individual’s own experiences, but also the more distant “large-self” self-ancestry that extends beyond the boundaries of the individual life (Ji Lijun et al., 2023). Specifically, self-past orientation is reflected in individuals’ emphasis on and reflection upon their own personal experiences, as in “I examine myself three times a day.” Chinese people likewise show profound concern for the more remote life course of their ancestors. Confucius once said, “All things are rooted in Heaven, and human beings are rooted in their ancestors”; the *Book of Rites* also states, “The gentleman returns to antiquity and retraces the beginning, not forgetting the source from which he was born.” Since ancient times, rites for offering sacrifices to ancestors and repaying one’s roots by returning to the beginning have shaped Chinese people’s temporal perceptual orientation of valuing self-ancestry. In addition, a large body of nostalgic poetry also provides evidence from the side, such as Lu You’s line, “On the day the royal army marches north and pacifies the Central Plains, do not forget to tell your old father at the family sacrifice,” which entrusts an appeal to the ancestors. These pieces of evidence together indicate that, in Chinese people’s temporal perceptual orientation, the psychological temporal connection with the past points not only to the “small-self” personal experiences of the individual (i.e., the self-past), but also includes the life course extending to the ancestral “large self” (i.e., self-ancestry). It must be emphasized that self-ancestry is a temporal perceptual orientation bounded by the time point before an individual’s birth and centered on psychological concern for ancestors’ life experiences. In addition to differing from the “self-past,” it also differs from “ancestor worship” (Li Fengyu, 2024), which takes ritual behavior as its core, and still more from “family identity” (Lin Jifu, Wu Peiqi, 2021) and the “collective self” (Ellemers, 2012), which take group membership as their core.

In summary, the present study makes a preliminary attempt to expand individuals’ temporal perceptual orientation from the three perspectives of the “small self” to the five perspectives of the “large self,” namely self-ancestry, self-past, self-present, self-future, and self-descendants, thereby presenting a more complete system of individual temporal perceptual orientation (Figure 1).

Figure 1. Individual temporal perceptual orientation

Note: $A \rightarrow B$ represents an individual's own life course, reflecting that the "small self," self-ancestry, and self-descendants are of important significance to the individual self, and together with the individual's own life course they constitute the "large self," forming a systematically complete perspective on temporal perceptual orientation.

1.2 Temporal perceptual orientation and intergroup helping behavior across ethnic groups

Temporal perceptual orientation has a positive facilitating effect on prosocial behavior or general intergroup helping behavior, especially as reflected in self-past, self-future, and self-descendant orientations. For example, in terms of self-past orientation, because empirical research directly examining the relationship between self-past orientation and prosocial behavior is relatively limited, researchers often rely on nostalgia studies to indirectly infer the past

possible effect of orientation. Nostalgia, especially personal nostalgia, refers to an individual's affective yearning for his or her own past experiences. It is rooted in specific memory content and, together with "self-past orientation," points to attention to the time period of the "self-past" (Juhl & Biskas, 2023). Researchers have activated individuals' attention to their own past experiences through tasks such as manipulating nostalgia and recalling memories; the "self-past" activated by these tasks can significantly enhance individuals' willingness to donate (Juhl & Biskas, 2023) and prosocial behavior (Fang Jiandong, Chang Baorui, 2019; Juhl et al., 2020). These findings also provide indirect but important evidential support for the role of self-past orientation in promoting interethnic helping behavior. With respect to self-future orientation, some studies have activated individuals' self-future orientation by asking them to write a letter to the future, and have found that the more salient this orientation is, the more willing individuals are to contribute to climate change and environmental-protection policies (Vlasceanu et al., 2024). Recently, Guan Jian and Zhou Mengfei (2024) simultaneously activated individuals' past orientation and future orientation in temporal awareness, and found that both could increase individuals' willingness to help other ethnic groups (including monetary help and time help). With regard to self-future-generations orientation, Li Aimei et al. (2018) found that when individuals thought about their own children, this promoted their consideration of the future lives of their children and grandchildren, thereby stimulating individuals to actively participate in pro-environmental behaviors and support pro-environmental policies. It can be seen that temporal awareness orientation can influence individuals' willingness to provide help to others or to outgroups. Since interethnic helping behavior is itself a type of intergroup helping behavior in the ethnic domain, it can be inferred that temporal awareness orientation may also have a positive effect on interethnic helping behavior. Unfortunately, however, there is currently little empirical research that directly focuses on this issue, and further investigation is urgently needed.

In addition, it should be noted that the above studies on temporal awareness

orientation and prosocial behavior or intergroup helping behavior have mostly focused on self-past, self-future, and self-future-generations orientations, and have involved relatively little discussion of the two orientations of self-ancestors and self-present. With regard to self-ancestors orientation, it may promote interethnic helping behavior through the following pathways. On the one hand, within China's ethnic pattern of "pluralistic unity," different ethnic groups often share certain historical origins or cultural ancestors (such as the "descendants of Yan and Huang"). When individuals activate a self-ancestors orientation, they not only think of their own bloodline ancestors, but may also activate psychological representations of "common ancestors," thereby incorporating members of other ethnic groups into a superordinate ingroup based on common blood ties or cultural roots (Guan Jian, 2022). The dissolution of such cognitive boundaries helps reduce intergroup prejudice and enhance individuals' sense of identification with, and willingness to help, members of other ethnic groups (Zhu Ting et al., 2024). On the other hand, parents and ancestors may, in everyday interactions, transmit values concerning ethnic community and solidarity and mutual assistance (Guan Jian, Chen Lanshuang, 2024). This enables individuals, through remembering and attending to their self-ancestors, to evoke a deep-seated sense of ethnic identification and an inclusive attitude, and then to extend this positive emotion to other ethnic groups, manifested as a greater willingness to understand, empathize with, and help members of other ethnic groups. With regard to self-present orientation, it emphasizes individuals' attention to and experience of the present moment (Hao Haiping et al., 2023). When individuals focus their attention on the present, they often introspectively observe their own cognition, emotions, and feelings; this process may promote individuals' prosocial behavior and enhance their willingness to help outgroups (Prevost et al., 2025). That is, in interethnic interactions, individuals with a strong self-present orientation may be more likely to attend to the quality of current interactions and relationship building, and to actively engage in exchanges and mutual assistance with other ethnic groups. Based on this, the present study proposes the hypothesis: 相

Compared with the control group (the group in which no temporal awareness orientation was activated), temporal awareness orientations (self-as-predecessor, self-in-the-past, self-in-the-present, self-in-the-future, and self-as-successor) are more likely to enhance individuals' interethnic helping behavior (H1).

1.3 The Mediating Role of Self-Continuity

Since temporal awareness orientation may influence interethnic helping behavior, what is its internal mechanism? According to continuous motivation theory, individuals have an intrinsic psychological need to maintain consistency and continuity of the self across temporal orientations; that is, the self pursues, cognitively and emotionally, a psychological connection from the past to the future. This internal psychological need (the need for self-continuity) is an important driving force that promotes individual identity recognition and be-

havioral decision-making (包寒吴霜 et al., 2019; Vignoles, 2011). In other words, activating different temporal awareness orientations may strengthen individuals' perceived connectedness among selves at different times, thereby forming a clearer sense of self-continuity. Specifically, because self-continuity is divided into past self-continuity (i.e., emphasizing the perceived connectedness between one's past self and present self) and future self-continuity (i.e., emphasizing the perceived connectedness between one's present self and future self) (Sedikides et al., 2023), activating a past-directed temporal awareness orientation may induce stronger past self-continuity (Sedikides & Wildschut, 2022), whereas activating a future-directed temporal awareness orientation may enhance future self-continuity (Engle-Friedman et al., 2022). As for the self-present orientation, as a connecting point between the past and the future, although it does not directly correspond to any one type of self-continuity, it can provide an appropriate anchoring basis for the formation of both past self-continuity and future self-continuity, which means that it may be correlated with both types of continuity (陈兰双 et al., 2025).

On the one hand, temporal awareness orientation affects self-continuity. For example, studies have found that activating a self-past orientation can strengthen individuals' past self-continuity (Sedikides & Wildschut, 2022); activating a self-future or self-successor orientation helps enhance future self-continuity (王琳 et al., 2020; Engle-Friedman et al., 2022). On the other hand, self-continuity also affects prosocial behavior. For example, past self-continuity can strengthen individuals' donation behavior and willingness to use environmentally friendly products (Wang et al., 2020); future self-continuity can promote individuals' adoption of more active prosocial behaviors, such as protecting the environment and making donations (刘云芝 et al., 2018). In other words, both past self-continuity and future self-continuity can, to a certain extent, promote individuals' prosocial behavior. It can thus be seen that self-continuity may play a mediating role in the relationship between temporal awareness orientation and prosocial behavior. Considering that interethnic helping behavior can also be regarded as a form of prosocial behavior, this means that self-continuity may also mediate the influence of temporal awareness orientation on interethnic helping behavior. Theoretically, Chen Lanshuang et al. (2025) explicitly pointed out that self-continuity may be a key internal mechanism through which psychological temporal awareness orientation influences intergroup helping behavior. Empirically, Guan Jian and Zhou Mengfei (2024) found that individuals with greater breadth of temporal awareness perceived higher self-continuity, which in turn generated stronger willingness for interethnic contact and greater willingness to provide monetary and time assistance to other ethnic groups. It is worth noting that although that study examined the breadth of temporal awareness (which differs conceptually from temporal awareness orientation), both belong to the research category of psychological time. This means that self-continuity may also play a mediating role in the influence of temporal awareness orientation on interethnic helping behavior. Because different temporal awareness ...

Orientation may activate different types of self-continuity. Therefore, on the basis of systematically comparing and identifying the more optimal temporal cognition orientation, this study will further focus on the self-continuity associated with that orientation and examine its mediating role in depth. Based on this, the present study proposes the hypothesis that self-continuity mediates the effect of temporal cognition orientation on interethnic helping behavior (H2).

1.4 The Moderating Role of the Direction of Interethnic Mutual Assistance

Interethnic helping behavior is, in essence, a bidirectional interaction between ethnic groups—it includes both Han people helping ethnic minorities and ethnic minorities helping Han people. However, existing research has mostly focused on the former and has paid relatively little attention to situations in which ethnic minorities serve as helpers (Mashuri et al., 2025). Intergroup contact theory suggests that equal and reciprocal mutual assistance helps establish positive intergroup relations and strengthen shared ingroup identity (Pettigrew & Tropp, 2006). Therefore, if the direction of interethnic mutual assistance is ignored (i.e., which ethnic group the target of help belongs to), it will be difficult to fully reveal the complex mechanism by which temporal cognition orientation influences interethnic helping behavior. Notably, individuals from different ethnic groups may differ in their temporal cognition orientations. For example, Narenqiqige (2022) pointed out that, compared with Han individuals, ethnic-minority individuals may place greater emphasis on the inheritance of traditional culture and therefore be better at drawing spiritual strength and cultural confidence from historical processes. This means that ethnic-minority individuals may be more inclined toward a past-oriented self. It is precisely because of such differences in temporal cognition orientation that willingness to engage in interethnic helping behavior may differ further. For instance, Guan Jian and Zhou Mengfei (2024) found that, when a past-oriented self was activated, ethnic-minority individuals showed significantly higher willingness for intergroup contact and monetary and time helping behaviors than Han individuals; especially in monetary helping, ethnic-minority individuals performed better under the past-oriented self condition than under the future-oriented self condition, whereas Han individuals performed better under the future-oriented self condition. It can thus be seen that different directions of interethnic mutual assistance may influence the relationship between temporal cognition orientation and interethnic helping behavior.

In addition, because interethnic helping behavior involves differences among ethnic groups and cultures (Zhu Xiumei et al., 2022), and such differences may in turn influence individuals' perception of self-continuity (Sedikides et al., 2023), it is necessary to consider whether the direction of interethnic mutual assistance affects the mediating role of self-continuity between temporal cognition orientation and interethnic helping behavior. Research has found that when the direction of helping differs, the temporal cognitive resources on which in-

dividuals rely may change (Guan Jian, Zhou Mengfei, 2024): in the context of “Han people helping ethnic minorities,” individuals may be more inclined to evaluate the long-term significance and social benefits of helping behavior from a future-oriented self perspective, influencing their future self-continuity and interethnic helping behavior; whereas in the context of “ethnic minorities helping Han people,” helpers may pay more attention to norms of mutual assistance and a sense of historical responsibility in ethnic traditions, in which case the past self-continuity formed by a past-oriented self may become a more important psychological motivation. This means that the direction of interethnic mutual assistance may not only moderate the direct effect of temporal cognition orientation on interethnic helping behavior, but may also moderate the mediating pathway through which temporal cognition orientation influences interethnic helping behavior via self-continuity. Based on this, the present study proposes the hypotheses that the direction of interethnic mutual assistance moderates the effect of temporal cognition orientation on interethnic helping behavior (H3a); and that the direction of interethnic mutual assistance moderates the process by which temporal cognition orientation influences interethnic helping behavior via self-continuity (H3b).

1.5 Study Overview

This study examines, through four experimental systems, the effects of different time-perception orientations on individuals’ interethnic helping behavior, explores the more optimal time-perception orientation, and reveals its underlying psychological mechanism and boundary conditions. Specifically, Experiments 1a and 1b were designed to preliminarily examine whether time perception promotes individuals’ interethnic helping behavior and which time-perception orientation has the better facilitative effect (intended to test H1); Experiment 2 was designed to further test whether self-continuity mediates the effect of the relatively more optimal time-perception orientation on interethnic helping behavior (intended to test H2); Experiment 3 was designed to explore whether the direction of ethnic mutual help moderates the effect of the relatively more optimal time-perception orientation on interethnic helping behavior (intended to test H3a and H3b).

2 Experiment 1a: The Effect of Time-Perception Orientation on Interethnic Helping Behavior: Based on a Writing Task

Experiment 1a had two main purposes: (1) to use a writing task to preliminarily explore whether time-perception orientation can promote individuals’ interethnic helping behavior. (2) To systematically compare the effects of five different time-perception orientations (self-ancestors, self-past, self-present, self-future, and self-descendants) on individuals’ interethnic helping behavior, and to clarify the

time-perception orientation with the optimal facilitative effect.

2.1 Participants

G*Power 3.1 was used to conduct an a priori analysis to calculate the sample size (Faul et al., 2011), with the effect size f set at 0.25, the significance level α at 0.05, and statistical power $1 - \beta$ at 0.95. The results showed that a one-factor, 6-level analysis of variance required at least 324 participants. Accordingly, this study recruited 358 college students to participate in the online experiment through the “Questionnaire Star” participant-recruitment platform ($n_{\text{self-ancestors group}} = 60$, $n_{\text{self-past group}} = 59$, $n_{\text{self-present group}} = 59$, $n_{\text{self-future group}} = 60$, $n_{\text{self-descendants group}} = 60$, $n_{\text{control group}} = 60$). Among them, there were 197 women and 161 men, with a mean age of 22.96 years ($SD = 1.42$ years); 234 were Han, and 124 were ethnic minorities. Before the experiment, all participants were informed of the precautions for answering the questions and signed informed consent; after the experiment, they received a certain amount of remuneration.

2.2 Experimental Design

A one-factor, 6-level between-subjects experimental design was adopted (time-perception orientation: self-ancestors, self-past, self-present, self-future, self-descendants, and control group). Among these, time-perception orientation was the independent variable, and the dependent variable was interethnic helping behavior, including willingness to engage in interethnic helping behavior, willingness to provide monetary help across ethnic groups, and willingness to provide time help across ethnic groups.

2.3 Procedure and Measures

After entering the experimental program, participants were first randomly assigned to one of six groups and were asked, according to the instructions, to complete a writing task of at least 50 words and lasting no less than 1 minute (i.e., the manipulation of time-perception orientation; Jian Guan Jian, Zhou Mengfei, 2024; Vlasceanu et al., 2024). Specifically:

Self-ancestor group: Please imagine the era in which your ancestors, before your birth, or your forebears lived, and describe your ancestors in a few sentences or write down the life scenes of your ancestors at that time.

Self-past group: Please recall yourself from many years ago, and describe your past self in a few sentences or write down scenes from your past life.

Self-present group: Please focus on your current self, and describe your present self in a few sentences or write down scenes from your current life.

Self-future group: Please imagine yourself many years from now, and describe your future self in a few sentences or write down scenes from your future life.

Self-descendant group: Please imagine the life circumstances of your descendants 100 years or even further into the future, and describe your descendants in a few sentences or write down the possible life scenes of your descendants at that time.

Control group: Please describe potatoes in a few sentences or write down several common ways of eating potatoes.

After the writing task was completed, participants completed a manipulation check for the experiment: “Please recall what you just wrote. What was the primary temporal orientation described in it?” The options included: self-ancestors, self-past, self-present, self-future, self-descendants, and unspecified time.

Next, participants were asked to complete measures of the dependent variables. Among them, interethnic helping behavior intention was measured using a single item adapted from Cuddy et al. (2007): “As a member of your own ethnic group, to what extent are you willing to help members of other ethnic groups?” An 11-point scale was used (0 = completely unwilling, 10 = very willing), with higher scores indicating stronger willingness to engage in interethnic helping behavior. Willingness to provide interethnic monetary help was measured with reference to the studies of Thomas et al. (2017) and Guan Jian and Zhou Mengfei (2024): “Suppose you receive a sum of 100 yuan in discretionary funds. How many yuan would you be willing to donate to a public-interest project supporting the educational development of members of other ethnic groups?” A 101-point scale was used (0 = 0 yuan, 100 = 100 yuan), with higher scores indicating stronger willingness to provide interethnic monetary help. Willingness to provide interethnic time help was likewise adapted from the above studies: “If there were a 7-day volunteer project for ‘ethnic cultural exchange,’ intended to promote mutual understanding and assistance among different ethnic groups, how many days would you be willing to spend participating in the project and providing volunteer service to members of other ethnic groups?” An 8-point scale was used (0 = 0 days, 7 = 7 days), with higher scores indicating stronger willingness to provide interethnic time help. Finally, participants completed measures of demographic variables.

2.4 Results

2.4.1 Manipulation Check

To test the effectiveness of the manipulation, this study conducted a χ^2 test to compare whether the actual proportion of participants in each priming group who selected the correct temporal orientation was significantly higher than the theoretical probability. The results showed (see Table 1) that the χ^2 values for all groups reached significance, and the accuracy rates all exceeded 93%, indicating that more than 93% of participants were able to accurately identify the temporal orientation that had been primed. According to previous research

The results (Wang Zhen et al., 2026) indicate that the experimental manipula-

tion for the groups was effective. Similarly, in the following three experiments, the results of the manipulation checks also showed that all experimental manipulations in this study were effective. Therefore, the manipulation-check reports will not be presented separately for the subsequent experimental results.

Table 1 Manipulation Check of the Time-Perspective Orientation Priming

	Self- ancestors	Self- past	Self- present	Self- future	Self- descendants	Unspecified time	χ^2
Experiment 1a	95.00%	94.90%	93.20%	95.00%	95.00%	98.30%	1598.13***
Experiment 1b	96.60%	96.70%	96.70%	98.30%	96.60%	95.00%	1651.71***
Experiment 2	94.90%					97.40%	77.00***
Experiment 3	98.20%					97.30%	220.33***

Note: % indicates accuracy, that is, the corresponding time-perspective orientation correctly identified by participants in the imagery or writing task.

2.4.2 Difference Analysis

One-way analyses of variance were conducted separately for the three dependent variables. The results are as follows (Table 2):

Willingness to provide interethnic behavioral help: the between-group difference was significant, $F(5, 352) = 18.22$, $p < 0.001$, $\eta_p^2 = 0.21$.

Post hoc multiple comparisons showed (based on Bonferroni correction; the same below) that the willingness to provide interethnic behavioral help in the self-ancestors group, self-past group, self-present group, self-future group, and self-descendants group was significantly higher than that in the control group. In addition, the self-ancestors group was also significantly higher than the self-future group and the self-descendants group.

Willingness to provide interethnic monetary help: the between-group difference was significant, $F(5, 352) = 9.56$, $p < 0.001$, $\eta_p^2 = 0.12$.

Post hoc multiple comparisons showed that the willingness to provide interethnic monetary help in the self-ancestors group, self-past group, self-present group, self-future group, and self-descendants group was significantly higher than that in the control group. In addition, the self-ancestors group was also significantly higher than the self-descendants group.

Willingness to provide interethnic time help: the between-group difference was significant, $F(5, 352) = 12.44$, $p < 0.001$, $\eta_p^2 = 0.15$.

Post hoc multiple comparisons showed that the willingness to provide interethnic time help in the self-ancestors group, self-past group, self-present group, self-future group, and self-descendants group was significantly higher than that in the control group. In addition, the self-ancestors group was also significantly higher than the self-future group and the self-descendants group.

Table 2 One-Way Analysis of Variance

	Self- ancestors group (<i>n</i> = 60)	Self-past group (<i>n</i> = 59)	Self- present group (<i>n</i> = 59)	Self- future group (<i>n</i> = 60)	Self- descendants group (<i>n</i> = 60)	Control group (<i>n</i> = 60)
Variable	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Willingness to pro- vide in- tereth- nic behav- ioral help	7.61 (2.19)	7.12 (2.04)	7.20 (1.67)	6.52 (2.14)	6.38 (1.73)	4.54 (2.05)

Variable	Post hoc compari- son	<i>t</i>	<i>p</i>	95% CI Lower	95% CI Upper
Willingness to provide intereth- nic behav- ioral help	Self- ancestors group > Self- future group	3.03	0.040	0.03	2.16

Intergroup compari- son	<i>t</i>	<i>p</i>	95% CI Lower	95% CI Upper
Self- ancestors group > Self- descendants group	3.41	0.011	0.17	2.30
Self- ancestors group > Control group	8.51	< 0.001	2.01	4.14
Self-past group > Control group	7.11	< 0.001	1.51	3.65
Self- present group > Control group	7.35	< 0.001	1.59	3.74
Self-future group > Control group	5.48	< 0.001	0.91	3.05
Self- descendants group > Control group	5.10	< 0.001	0.77	2.91

<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
55.30(25.66)	52.27(23.90)	50.41(22.29)	49.43(25.48)	42.82(20.95)	29.82(19.77)

Post hoc comparisons

Cross-ethnic/intergroup money-helping behavior	Intergroup comparison	<i>t</i>	<i>p</i>	95% CI Lower	95% CI Upper
Cross-ethnic/intergroup money-helping behavior	Self-group > Self-descendants group	2.96	0.049	0.01	24.96
Cross-ethnic/intergroup money-helping behavior	Self-group > Self-descendants group	6.04	< 0.001	13.01	37.96
Cross-ethnic/intergroup money-helping behavior	Self-past group > Control group	5.30	< 0.001	9.93	34.98
Cross-ethnic/intergroup money-helping behavior	Self-present group > Control group	4.86	< 0.001	8.07	33.12
Cross-ethnic/intergroup money-helping behavior	Self-group > Control group	4.65	< 0.001	7.14	32.09
Cross-ethnic/intergroup money-helping behavior	Self-descendants group > Control group	3.08	0.033	0.53	25.47
<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
4.81(1.45)	4.14(1.51)	4.22(1.52)	3.97(1.59)	3.83(1.42)	2.76(1.40)

Post hoc comparisons

Cross-ethnic/intergroup time-helping behavior	Intergroup comparison	<i>t</i>	<i>p</i>	95% CI Lower	95% CI Upper
Cross-ethnic/intergroup time-helping behavior	Self-group > Self-future group	3.08	0.034	0.03	1.63
Cross-ethnic/intergroup time-helping behavior	Self-group > Self-descendants group	3.62	0.005	0.18	1.78
Cross-ethnic/intergroup time-helping behavior	Self-group > Control group	7.57	< 0.001	1.25	2.85
Cross-ethnic/intergroup time-helping behavior	Self-past group > Control group	5.09	< 0.001	0.58	2.19
Cross-ethnic/intergroup time-helping behavior	Self-present group > Control group	5.39	< 0.001	0.66	2.27
Cross-ethnic/intergroup time-helping behavior	Self-group > Control group	4.49	< 0.001	0.42	2.02
Cross-ethnic/intergroup time-helping behavior	Self-descendants group > Control group	3.94	0.001	0.27	1.87

Note: Post hoc comparisons used Bonferroni correction; the same below.

2.5 Summary

Experiment 1a found, through a writing task, that the willingness to engage in cross-ethnic/intergroup helping behavior was significantly higher in all five temporal-knowledge-orientation groups than in the control group (H1 was supported), indicating that temporal knowledge orientation has a facilitating effect on individuals' cross-ethnic/intergroup helping behavior. In addition, the cross-ethnic/intergroup helping-behavior indicators of the self-ancestors group were higher than those of the other groups, suggesting that the self-ancestors group may represent a more optimal temporal knowledge orientation.

3 Experiment 1b: The effect of temporal knowledge orientation on cross-ethnic/intergroup helping behavior: based on an imagination task

Task

The main purpose of Experiment 1b was to adopt the time-perspective orientation induced by an imagination task, in contrast to the writing task in Experiment 1a. The writing task required participants to externalize imagined content into written words, involving secondary processing through language encoding and logical organization; whereas the imagination task only required participants to engage in mental simulation, without external output, and was closer to the natural cognitive state in which individuals come into contact with information in real life. Therefore, Experiment 1b used an imagination task to examine whether the results of Experiment 1a were replicable, and in particular to test whether the preferential promoting effect of self-ancestor orientation on interethnic helping behavior, initially observed in Experiment 1a, was robust.

3.1 Participants

G*Power 3.1 was used to conduct an a priori power analysis and calculate the sample size. With the effect size f set at 0.25, the significance level α at 0.05, and $1 - \beta$ at 0.95, a one-way analysis of variance with six levels required at least 324 participants. Accordingly, this study recruited 358 university students to participate in an online experiment through “Wenjuanxing” ($n_{\text{self-ancestor group}} = 59$, $n_{\text{self-past group}} = 60$, $n_{\text{self-present group}} = 60$, $n_{\text{self-future group}} = 60$, $n_{\text{self-descendant group}} = 59$, $n_{\text{control group}} = 60$). Among them, there were 169 females and 189 males, with a mean age of 22.12 years ($SD = 1.26$ years); 231 were Han Chinese and 127 were members of ethnic minorities. Before the experiment, participants were informed of the instructions and signed informed consent; after the experiment, they received a certain amount of compensation.

3.2 Experimental Design

Same as Experiment 1a.

3.3 Procedure and Measures

The basic experimental procedure and measures were the same as in Experiment 1a. The difference was that the manipulation method for time-perspective orientation was changed from the writing task to an imagination task (see Hara et al., 2019): participants were required to imagine for at least 30 seconds according to the instructions. Specifically:

Self-ancestor group: Please imagine the era in which your ancestors lived before you were born, imagine a day in the daily life of your ancestors, or imagine what was most important to your ancestors at that time.

Self-past group: Please recall scenes from your past life many years ago, recall a day in your past daily life, or recall what was most important to you in the past.

Self-present group: Please focus on your present life, experience a day in your daily life at this moment, or imagine what is most important to you now.

Self-future group: Please imagine scenes from your future life many years from now, envision a day in your future daily life, or imagine what will be most important to you in the future.

Self-descendant group: Please imagine scenes of your descendants' lives 100 years or even longer from now, imagine a day in the daily life of your descendants, or imagine what will be most important to your descendants at that time.

Control group: Please imagine what a potato looks like, and think about several common ways of eating potatoes.

3.4 Results

A one-way analysis of variance was conducted for the three dependent variables. The results are as follows (Table 3):

Willingness to engage in cross-ethnic intergroup helping behavior: the between-group difference was significant, $F(5, 352) = 18.71, p < 0.001, \eta_p^2 = 0.21$.

Post hoc multiple comparisons showed that the willingness to engage in cross-ethnic intergroup helping behavior in the self-ancestor group, self-past group, self-present group, self-future group, and self-descendant group was significantly higher than that in the control group. In addition, the willingness to engage in cross-ethnic intergroup helping behavior in the self-ancestor group was also significantly higher than that in the self-future group and the self-descendant group.

Willingness to provide cross-ethnic intergroup monetary help: the between-group difference was significant, $F(5, 352) = 9.70$, $p < 0.001$, $\eta_p^2 = 0.12$.

Post hoc multiple comparisons showed that the willingness to provide cross-ethnic intergroup monetary help in the self-ancestor group, self-past group, self-present group, self-future group, and self-descendant group was significantly higher than that in the control group. In addition, the willingness to provide cross-ethnic intergroup monetary help in the self-ancestor group was also significantly higher than that in the self-future group and the self-descendant group.

Willingness to provide cross-ethnic intergroup time help: the between-group difference was significant, $F(5, 352) = 10.23$, $p < 0.001$, $\eta_p^2 = 0.13$.

Post hoc multiple comparisons showed that the willingness to provide cross-ethnic intergroup time help in the self-ancestor group, self-past group, self-present group, self-future group, and self-descendant group was significantly higher than that in the control group. In addition, the willingness to provide cross-ethnic intergroup time help in the self-ancestor group was also significantly higher than that in the self-present group, self-future group, and self-descendant group.

Table 3. One-way analysis of variance

	Self- ancestor group ($n = 60$)	Self-past group ($n = 59$)	Self- present group ($n = 59$)	Self- future group ($n = 60$)	Self- descendant group ($n = 60$)	Control group ($n = 60$)
Variable	$M (SD)$	$M (SD)$	$M (SD)$	$M (SD)$	$M (SD)$	$M (SD)$
Cross- ethnic inter- group help- ing behav- ior	7.44(1.23)	6.65(2.07)	6.50(2.11)	6.15(2.23)	5.94(2.18)	4.13(1.91)

Variable	Post hoc comparison	<i>t</i>	<i>p</i>	95% CI Lower	95% CI Upper
Cross-ethnic inter-group helping behavior	Self-ancestor group > Self-future group	3.56	0.006	0.22	2.37
Cross-ethnic inter-group helping behavior	Self-ancestor group > Self-descendant group	4.11	< 0.001	0.42	2.58
Cross-ethnic inter-group helping behavior	Self-ancestor group > Control group	9.11	< 0.001	2.24	4.39
Cross-ethnic inter-group helping behavior	Self-past group > Control group	6.95	< 0.001	1.45	3.59
Cross-ethnic inter-group helping behavior	Self-present group > Control group	6.54	< 0.001	1.30	3.44
Cross-ethnic inter-group helping behavior	Self-future group > Control group	5.57	< 0.001	0.95	3.09
Cross-ethnic inter-group helping behavior	Self-descendant group > Control group	4.98	< 0.001	0.74	2.89

Variable	Self- ancestor group <i>M</i> (<i>SD</i>)	Self-past group <i>M</i> (<i>SD</i>)	Self- present group <i>M</i> (<i>SD</i>)	Self- future group <i>M</i> (<i>SD</i>)	Self- descendant group <i>M</i> (<i>SD</i>)	Control group <i>M</i> (<i>SD</i>)
Cross-ethnic inter- group mone- tary help- ing behav- ior	58.75(19.76)	50.75(23.26)	53.47(27.24)	45.50(25.49)	45.15(22.46)	31.92(17.59)

Variable	Post hoc compari- son	<i>t</i>	<i>p</i>	95% CI Lower	95% CI Upper
Cross-ethnic inter- group mone- tary helping behavior					

Group compari- son	<i>t</i>	<i>p</i>	95% CI Lower	95% CI Upper
Self- predecessor group > self-future group	3.16	0.026	0.85	25.64
Self- predecessor group > self- descendant group	3.23	0.020	1.15	26.04

Group compari- son	<i>t</i>	<i>p</i>	95% CI Lower	95% CI Upper
Self- predecessor group > control group	6.40	< 0.001	14.44	39.22
Self-past group > control group	4.51	< 0.001	6.49	31.18
Self- present group > control group	5.16	< 0.001	9.21	33.89
Self-future group > control group	3.25	0.019	1.24	25.93
Self- descendant group > control group	3.16	0.026	0.84	25.63
<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
4.69(1.30)	4.07(1.56)	3.79(1.69)	3.76(1.60)	3.66(1.52)
2.73(1.54)				

Post hoc comparisons

Variable	Group comparison	<i>t</i>	<i>p</i>	95% CI Lower	95% CI Upper
Cross-ethnic inter-group time-helping behavior	Self-predecessor group > self-present group	3.17	0.025	0.06	1.73
Cross-ethnic inter-group time-helping behavior	Self-predecessor group > self-future group	3.27	0.018	0.09	1.76
Cross-ethnic inter-group time-helping behavior	Self-predecessor group > self-descendant group	3.61	0.005	0.19	1.86
Cross-ethnic inter-group time-helping behavior	Self-predecessor group > control group	6.95	<0.001	1.13	2.79
Cross-ethnic inter-group time-helping behavior	Self-past group > control group	4.80	<0.001	0.52	2.18
Cross-ethnic inter-group time-helping behavior	Self-present group > control group	3.79	0.003	0.24	1.90

Variable	Group comparison	<i>t</i>	<i>p</i>	95% CI Lower	95% CI Upper
Cross-ethnic inter-group time-helping behavior	Self-future group > control group	3.69	0.004	0.21	1.87
Cross-ethnic inter-group time-helping behavior	Self-descendant group > control group	3.32	0.015	0.10	1.77

3.5 Summary

Experiment 1b found, through an imagination task, that the willingness to engage in cross-ethnic intergroup helping behavior was significantly higher in all five temporal-perception-orientation groups than in the control group (H1 was supported). This indicates that temporal perception orientation has a facilitating effect on individuals' cross-ethnic intergroup helping behavior. In addition, the cross-ethnic intergroup helping willingness of the self-predecessor group was significantly higher than that of the other temporal-perception-orientation groups. This means that the self-predecessor orientation group had a stronger facilitating effect on cross-ethnic intergroup helping behavior; that is, the self-predecessor group may be the more optimal temporal perception orientation.

4 Experiment 2: The Mediating Role of Self-Continuity

Experiment 2 had two main purposes: (1) The results of Experiments 1a and 1b showed that, among the five temporal perception orientations, the self-predecessor orientation had a superior facilitating effect on cross-ethnic intergroup helping behavior (including helping willingness, monetary helping, and time helping). Therefore, this experiment planned to use an imagination task to further test the stability of this effect. (2) In view of the superior performance of the self-predecessor orientation, this study focused on this orientation and further examined whether self-continuity plays a mediating role between self-predecessor orientation and cross-ethnic intergroup helping behavior. Previous research has found that activating a temporal perception orientation directed toward the past usually induces stronger past self-continuity (Sedikides & Wildschut, 2022), and past self-continuity can, to a certain extent, influence

individuals' cross-ethnic intergroup helping behavior (Liu Yunzhi et al., 2018; Wang et al., 2020). It should be noted that, because the self-predecessor

Because temporal orientation is, in essence, a time orientation directed toward the past, this study focuses on the mediating role of past self-continuity (hereafter "self-continuity").

4.1 Participants

G*Power 3.1 was used to conduct an a priori power analysis to calculate the sample size. The effect size f was set at 0.25, the significance level α at 0.05, and $1 - \beta$ at 0.95; at least 210 participants were required. Accordingly, this study recruited 223 university students through "Wenjuanxing" to participate in an online experiment ($n_{\text{self-transcendence group}} = 113$, $n_{\text{control group}} = 110$). Among them, 116 were female and 107 were male; the mean age was 20.55 years ($SD = 1.87$ years). Eighty-eight participants were Han Chinese and 135 were from ethnic minority groups. Before the experiment, participants were informed of the precautions for completing the questionnaire and signed informed consent; after the experiment, they received a certain amount of compensation.

4.2 Experimental Design

A single-factor, two-level between-subjects experimental design was adopted (group: self-transcendence group vs. control group). Group was the independent variable, and the dependent variables were the same as in Experiment 1.

4.3 Procedure and Measures

The basic experimental procedure and measures were the same as in Experiment 1b. The difference was that, in the questionnaire section, participants also continued to complete the Past Self-Continuity Questionnaire adapted by Zhang Feng et al. (2022), to measure individuals' perception of past self-continuity. The questionnaire consisted of 10 items (e.g., "To what extent are your present self and your self from ten years ago similar?"), using a 6-point scale (1 = completely not, 6 = completely). The mean score of the 10 items constituted the past self-continuity index ($\alpha = 0.90$); higher scores indicated stronger perceived past self-continuity.

4.4 Results

4.4.1 Difference Analysis

Independent-samples t -tests were conducted separately for the three dependent variables. The results showed that the self-transcendence group's willingness to engage in interethnic helping behavior ($M = 6.34$, $SD = 2.36$) was significantly higher than that of the control group ($M = 4.82$, $SD = 1.91$), $t(221) = 5.29$, $p < 0.001$, Cohen's $d = 0.71$; the self-transcendence group's willingness to

Figure 2. Results diagram of the mediating role of self-continuity

Figure 2: Figure 2. Results diagram of the mediating role of self-continuity

provide interethnic financial help ($M = 52.31$, $SD = 22.03$) was significantly higher than that of the control group ($M = 36.62$, $SD = 18.90$), $t(221) = 5.70$, $p < 0.001$, Cohen's $d = 0.76$; the self-transcendence group's willingness to provide interethnic time help ($M = 4.31$, $SD = 1.76$) was significantly higher than that of the control group ($M = 3.33$, $SD = 1.49$), $t(221) = 4.53$, $p < 0.001$, Cohen's $d = 0.60$.

4.4.2 Mediation Effect Analysis

To examine the mediating role of self-continuity between self-transcendent orientation and interethnic helping behavior, this study used group (0 = control group, 1 = self-transcendence group) as the independent variable, self-continuity as the mediator variable, and willingness to engage in interethnic helping behavior, willingness to provide financial help, and willingness to provide time help as the dependent variables. Mediation analyses were conducted using Model 4 of the PROCESS macro (5000 bootstrapping; Hayes, 2013). The results showed (see Figure 2) that, through self-continuity, group had an effect on

college students' willingness to help outgroups across ethnic boundaries ($B = 0.70$, $SE = 0.19$, 95% CI = [0.33, 1.06]), willingness to help with money ($B = 5.36$, $SE = 1.54$, 95% CI = [2.51, 8.54]), and willingness to help with time ($B = 0.46$, $SE = 0.13$, 95% CI = [0.22, 0.71]) were all significant. This indicates that self-continuity played a significant mediating role between group and these dependent variables.

Figure 2. Results diagram of the mediating role of self-continuity

Note: ** $p < 0.01$, *** $p < 0.001$; same below; path coefficients are unstandardized coefficients.

4.5 Summary Experiment 2 found, through an imagination task, that compared with the control group, activating the self-ancestor orientation significantly increased participants' willingness to help across ethnic boundaries, willingness to help with money, and willingness to help with time, further supporting the research conclusions of Experiments 1a and 1b. This study revealed the mediating role of self-continuity between the two: the self-ancestor orientation enhanced individuals' past self-continuity, thereby increasing their cross-ethnic intergroup helping behavior (H2 was verified).

5 Experiment 3: The moderating role of the direction of ethnic mutual assistance

Experiment 3 had two main purposes: (1) to use a writing task to test again whether the results of Experiment 2 were replicable, especially to examine whether the mediating role of self-continuity was stable. (2) Since different ethnic groups differ in temporal perception orientation, cross-ethnic intergroup helping behavior, and self-continuity (Guan Jian, Zhou Mengfei, 2024; Nurenzgige, 2022;

Sedikides et al., 2023), and cross-ethnic intergroup helping behavior itself is bidirectional. Therefore, the present study will further examine whether the direction of interethnic helping (Han helping ethnic minorities vs. ethnic minorities helping Han) moderates the effect of temporal self-appraisal orientation on cross-ethnic intergroup helping behavior.

5.1 Participants

An a priori power analysis was conducted using G*Power 3.1 to calculate the sample size (Faul et al., 2011), with the effect size f set to 0.25, the significance level α set to 0.05, and $1 - \beta$ set to 0.95; at least 210 participants were required. Accordingly, the present study recruited 220 university students through “Wenjuanxing” to participate in an online experiment ($n_{\text{Han self-superiority group}} = 53$, $n_{\text{ethnic-minority self-superiority group}} = 57$, $n_{\text{Han control group}} = 55$, $n_{\text{ethnic-minority control group}} = 55$). Among them, 128 were female and 92 were male; the mean age was 21.08 years ($SD = 3.00$); 108 were Han and 112 were ethnic minorities. Before the experiment, all participants were informed of the precautions and signed informed consent, and after the experiment they received a certain amount of compensation.

5.2 Experimental Design

A 2 (temporal self-appraisal orientation: self-superiority vs. control group) $\times$ 2 (ethnicity: Han vs. ethnic minority) between-subjects experimental design was adopted. Group and ethnicity were the independent variables, and the dependent variables were the same as in Experiment 1.

5.3 Procedure and Measures

The basic experimental procedure and measures were the same as in Experiment 2; that is, in addition to measuring the dependent variables, the measurement of the mediator was also included: the Past Self-Continuity Questionnaire ($\alpha = 0.86$). The difference was that the method used to activate temporal self-appraisal orientation was again changed from an imagination task to a writing task (see Experiment 1a), and participants of each ethnicity were required to write content related to their own superiority according to the instructions.

5.4 Results

5.4.1 Difference Analysis Two-way analyses of variance were conducted separately for the three dependent variables, and the results showed that:

For willingness to engage in cross-ethnic intergroup helping behavior, the main effect of group was significant, $F(1, 216) = 124.91$, $p < 0.001$, $\eta_p^2 = 0.37$. The willingness to engage in cross-ethnic intergroup helping behavior in the self-superiority group ($M = 7.89$, $SD = 1.58$) was significantly higher than that in the control group ($M = 5.34$, $SD = 1.80$). The main effect of ethnicity was not significant, $F(1, 216) = 0.92$, $p = 0.340$, $\eta_p^2 = 0.01$. The interaction between group and ethnicity was not significant, $F(1, 216) = 0.04$, $p = 0.834$, $\eta_p^2 = 0.01$.

For willingness to provide cross-ethnic intergroup monetary help, the main effect of group was significant, $F(1, 216) = 80.59$, $p < 0.001$, $\eta_p^2 = 0.27$. The willingness to provide cross-ethnic intergroup monetary help in the self-superiority group ($M = 63.69$, $SD = 22.37$) was significantly higher than that in the control group ($M = 38.01$, $SD = 19.87$). The main effect of ethnicity was not significant, $F(1, 216) = 0.01$, $p = 0.990$, $\eta_p^2 = 0.01$. The interaction between group and ethnicity was not significant, $F(1, 216) = 0.35$, $p = 0.556$, $\eta_p^2 = 0.01$.

For willingness to provide cross-ethnic intergroup time help, the main effect of group was significant, $F(1, 216) = 99.44$, $p < 0.001$, $\eta_p^2 = 0.32$. The willingness to provide cross-ethnic intergroup time help in the self-superiority group ($M = 5.02$, $SD = 1.32$) was significantly higher than that in the control group ($M = 3.24$,

$SD = 1.32$). The main effect of ethnicity was not significant, $F(1, 216) = 0.64$, $p = 0.426$, $\eta_p^2 = 0.01$. The interaction between group and ethnicity was not significant, $F(1, 216) = 0.01$, $p = 0.961$, $\eta_p^2 = 0.01$.

5.4.2 Mediation Effect Analysis

This study used the same analytic method as in Experiment 2 to test the mediation effect. The results showed that the indirect effects of group on willingness to engage in interethnic helping behavior toward college students through self-continuity ($B = 0.10$, $SE = 0.06$, 95% CI = [0.01, 0.25]), willingness to provide monetary help ($B = 1.64$, $SE = 0.96$, 95% CI = [0.19, 3.91]), and willingness to provide time help ($B = 0.09$, $SE = 0.05$, 95% CI = [0.01, 0.21]) were all significant. This indicates that self-continuity played a significant mediating role between group and these dependent variables.

5.4.3 Moderated Mediation Effect Analysis

In this study, temporal perception orientation group (self-prime vs. control group) was used as the independent variable, self-continuity as the mediator, direction of ethnic mutual assistance as the moderating variable, and willingness to engage in interethnic helping behavior, willingness to provide monetary

help, and willingness to provide time help as dependent variables, respectively. A moderated mediation analysis was conducted with Model 8 of the Process macro (5000 bootstrap samples; Hayes, 2013). The results showed that, for the first half of the mediation path, the interaction between temporal perception orientation and direction of ethnic mutual assistance had a significant effect on self-continuity ($B = -0.73$, $SE = 0.21$, 95% CI = $[-1.15, -0.31]$). Specifically, when helping members of ethnic minorities, the self-precedence temporal perception orientation activated in Han participants significantly affected their self-continuity ($B = 0.69$, $SE = 0.15$, 95% CI = $[0.39, 0.99]$); whereas when helping Han people, the self-precedence temporal perception orientation activated in ethnic-minority participants had no significant effect on their self-continuity ($B = -0.04$, $SE = 0.15$, 95% CI = $[-0.34, 0.25]$). For the direct path of the mediation effect, the interaction between temporal perception orientation and direction of ethnic mutual assistance had no significant effect on willingness to engage in interethnic helping behavior ($B = 0.14$, $SE = 0.47$, 95% CI = $[-0.78, 1.06]$), willingness to provide interethnic monetary help ($B = 0.46$, $SE = 5.79$, 95% CI = $[-10.94, 11.86]$), or willingness to provide interethnic time help ($B = 0.21$, $SE = 0.36$, 95% CI = $[-0.50, 0.92]$).

The moderated mediation analysis results indicated (see Figure 3) that, after the moderator was included, part of the mediation effect held: under the condition in which Han participants helped ethnic-minority groups, self-precedence temporal perception orientation influenced willingness to engage in interethnic helping behavior through self-continuity ($B = 0.22$, $SE = 0.12$, 95% CI = $[0.03, 0.49]$), willingness to provide monetary help ($B = 3.62$, $SE = 1.84$, 95% CI = $[0.66, 7.89]$), and willingness to provide time help ($B = 0.21$, $SE = 0.11$, 95% CI = $[0.03, 0.46]$), and the indirect effects were significant. By contrast, under the condition in which ethnic-minority participants helped Han groups, the indirect effects of self-precedence temporal perception orientation on willingness to engage in interethnic helping behavior through self-continuity ($B = -0.01$, $SE = 0.05$, 95% CI = $[-0.10, 0.10]$), willingness to provide monetary help ($B = -0.22$, $SE = 0.75$, 95% CI = $[-1.73, 1.34]$), and willingness to provide time help ($B = -0.01$, $SE = 0.05$, 95% CI = $[-0.10, 0.08]$) were not significant. In addition, for willingness to engage in interethnic helping behavior ($Index = -0.24$, $SE = 0.12$, 95% CI = $[-0.50, -0.03]$), willingness to provide monetary help ($Index = -3.84$, SE

$= 1.98$, 95% CI = $[-8.33, -0.65]$) and willingness to help with time ($Index = -0.23$, $SE = 0.12$, 95% CI = $[-0.50, -0.04]$) as dependent variables were both significant. This indicates that the moderated mediation effect model holds: the direction of ethnic mutual assistance plays a moderating role; only when the self-continuity of Han participants is activated by a temporal perception orientation can it promote their willingness to engage in cross-ethnic intergroup helping behavior.

Figure 3 Results diagram of the moderated mediation effect

Figure 3. Results diagram of the moderated mediation effect

Figure 3: Figure 3. Results diagram of the moderated mediation effect

5.5 Summary

Experiment 3 found, through a writing task, that self-prioritizing orientation promoted cross-ethnic intergroup helping behavior, and that self-continuity played a mediating role. This study also found that the direction of ethnic mutual assistance significantly moderated the mediating effect through which self-prioritizing orientation influenced cross-ethnic intergroup helping behavior via self-continuity (i.e., the moderated mediation effect was established), but the moderating effect on the direct effect between self-prioritizing orientation and cross-ethnic intergroup helping behavior was not significant (H3 was partially supported).

6 Discussion

6.1 Self-prioritizing orientation and cross-ethnic intergroup helping behavior

Experiments 1a and 1b jointly found that all five temporal perception orientations could promote cross-ethnic intergroup helping behavior, including willingness to help across ethnic groups, monetary helping, and time helping. This result supports and extends the research conclusion of Guan Jian and Zhou Mengfei (2024)—not only does it once again verify the facilitating effect of self-past and self-future orientations on cross-ethnic intergroup helping behavior,

It also provides empirical support for the positive effects of self-ancestor, self-present, and self-descendant orientations. Compared with not activating a temporal perspective, activating any orientation may prompt individuals to extend their psychological resources into a broader temporal framework. Such an expansion of the temporal frame may strengthen feelings of social connectedness, a sense of meaning in life, or concern for the well-being of others, thereby enhancing individuals' willingness to help members of other ethnic groups (Chen Lanshuang et al., 2025).

It is worth noting that the willingness to engage in interethnic helping behavior in the self-ancestor group was significantly higher than that in the other temporal-perspective groups, indicating that it is a more advantageous temporal perspective. The reasons may be as follows. First, at the cognitive level, the self-ancestor orientation may activate collective memory and promote "common ingroup identity" based on a shared historical origin. Within China's ethnic pattern of "unity in diversity," imagining ancestors is not only an individual process of nostalgia; it may also automatically evoke associations with shared historical origins and cultural roots, thereby cognitively incorporating members

of what were originally outgroups into a superordinate ingroup based on “common ancestors” (Guan Jian, 2022). According to the common ingroup identity model, this blurring of cognitive boundaries can significantly reduce intergroup bias, making individuals more willing to regard members of other ethnic groups as “one of us,” and thereby stimulating willingness to help across ethnic groups (Gaertner & Dovidio, 2000; Zhu Ting et al., 2024). Second, at the level of consciousness, the self-ancestor orientation may strengthen individuals’ identity as “inheritors” and activate moral responsibility awareness. Research on familism shows that Chinese people’s self-concept is centered on blood ties and is deeply embedded in intergenerational networks (Fan Ke, 2018; Zhou Daming, Huang Feng, 2019). Activating a self-ancestor orientation may transform the individual from a purely “present self” into an “inheritor” who connects the past and the future. In this situation, by imagining the life experiences of their ancestors, individuals may internalize traditional norms represented by ancestors, such as “watching over and helping one another,” and thus develop a sense of moral responsibility (Watkins & Goodwin, 2020). This awareness stems from identification with ancestors and commitment to intergenerational transmission, prompting individuals to extend the altruistic spirit of their ancestors to members of other ethnic groups, thereby enhancing their cross-ethnic helping behavior. Third, at the motivational level, the self-ancestor orientation may promote interethnic helping behavior by activating mechanisms of intergenerational transmission. According to the theory of intergenerational inheritance, individuals’ values, behavioral patterns, and emotional resources can be transmitted from one generation to the next through mechanisms of cultural inheritance (Cavalli-Sforza & Feldman, 1981; Schönplflug, 2009). More importantly, such transmission is not limited to vertical inheritance between parents and children, but also encompasses the broader and far-reaching influence of ancestors on descendants’ values and prosocial behavioral development (Begley, 2016; Branje et al., 2020). Studies have shown that the inclusive values and altruistic tendencies of self-ancestors can influence descendants’ prosocial behavior toward members of other ethnic groups (Liu Qingwen, Wang Zhenhong, 2025). In other words, activating a self-ancestor orientation may activate the ancestor-related prosocial norms internalized in the individual’s mind, promote the intergenerational transmission of altruistic behavior, and thereby enhance interethnic helping behavior.

6.2 The Mediating Role of Past Self-Continuity

Experiments 2-3 found that the self-ancestor orientation enhances individuals’ interethnic helping behavior by promoting their past self-continuity. This finding verifies the cross-cultural applicability of continuity motivation theory in the Chinese cultural context, and provides empirical support for the theoretical prediction by Chen Lanshuang et al. (2025) that self-continuity plays a mediating role between temporal-perspective orientation and intergroup helping behavior. Continuity motivation theory holds that individuals have an intrinsic psychological need to maintain consistency and continuity of the self across temporal

orientations.

needs (Bao Saishuang et al., 2019; Vignoles, 2011). Activating different temporal identity orientations may strengthen individuals' perceived connectedness among different temporal selves, thereby forming a clearer sense of self-continuity and ultimately influencing their prosocial behavior. The ancestral self-orientation is a temporal identity orientation directed toward the past. Individuals often psychologically trace back to the era in which their ancestors lived, linking ancestral experiences with the self-concept. This linkage is not a simple recollection; rather, it regards ancestors as part of the "great self" (Yang Guoshu & Lu Luo, 2009). When individuals perceive a continuous bloodline and cultural bond between their own past (through ancestors) and the present, past self-continuity is enhanced. In turn, the improvement of past self-continuity promotes individuals' willingness to engage in cross-ethnic intergroup helping behavior (Chen Lanshuang et al., 2025; Guan Jian & Zhou Mengfei, 2024). Therefore, past self-continuity becomes a key internal mechanism connecting ancestral self-orientation and cross-ethnic intergroup helping behavior.

6.3 The Moderating Role of Ethnic Mutual-Help Orientation

Experiment 3 found that ethnic mutual-help orientation did not significantly moderate the direct effect of ancestral self-orientation on cross-ethnic intergroup helping behavior (i.e., regardless of the level of ethnic mutual-help orientation, activating the ancestral self promoted cross-ethnic intergroup helping behavior), but it significantly moderated the mediating pathway—the mediating effect of past self-continuity held only in the context of Han participants helping ethnic minorities, and did not hold in the context of ethnic minorities helping Han people. This indicates that the internal psychological mechanisms through which ancestral self-orientation influences cross-ethnic intergroup helping behavior may differ across ethnic groups: for Han individuals, ancestral self-orientation operates by enhancing self-continuity; for ethnic minority individuals, the role of ancestral self-orientation is reflected more in a direct effect, and its internal mechanism may involve other psychological pathways (such as gratitude). Studies have found that asking individuals to recall the lives and contributions of previous generations can promote their levels of gratitude and sense of intergenerational responsibility (Watkins & Goodwin, 2020), and gratitude, as a positive emotion, can enhance individuals' willingness to help outgroup members (Oguni & Ishii, 2024; Rambaud et al., 2021). In the historical process of interaction, exchange, and integration among ethnic groups in China, ethnic minority groups have long benefited from the state's counterpart support and the selfless assistance of Han compatriots (such as the Aid-Xinjiang and Aid-Tibet projects). This memory of "receiving help-gratitude" may already be deeply embedded in the collective consciousness of ethnic minorities. When ethnic minority individuals imagine the lives of their ancestors, this may not only awaken family memories but also more readily activate their ancestors' experiences of receiving help, thereby eliciting strong feelings of gratitude. According to the gratitude

moral-affect theory (McCullough et al., 2001), gratitude can activate individuals' prosocial motivation and prompt them to engage in helping behavior, including cross-ethnic intergroup helping behavior. Accordingly, when ethnic minority individuals activate the ancestral self-orientation, they may be more likely to awaken feelings of gratitude, rather than past self-continuity, and thereby influence their cross-ethnic intergroup helping behavior. Considering that gratitude is a theoretically plausible explanation, future research should examine the mediating role of gratitude or other possible variables between temporal identity orientation and cross-ethnic intergroup helping behavior among ethnic minority individuals.

6.4 Theoretical Contributions

First, this study extends the concept of temporal identity orientation from the traditional three perspectives of the “small self” to the five perspectives of the “great self,” thereby enriching the research perspective of psychological time. Previous research has mostly focused on the three temporal perspectives of the past self, present self, and future self; however, this division is rooted in an individualistic view of the self and emphasizes the independent extension of the self across temporal perspectives (Cottle,

1976; Graham, 1981), making it difficult to depict Chinese people's self-construal of “relational primacy.” In Chinese culture, the self is not an isolated individual, but is embedded in a network of interpersonal relationships (Yang Guoshu & Lu Luo, 2009; Yang Zhongfang, 2009). Chinese people's temporal cognition involves others who are of important significance to the self, such as ancestors and descendants (Tao Rui & Zheng Rui, 2023).

Therefore, in the Chinese cultural context, the present study extends temporal-cognition orientation from tracing forward within the individual's own life to “self-ancestors,” and backward to “self-descendants,” thereby initially forming a five-perspective temporal-cognition orientation. This expansion not only responds to the cultural view of the self as the “larger self,” but also provides a more localized research perspective for subsequent studies of temporal-cognition orientation. Second, by placing the five temporal-cognition orientations simultaneously within the same research context, this study systematically revealed the “more optimal temporal-cognition orientation” for promoting interethnic helping behavior. Although all five temporal-cognition orientations can significantly enhance individuals' interethnic helping behavior, the self-ancestors orientation showed stronger facilitating effects on all three indicators—willingness to provide interethnic help, monetary help, and time help. This finding offers a new perspective on the application of psychological time factors in the field of intergroup relations, and also directly responds to the core question of “which temporal-cognition orientation is more facilitative.” Finally, based on continuity-motive theory, this study revealed the mediating mechanism of self-continuity in the influence of temporal-cognition orientation on interethnic helping behavior, and further clarified the moderating boundary of the direction of interethnic helping.

Specifically, the self-ancestors orientation promotes interethnic helping behavior by enhancing past self-continuity, and this mediating effect holds only in the context of Han people helping ethnic minorities. This finding not only deepens the understanding of the internal mechanism by which temporal-cognition orientation affects interethnic helping behavior, but also provides a new theoretical perspective for understanding the interaction between temporal-cognition orientation and group identity.

6.5 Practical Contributions

This study not only enriches the relevant findings on temporal-cognition orientation and interethnic helping behavior, but also provides certain practical implications for strengthening the sense of community for the Chinese nation and promoting interaction, exchange, and integration among all ethnic groups. First, this study found that the “self-ancestors orientation” is a more optimal temporal perspective for promoting interethnic helping behavior. This suggests that, in practical work, it is possible to activate people’s memories of “common ancestors” and “shared culture” by recounting true stories of how the ancestors of different ethnic groups jointly resisted foreign aggression and watched over and helped one another throughout history. Narratives based on this sense of historical depth are more likely to stimulate individuals’ moral responsibility as “inheritors,” thereby reducing intergroup prejudice and promoting interethnic helping behavior (Guan Jian, 2022). Second, the self-ancestors orientation enhances interethnic helping behavior by strengthening individuals’ past self-continuity. This means that, in practical interventions, it is necessary not only to activate memories of self-ancestors, but also to strengthen individuals’ sense of connection with the past. Experiential activities such as “intergenerational dialogue” and “family genealogy mapping” can be used to help individuals enhance their experience of self-continuity and promote their interethnic helping behavior (Liu Yunzhi et al., 2018; Engle-Friedman et al., 2022). Third, the direct effect of the self-ancestors orientation on interethnic helping behavior is robust across ethnic groups and contexts, but its mediating effect through past self-continuity holds only in the context of Han people helping ethnic minorities. This suggests that intervention practices should “tailor measures to groups.” Especially for Han groups, strengthening past self-continuity can increase their willingness to help ethnic minorities.

6.6 Research Limitations and Future Directions

Although this study has important theoretical and practical significance, it also has certain limitations that await further exploration in future research. First, the sample sources were relatively homogeneous. Future research could broaden the sample scope by including participants from different age groups, different occupational backgrounds, and different minority-ethnic groups, in order to test the generalizability of the conclusions of this study. Second, in the context of minority ethnic groups helping the Han, the internal mechanism by which

self-continuity orientation influences cross-ethnic helping behavior still requires further investigation. As noted above, gratitude is one possible explanatory pathway (Oguni & Ishii, 2024; Watkins & Goodwin, 2020), but this conjecture needs to be further tested in future research, and the existence of other mediating variables cannot be ruled out. Third, the measurement methods for the independent and dependent variables need further improvement. In measuring the independent variable “self-continuity,” this study adopted a relatively broad operational definition of “self-continuity.” Although this helps improve the ecological validity of the experiment and enables participants to activate the ancestor representation with the greatest psychological significance for them, it may also lead to blurred conceptual boundaries—different participants’ psychological representations of “ancestors” may point to objects from different generations (such as parents, grandparents, and great-grandparents), which to some extent increases the heterogeneity of construct measurement. Future research could further distinguish ancestors of different generations and examine whether ancestors from different generations have differential effects on cross-ethnic intergroup helping behavior. In terms of manipulation of the independent variable, this study used a writing task and an imagined-task initiation of temporal-perception orientation. Although both methods are common paradigms in this field, their formats remain relatively limited. Future research could explore more diverse initiation methods (such as picture initiation and video initiation) to further enhance ecological validity. In addition, the manipulation check for the independent variable in this study used a single-item measure, mainly evaluating participants’ cognitive identification with the content of the temporal-perception orientation corresponding to the task; however, it may still be insufficient in reflecting the depth of psychological association. Future research could further use multi-item manipulation checks or introduce process indicators (such as emotional involvement, writing-content analysis, and self-ratings of imagery vividness) to more comprehensively evaluate the effectiveness of the manipulation. In measuring the dependent variable, future research could introduce more objective behavioral indicators (such as actual donation amounts, records of volunteer-service duration, and behavioral observations), or use multi-source data (such as peer evaluations and behavioral logs), to strengthen the ecological validity and reliability of the research findings. Finally, this study mainly focused on temporal-perception orientation at the individual level. Considering that collective and individual temporal-perception orientations differ in cognitive processing, and that their mechanisms of influence on intergroup behavior may differ, future research could further extend to the collective level and examine the influence of collective temporal-perception orientation on cross-ethnic intergroup helping behavior, thereby more comprehensively revealing the relationship between temporal-perception orientation and cross-ethnic intergroup helping behavior.

7 Conclusion

Temporal-perception orientation can promote cross-ethnic intergroup helping behavior. Specifically, all five temporal-perception orientations can significantly enhance individuals' cross-ethnic intergroup helping behavior, and the promotional effect of self-continuity orientation is especially pronounced. Past self-continuity plays a mediating role in the influence of self-continuity on cross-ethnic intergroup helping behavior, and ethnic mutual-help orientation plays a moderating role therein: the mediating effect of self-continuity orientation on cross-ethnic intergroup helping behavior through past self-continuity exists only when Han participants help minority ethnic groups.

holds in the context of the Han helping ethnic minorities, but does not hold in the context of ethnic minorities helping the Han.

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The effects of time orientation on interethnic helping behavior

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Abstract

Interethnic helping behavior plays a critical role in promoting interethnic interactions, exchanges, and integration, as well as in fostering a stronger sense of community for the Chinese nation. However, despite the fundamental role of time in shaping social cognition and decision making, little is known about how individuals' time orientation affects interethnic helping. Time orientation refers to individuals' relative attention to and preference for the past, present, and future. Previous research has largely focused on a "small-self" three-perspective model, conceptualizing time orientation in terms of the past-self, present-self, and future-self. Extending this perspective, the present research advances a "large-self" five-perspective model that incorporates two additional temporal perspectives: the ancestral-self and descendant-self. Across four experiments ($N = 1,159$), we investigated how different time orientations influence interethnic helping behavior, identified the time orientation most conducive to such helping, and further examined the underlying mechanisms and boundary conditions of this effect.

In Studies 1a and 1b, we used a writing task and an imagination task, respectively, to examine whether time orientation promotes interethnic helping behavior. By systematically comparing the effects of five time orientations—ancestral-

self, past-self, present-self, future-self, and descendant-self—on interethnic helping behavior, we identified the orientation with the strongest promotive effect. Study 2 investigated whether self-continuity mediates the relationship between ancestral-self orientation and interethnic helping behavior. Finally, Study 3 examined whether the direction of interethnic helping (i.e., Han individuals helping ethnic minority members vs. ethnic minority members helping Han individuals) moderates the effect of ancestral-self orientation on interethnic helping behavior.

The results showed that participants in all five time-orientation groups (ancestral-self, past-self, present-self, future-self, descendant-self) reported significantly greater intentions to engage in interethnic helping, monetary helping, and time-based helping than those in the control group. Among the five orientations, ancestral-self orientation exerted the strongest promotive effects across all three dependent outcomes. Furthermore, ancestral-self orientation promoted

interethnic helping behavior by enhancing individuals' sense of past self-continuity. The direction of interethnic helping significantly moderated this mediation process. Specifically, the mediating effect of past self-continuity emerged when Han individuals helped ethnic minority individuals, but not when ethnic minority individuals helped Han individuals. In contrast, the direction of interethnic helping did not significantly moderate the direct effect of ancestral-self orientation on interethnic helping behavior.

This research has the following contributions. First, by extending the conceptualization of time orientation from the traditional “small-self” three-perspective model to a “large-self” five-perspective model, we provide a more culturally adaptive framework for understanding the multidimensional structure of time orientation. Second, by systematically comparing the effects of five time orientations, we demonstrate the unique advantage of ancestral-self orientation in promoting interethnic helping behavior. Third, drawing on continuity motivation theory, we reveal past self-continuity as a mediator of the relationship between ancestral-self orientation and interethnic helping behavior, thereby advancing our understanding of how time orientation influences interethnic helping behavior. Fourth, we identify the direction of interethnic helping as an important boundary condition: the mediating effect of past self-continuity emerges when Han individuals help ethnic minority individuals but not when ethnic minority individuals help Han individuals. In summary, these findings extend the psychological study of time orientation and offer theoretical and practical insights into promoting ethnic unity and strengthening a sense of community for the Chinese nation.

Keywords time orientation, ancestral-self, self-continuity, inter-ethnic helping behavior, direction of interethnic helping

Appendix

Writing-task prompts:

Ancestral-self group: Please imagine the era in which your ancestors lived before you were born, describe your ancestors in a few sentences, or write down the life scenes of your ancestors at that time.

Past-self group: Please recall yourself from many years ago, describe your past self in a few sentences, or write down scenes from your past life.

Present-self group: Please focus on your present self, describe your current self in a few sentences, or write down scenes from your current life.

Future-self group: Please imagine yourself many years from now, describe your future self in a few sentences, or write down scenes from your future life.

Descendant-self group: Please imagine the living circumstances of your descendants 100 years or even further into the future, describe your descendants in a few sentences, or write down possible life scenes from when your descendants are alive.

Control group: Please describe potatoes in a few sentences or write down several common ways of eating potatoes.

Manipulation check:

Please recall what you just wrote. The temporal orientation of its main description was:

Ancestral self, past self, present self, future self, descendant self, unspecified time.

Imagery-task prompts:

Ancestral-self group: Please imagine the era in which your ancestors lived before you were born; imagine a day in the everyday life of your ancestors, or imagine what was most important to your ancestors at that time.

Past-self group: Please recall life scenes from many years ago, in the past; recall a day in your everyday life in the past, or recall what was most important to you in the past.

Present-self group: Please focus on your current life; experience your everyday life at this very moment, or think about what is most important to you now.

Future-self group: Please imagine life scenes many years from now, in the future; envision a day in your everyday life in the future, or imagine what will be most important to you in the future.

Descendant-self group: Please imagine the living circumstances of your descendants 100 years or even further into the future; imagine a day in the everyday

life of your descendants, or imagine what will be most important to your descendants at that time.

Control group: Please imagine what potatoes look like, and think about several common ways of eating potatoes.

Manipulation check:

Please recall the content you just imagined. The temporal orientation of what you mainly imagined was:

self-predecessor, self-past, self-present, self-future, self-descendant, unspecified time.

Measurement of Interethnic Helping Behavior:

As a member of your ethnic group, to what extent are you willing to help members from other ethnic groups? (0 = completely unwilling,

10 = very willing)

Suppose you have received a freely disposable sum of 100 RMB. How many yuan of it would you be willing to donate to

a public-interest project supporting the educational development of members of other ethnic groups? (0 = 0 yuan, 100 = 100 yuan)

If there is a 7-day “ethnic cultural exchange” volunteer project intended to promote mutual understanding and assistance among different ethnic groups, how many days would you be willing to spend participating in this project and providing volunteer service for members of other ethnic groups? (0 = 0

days, 7 = 7 days)

Measurement of Past Self-Continuity

(1 = very dissimilar/very unable/very much dislike ~ 6 = very similar/very able/very much like)

1. How similar are you now to who you were ten years ago?
2. How similar are your current thoughts to your thoughts ten years ago?
3. How similar is your current personality to your personality ten years ago?
4. How similar are your current values to your values ten years ago?
5. To what extent can you vividly imagine yourself ten years ago?
6. To what extent can you vividly imagine what you looked like ten years ago?
7. To what extent can you vividly imagine your family relationships ten years ago?
8. To what extent do you like the self you were ten years ago?

9. To what extent do you like the personality you had ten years ago?
10. To what extent do you like the way you did things ten years ago?

Note: Figure translations are in progress. See original paper for figures.

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