# Temporality in Moral Self-judgment in Children

A Thesis

Presented to the Faculty of the Graduate School

of Cornell University

In Partial Fulfillment of the Requirements for the Degree of

Master of Arts

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May 2019

ABSTRACT

Children's moral judgments have been first talked about combined with the time perspective. In this study, 97 children from kindergarten, grade one and grade two was assigned to the future group or the past group, participated in the interview protocol and rated their moral judgment scores toward 4 moral and 4 immoral scenarios happened in the past week or the next. Children's perception of what degree of reward or punishment they would receive, their emotion reactions, as well as their reputational concern were recorded for the future analysis. The study was designed to figure out whether children would attribute future good deeds and bad deeds more moral components compared to the past like adults does (Sjåstad & Baumeister, 2018), and whether subjective temporal distance played a mediating role in this cognitive process. The results confirmed the hypothesis that grade one children did attribute higher moral scores to future incident compared to the past, while in grade two group the effect was reversed. We also found children at that age generally attribute higher emotion scores to reward scenarios compared to punishment scenarios.

BIOGRAPHICAL SKETCH

Lingjie Mei was the lab manager of Culture & Social Cognition Lab from 2018-2019 academic year. She graduated from East China Normal University in Shanghai, China as a psychology major student. During her undergraduate career, she was the first China Scholarship Council funded exchange student in her department, and received the Undergraduate Diversity Fund Award from the Society for Personality and Social Psychology in 2015. In 2016, she went to the University of Queensland to work as the research assistant for Professor Roy Baumeister. Her current research interest lies in the field of prospective thinking, interpersonal relationships and self-identity.

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**Theories about past and future**

Time has always been a fascinating topic in social psychology because of its objective nature and subjective influence on human beings' mental state. Many researchers have talked about time psychology from different perspectives. The most widespread theory might be the temporal discounting effect. Frederick and his colleagues (2002) used the term "time discounting" broadly to encompass any reason for caring less about a future consequence, like $15 after a month equals $10 if given right now in our mind.

We also tend to overestimate the intensity and duration of our emotional reactions to future events. Van Boven and Ashworth (2007) found anticipating future experiences usually caused stronger emotion in the present than remembering similar experiences from the past. This is especially true when predicting reactions to negative events: we fail to anticipate how quickly we could recover from them (Wilson & Gilbert, 2005). And Apart from the difference on anticipated subjective monetary value and emotion valance, our recall of past events was also proved to be able to influence our expectations of the future change (Wang, Gould, & Hou, 2014). In Wang et al's study, 156 college students recalled positive and negative personal events of various situations, and then imagined a future personal event involving the same situation. Participants expected over half of the events to change in either upward or downward directions, depending on the valence of past events, which told us we not necessarily always held

an optimistic view of the future, but in fact perceived change in future events from memory-based event simulation.

Psychological distance was also proved to be different between the past and future. Casuro, Van Boven, Chin, & Ward's study (2013) recorded people's perception towards specific times (e.g., 1 year) or events (e.g., Valentine's Day), and found a systematic asymmetry that future events are psychologically closer than past events of equivalent objective distance. Liberman and Trope (2009) stated in their review published on science that, more distal objects in both spatial distance and other distance dimensions, including conceptual abstraction, will be constructed at a higher level. They used a metaphor to describe this hypothesis: From far away, we see the forest, and as we get closer, we see trees. And thinking about tomorrow is like seeing the trees, while thinking about next year is like seeing the forests.

They also stated the reciprocal relation between construal level and distance. In an Implicit Associations Test by Bar-Anan et al in 2006, participants mapped words from four categories (high/low level construal like "drinks" vs "Coke", and large/small psychological distance words like "friend" vs "stranger") by pressing a left or right key on the computer keyboard. Congruent trials referred to high-level stimuli paired with distant stimuli, and low-level stimuli were paired with proximal stimuli. Incongruent trails referred to high-level stimuli paired with proximal stimuli, and low-level stimuli paired with distant stimuli. With all four dimensions, participants were faster with congruent than incongruent pairings, which suggested they implicitly associated large psychological distances with high-level construal and small psychological distances

with low-level construal. In conclusion, as psychological distance increases, the level of abstraction increases, and as level of abstraction increases, so do the psychological distances people imagine. It suggests that abstract thinking is used to transcend the present and think farther into time and space, considering remote social targets and possibilities.

Moreover, temporality also plays a part in our self-identity. A distal time perspective directs attention to the core and defining characteristics of the self (idealistic self), whereas a proximal time perspective shifts attention to situational contingencies that would make one choose instrumental benefits over maximizing identity (Kivetz & Tyler, 2007).

**Moral Principles in the time frame**

Researchers have extended the extant literature on temporal distance to the domain of morality now. Usually, we would assume moral principles are objective and timeless. If someone commits a crime, it shouldn't matter that much whether this crime was committed before one week or after one week. But this was proved to be wrong by Agerström and Björklund in 2009. They studied people's moral judgment and reports on moral emotions toward others' morally questionable behavior that took place both in the near and in the distant future. The results demonstrated that people make harsher evaluations of and become angrier at other individuals' morally questionable actions when these would take place in the distant future as compared to the near future. Moreover, it was shown that people increasingly attribute distant vs. near future behavior to abstract dispositional relative to concrete situational causes. This attribution

bias is partially responsible for the temporal distance effect on moral judgments according to their speculation.

In 2010, Caruso did a series of 7 studies, using different scenarios both in real world events (e.g., Coke Vending Machine, Amazon.com Pricing Policy, etc), and hypothetical terms (e.g., late night TV shows, etc), confirming the temporal asymmetry in affective responses as well as perceived fairness to the past and future immoral scenarios.

Caruso thought the most compelling possibility of this finding is that reactions to future events are overlearned responses to the natural environment. He used Frijda's theory here, the function of emotion is to prepare organisms for action, as theoretical base. As if we lacked this bias towards things happened in the past or future, we would be as much concerned about past pains and pleasures, and lead to failing to get future pleasures and avoid future pains (Parfit, 1984b, p. 168). Plus, People are remarkably effective at the process of rationalization and cope with their emotions after something bad happened, all above might explain the affective asymmetry towards things happened in the past or will happen in the future.

Besides affective asymmetry, researchers also touched on the cognitive and behavioral asymmetry between past and future perspective. In Sjåstad's study in 2019, he found future-orientation can make people more generous because it also makes people more attuned to the social consequences of their choices. In a hypothetical donation scenario, participants were randomly assigned to either focus on the past or focus on the future. Participants in the future-focused group tend to donate more money

to charity, but this effect disappeared when the choice was framed as private instead of public. That means focusing on the future makes people more generous only when the choice was framed as public. He concluded that focusing on the future makes people more generous because the future promotes "reputation-based generosity".

These findings lead to the explorative work of figuring out the mediating factors behind moral judgments asymmetry. In 2018, Sjåstad and Baumeister took one step further based on Caruso's study, and proposed a different possible explanation for this asymmetry using participants from Norway and United States. Instead of testing people's moral judgments about others' immoral behavior, they turn the focus on people's moral judgments of their own behaviors. In a series of four studies, they randomly assigned people to future and past groups, and asked them to report to what extent they think they would receive rewards or punishments for something morally good or bad. Both one year's time duration and five years' duration in the past or future were tested in the study. Besides confirming the temporal moral judgment asymmetry as previous findings, two factors, anticipating (one's own) emotional reactions and concern about one's reputation were proved to successfully mediate the tendency to moralize the future more than the past.

**A Developmental Perspective**

Children's ability to "look back in time" (retrospection, episodic remembering) and to "look into the future" (prospection) is defined as mental time travel, and this topic has been increasingly attracting researchers' attention in recent years (Perner et al., 2010).

To travel backward in time to remember and re-experience past events, and to project the self forward in time to anticipate future happenings are two linked processes that involve overlapping cognitive faculties and neural substrates (Addis, Wong, & Schacter, 2007; D'Argembeau & Van der Linden, 2006). The two forms of mental time travel both emerge during the preschool years (Atance, 2008) and continue to develop across middle childhood (Coughlin, Lyons, & Ghetti, 2014; Wang, Capous, Koh, & Hou, 2014), as cited in Wang and Koh's article (2015, p. 132).

In Wang and Koh's study in 2015, 9 to 11-year-old children (N = 57) recalled positive and negative personal events of various situations and imagined a future personal event involving the same situation following each recall. A considerable percentage of children expected the future events to change in either upward or downward directions, depending on the affective nature of the past events. Additional analyses showed that the effects were not moderated by gender or ethnicity. Furthermore, children who anticipated greater upward changes and smaller downward changes in their personal futures exhibited greater well-being.

Even though there were researchers began looking at children's ability to do mental time travel from age 3 to 11 (Payne, Taylor, Hayne, & Scarf, 2015; Perner, Kloo, & Rohwer, 2010; Wang, & Koh, 2015; Wang, Capous, Koh, & Hou, 2014), temporality in moral self-judgment in children has remained to be an untouched field in both developmental and moral psychology. As Payne et al. (2015) found even three- and four-year-old children performed equally when planning for their own future or when planning for the experimenter's future, which made testing children's self-moral

judgment plausible and valuable theoretically.

**Purpose of the present study**

In this study, we decided to test whether children from kindergarten to early primary school would judge their own moral and immoral behaviors (instead of others') happened in the past or future differently, and whether they would have different emotion, reputational concern and subjective temporal distance scores between their prospection and retrospection process. Since previous finding has testified this temporal asymmetry in both prosocial and harmful situations (Sjåstad and Baumeister, 2018), we also included both positive and negative scenarios in our study.

We recruited participants from kindergarten, grade one and grade two to conduct an interview process to self-report their ratings of moral judgments, emotion, reputational concern and subjective temporal distance as dependent variables. To test whether the similar temporal asymmetry effect would appear, we adopted a mix design with time (past vs. future) as a between-subject factor and valence (punishment vs. reward scenarios) as a within-subject factor.

**Hypotheses**

*Temporal moral judgment asymmetry between past and future*

The primary hypothesis was that children would prescribe more blame and punishment for their future misdeeds than past ones, and more praise and reward for future good deeds than past ones. A future moralization effect of this kind would extend Sjåstad and Baumeister's (2018) findings with the important step of applying them to how children judge their own moral and immoral behaviors.

*Reputational concern*

Besides the difference on moral judgment scores, we also anticipated children would worry more about how others will evaluate them in the future compared to the past. According to Sjåstad's finding on reputational-based generosity (2019), future-focused participants shared more money in a public dictator game than present-focused participants, which was mediated by reputational concern, indicating that future-orientation can make people more generous because it also makes them more attuned to the social consequences of their choices. We expected to find similar effects on kindergarten and primary school children.

*Anticipated emotion*

A third explanatory hypothesis was about emotion. Caruso's (2010) work revealed that emotions play a key role in the moralization of other people's future actions. Since people tend to overestimate their emotion reactions towards future things compared to the past (Van Boven & Ashworth, 2007), we expected the similar pattern would emerge on kindergarten and primary school children.

*Subjective temporal distance*

Besides the factors mentioned above, we also added the subjective temporal distance into measurement as one dependent variable. According to Casuro, Van Boven, Chin, & Ward's study (2013), future events are psychologically closer than past events of equivalent objective distance. We were anticipating children would feel the future to be closer on subjective distance than the same time duration dated to the past.

*Valence*

Previous study by Baumeister (2018) didn't combine the prosocial and harmful scenarios together, so the potential valence effect, the interaction between valence and time hasn't been touched on. As previous finding indicated bad emotions have more impact than good ones (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001), we also hypothesized an interaction effect would show up between time and valence: children in both past and future group may attribute higher emotion scores to immoral scenarios compared to moral ones.

**Method**

*Participants*

Nighty-seven children from Beijing Experimental School Primary Department in Haidian District, as well as China Petroleum Kindergarten participated in the study (46 girls and 51 boys). The average age of our participants is 6.99 years old. There were 30 children from Kindergarten, 35 from the grade one of primary school, and 32 from the grade two of primary school. Each one of them completed the 15-minutes interview procedure individually and was compensated with cartoon stickers.

*Procedure*

Participants were randomly assigned to past and future conditions before the study. Four experimenters have gone through two half-hour training sessions to learn the process of building up rapport with children and basic interview skills. Each of them also did two pilot interviews to get familiar with the content and requirements of the experiment.

After the child arrived at the interview room, the experimenter would talk to them

first to build rapport, asking them what they have eaten for lunch and what's their favorite food. Then the experimenter would tell them:" We are going to play a fun game. We'll pretend that something happened to you and your favorite friends last week/next week. I am going to ask you some questions about it. You can reply in any way you want. There are no right or wrong answers and it's going to be fun. Are you ready?" After the child said they are ready to begin, the experimenter would ask a test question of choosing the flavor of ice cream. "Last week/ Next week, you and your friend went to have ice cream together. He or she chose the vanilla ice cream, which favor did you choose? To what extent do you think it's delicious? Please point to the rating scale here to let me know. The biggest circle means 4 points, most delicious, and the smallest circle means 0 points, not delicious at all." This test question aimed at helping students to learn about the usage of the rating scale (see below).
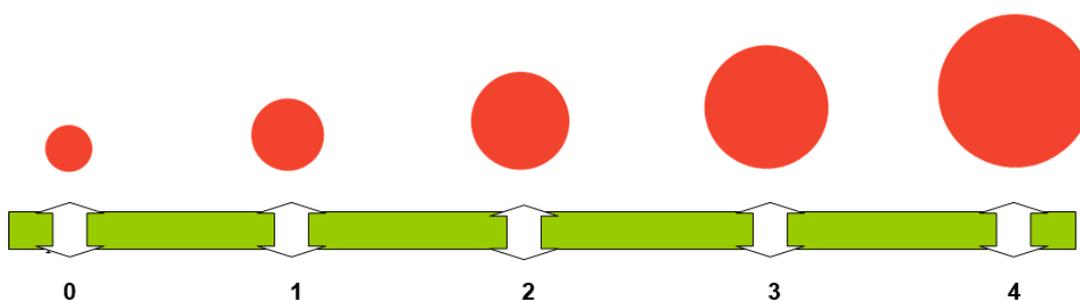


Then the experimenter would start reading 8 scenarios including four moral behaviors (marked as R1, R2, R3, R4) and four immoral behaviors (marked as P1, P2, P3, P4) happened in the past or next week, depending on which condition the child has been assigned to.

The details of moral and immoral scenarios could be seen in the Appendix section. The moral items were selected, designed and edited based on the major categorizations

of prosocial behaviors: providing help to others, sharing things with others, comforting others with kind words. And the immoral ones were about verbal and physical violent behaviors like saying mean things, pushing others off the bike, and taking others' things without getting approval, and lying to teacher to get rid of responsibility.

The interview questions were randomly presented by the experimenter to the children to prevent order effect. And the friend mentioned in those scenarios was defined to have the same gender as the participant to prevent any compounding gender interaction effect.

Children would be told about the details of the scenarios happened in the last week or next week, and then asked about how much do they think they should be punished/rewarded considering the current situation. They were asked to point out the answer on the rating scale, and the experimenter would record their responses as moral responsibility score. They were also asked how much they would feel sad/happy in the corresponding situation, and how much would other children think him or her to be a bad/good boy/girl. Those two items were recorded as emotion and reputational concern score. After testing the moral responsibility, emotion and reputational concern scores of those eight scenarios, children would be asked how far away does last week/next week feel to them, which was recorded as psychological distance score. And followed with the last question to confirm with participants whether we talked about the things happened in the past week or will happen in the next week as manipulation check question. Apart from the last question, all the other questions were self-report questions on the same rating scale ranging from 0 (not at all) to 4 (very much).

**Results**

We analyzed all the collected data to get the descriptive information and interaction with time and valence of the four dependent variables. The results have been presented as the following tables.

*Moral judgments*

Table 1. Descriptive statistics for moral judgment scores

| Grade | Valence | Past Mean | SD | Future Mean | SD |
|---|---|---|---|---|---|
| Kindergarten | Positive | 3.58 | 0.56 | 3.41 | 0.39 |
| *N(p)=16, N(f)=14* | Negative | 3.39 | 0.81 | 3.34 | 0.59 |
| Grade 1 | Positive | 3.36 | 0.62 | 3.53 | 0.58 |
| *N(p)=19, N(f)=16* | Negative | 3.21 | 0.81 | 3.70 | 0.32 |
| Grade 2 | Positive | 3.31 | 0.76 | 2.81 | 0.66 |
| *N(p)=16, N(f)=16* | Negative | 3.45 | 0.88 | 3.09 | 0.64 |

*Notes. N(p) refers to the number of children in the past condition, N(f) refers to the numbers of children in future condition. Significant at the p < 0.05 level*

Table 2. Repeated ANOVA for moral judgment scores in kindergarten

| Kindergarten *N(p)=16, N(f)=14* | Sum of squares | df | MSE | F value | Sig |
|---|---|---|---|---|---|
| Valence (within group) | 0.21 | 1 | 0.21 | 0.55 | 0.46 |
| Time (between group) | 0.26 | 1 | 0.26 | 0.62 | 0.44 |
| Valence * Time | 0.00 | 1 | 0.00 | 0.00 | 0.96 |

Table 3. Repeated ANOVA for moral judgment scores in grade 1

| Grade one *N(p)=19, N(f)=16* | Sum of squares | df | MSE | F value | Sig |
|---|---|---|---|---|---|
| Valence (within group) | 0.00 | 1 | 0.00 | 0.01 | 0.92 |
| **Time (between group)** | **1.94** | **1** | **1.94** | **4.38** | **0.04*** |
| Valence * Time | 0.44 | 1 | 0.44 | 1.24 | 0.27 |

Table 4. Repeated ANOVA for moral judgment scores in grade 2

| Grade two N(p)=16, N(f)=16 | Sum of squares | df | MSE | F value | Sig |
|---|---|---|---|---|---|
| Valence (within group) | 0.71 | 1 | 0.71 | 1.05 | 0.32 |
| **Time (between group)** | **2.95** | **1** | **2.95** | **7.04** | **0.01\*** |
| Valence * Time | 0.08 | 1 | 0.08 | 0.12 | 0.74 |

*Notes. N(p) refers to the number of children in the past condition, N(f) refers to the numbers of children in future condition. Significant at the p < 0.05 level*

We ran a repeated ANOVA for each grade of children to test whether there was significant difference on moral judgment scores under punishment and reward scenarios, between the past and future, and the interaction among those two. Significant difference was detected between past and future on the grade one (*sig = 0.04\* <0.05*) and grade two children (*sig = 0.01\*<0.05*). For grade one children, both the negative and positive scenarios in the future condition had higher moral judgment scores compared to the past (*Mean(past_positive) = 3.36 < Mean(future_positive) = 3.53, Mean(past_negative) = 3.21 < Mean(future_negative) = 3.70*). This result was consistent with our hypothesis. While for grade two children, we could see a reverse effect that the negative and positive scenarios in the future condition had lower moral judgment scores compared to the past (*Mean(past_positive) = 3.31 > Mean(future_positive) = 2.81, Mean(past_negative) = 3.45 > Mean(future_negative) = 3.09*).

*Emotion*

Table 5. Descriptive statistics for emotion scores

| Grade | Valence | Past Mean | SD | Future Mean | SD |
|---|---|---|---|---|---|
| Kindergarten | Positive | 3.67 | 0.48 | 3.68 | 0.40 |
| *N(p)=16, N(f)=14* | Negative | 3.13 | 1.06 | 2.95 | 0.95 |
| Grade 1 | Positive | 3.63 | 0.47 | 3.55 | 0.52 |
| *N(p)=19, N(f)=16* | Negative | 3.18 | 0.69 | 3.28 | 0.75 |
| Grade 2 | Positive | 3.78 | 0.31 | 3.63 | 0.43 |
| *N(p)=16, N(f)=16* | Negative | 3.36 | 0.94 | 3.06 | 0.74 |

*Notes. N(p) refers to the number of children in the past condition, N(f) refers to the numbers of children in future condition. Significant at the p < 0.05 level*

Table 6. Repeated ANOVA for emotion scores in kindergarten children

| Kindergarten *N(p)=16, N(f)=14* | Sum of squares | df | MSE | F value | Sig |
|---|---|---|---|---|---|
| **Valence (within group)** | **6.15** | **1** | **6.15** | **24.03** | **0.00\*\*** |
| Time (between group) | 0.33 | 1 | 0.33 | 0.53 | 0.47 |
| Valence * Time | 1.860E-5 | 1 | 1.860E-5 | 0.00 | 0.99 |

Table 7. Repeated ANOVA for emotion scores in grade 1

| Grade one *N(p)=19, N(f)=16* | Sum of squares | df | MSE | F value | Sig |
|---|---|---|---|---|---|
| **Valence (within group)** | **2.21** | **1** | **2.21** | **7.33** | **0.01\*** |
| Time (between group) | 0.00 | 1 | 0.00 | 0.00 | 0.97 |
| Valence * Time | 0.14 | 1 | 0.14 | 0.48 | 0.50 |

Table 8. Repeated ANOVA for emotion scores in grade 2

| Grade two *N(p)=16, N(f)=16* | Sum of squares | df | MSE | F value | Sig |
|---|---|---|---|---|---|
| **Valence (within group)** | **3.88** | **1** | **3.88** | **16.73** | **0.00\*\*** |
| Time (between group) | 0.82 | 1 | 0.82 | 1.33 | 0.26 |
| Valence * Time | 0.08 | 1 | 0.08 | 0.34 | 0.56 |

*Notes. N(p) refers to the number of children in the past condition, N(f) refers to the numbers of children in future condition. Significant at the p < 0.05 level*

We ran a repeated ANOVA for each grade of children to test whether there was significant difference on emotion scores under punishment and reward scenarios, between the past and future, and the interaction among those two. Significant difference was detected between punishment and reward scenarios among all three groups of children. For the kindergarten children in the past week condition, the mean of reward scenarios is 3.67, while the mean of negative condition is 3.13, and in the next week condition, the mean in the reward and punishment scenario was separately 3.68 and 2.95, with the significance value = *0.00\*\*<0.05*. For grade one and grade two children, the similar pattern remained consistent, confirming that children continuously attributed higher emotion score to reward scenarios compared to punishment scenarios.

*Reputational Concern*

Table 9. Descriptive statistics for reputational concern scores

| Grade | Valence | Past | | Future | |
|---|---|---|---|---|---|
| | | Mean | SD | Mean | SD |
| Kindergarten | Positive | 3.63 | 0.55 | 3.50 | 0.44 |
| *N(p)=16, N(f)=14* | Negative | 3.36 | 0.86 | 3.18 | 0.90 |
| Grade 1 | Positive | 3.22 | 0.82 | 3.47 | 0.62 |
| *N(p)=19, N(f)=16* | Negative | 2.96 | 1.08 | 3.20 | 1.10 |
| Grade 2 | Positive | 3.58 | 0.49 | 3.25 | 0.52 |
| *N(p)=16, N(f)=16* | Negative | 3.34 | 0.95 | 3.00 | 0.80 |

*Notes. N(p) refers to the number of children in the past condition, N(f) refers to the numbers of children in future condition. Significant at the p < 0.05 level*

Table 10. Repeated ANOVA for reputational concern scores in kindergarten

| Kindergarten N(p)=16, N(f)=14 | Sum of squares | df | MSE | F value | Sig |
|---|---|---|---|---|---|
| Valence (within group) | 1.24 | 1 | 1.24 | 3.18 | 0.09 |
| Time (between group) | 0.01 | 1 | 0.01 | 0.01 | 0.92 |
| Valence * Time | 0.07 | 1 | 0.07 | 0.18 | 0.67 |

Table 11. Repeated ANOVA for reputational concern scores in grade 1

| Grade one N(p)=19, N(f)=16 | Sum of squares | df | MSE | F value | Sig |
|---|---|---|---|---|---|
| Valence (within group) | 1.21 | 1 | 1.21 | 2.10 | 0.16 |
| Time (between group) | 1.03 | 1 | 1.03 | 0.85 | 0.36 |
| Valence * Time | 2.643E-5 | 1 | 2.643E-5 | 0.00 | 1.00 |

Table 12. Repeated ANOVA for reputational concern scores in grade 2

| Grade two N(p)=16, N(f)=16 | Sum of squares | df | MSE | F value | Sig |
|---|---|---|---|---|---|
| Valence (within group) | 0.94 | 1 | 0.94 | 2.19 | 0.15 |
| Time (between group) | 1.81 | 1 | 1.81 | 2.99 | 0.09 |
| Valence * Time | 0.00 | 1 | 0.00 | 0.00 | 0.96 |

*Notes. N(p) refers to the number of children in the past condition, N(f) refers to the numbers of children in future condition. Significant at the p < 0.05 level*

For the reputational concern dimension, no significant difference was found on moral judgment scores under punishment and reward scenarios, between the past and future, and the interaction among those two.

*Temporal Distance*

Table 13. Descriptive statistics for temporal distance scores

| Grade | Past | | Future | |
|---|---|---|---|---|
| | Mean | SD | Mean | SD |
| Kindergarten  *N(p)=19, N(f)=16* | 2.56 | 1.41 | 2.64 | 1.45 |
| Grade 1  *N(p)=19, N(f)=16* | 3.21 | 0.77 | 2.75 | 1.24 |
| Grade 2  *N(p)=16, N(f)=16* | 2.25 | 1.44 | 2.25 | 1.34 |

Table 14. Time x Grade ANOVA for temporal distance

| All grades  *N=97* | Sum of squares | df | MSE | F value | Sig |
|---|---|---|---|---|---|
| Time | 0.39 | 1 | 0.39 | 0.24 | 0.63 |
| Grade | 8.90 | 2 | 4.45 | 2.71 | 0.07 |
| Time * Grade | 1.41 | 2 | 0.71 | 0.43 | 0.65 |

*Notes. N(p) refers to the number of children in the past condition, N(f) refers to the numbers of children in future condition. Significant at the p < 0.05 level*

And for subjective temporal distance, also no significant difference was found on moral judgment scores under punishment and reward scenarios, between the past and future, and the interaction among those two.

**Discussion**

The present study was designed based on a widely confirmed phenomenon of people assigning greater moral emphasis on future good deeds or bad deeds compared to the past. Even there were some findings on adults have showed the systematic pattern existed on people's own moral judgments as well as judgments for others (Caruso, 2010; Sjåstad and Baumeister, 2018), similar topic has rarely been talked about in

developmental field.

We stepped onto this topic using interviews to ask hypothetical questions to children from kindergarten to grade one and grade two in primary school in Beijing, China. Among 8 moral and immoral scenarios including sharing, helping, comforting, and lying, pushing, saying mean things to friends, children's moral judgment scores, self-report emotion scores, reputational concern scores, and temporal distance scores were recorded by the experimenters and further analyzed.

Children from grade one and grade two showed significant differences on moral judgment scores between past and future. For grade one group, the moral judgment asymmetry was confirmed while for grade two group, the asymmetry showed reverse effects compared to previous finding: children in the past week condition give higher moral judgment scores compared to children in the next week condition. Possible explanation behind this result might be punishments and rewards for past incidents couldn't be changed, while for the future, there still existed slight uncertainty, thus children attributed higher scores to rewards or punishment received in the past compared to rewards or punishments going to receive in the future. For kindergarten children, their ability to do mental time travel might not be mature enough to distinguish those effects, thus no significant results were found on that group.

There were also consistent differences on the emotion scores towards punishment and reward scenarios among all age groups. Children in all three groups reported higher emotion scores towards reward scenarios compared to the punishment scenarios, which also reversed our hypothesis. Possible explanation might be children were not aware

that bad things happen all the time in adults world, so they generally were more optimistic and focusing more on the good things instead of the bad things.

The current study had gotten some meaning results, while also faced certain points that could be improved. First there was the small sample size in each age group. Right now we have around 15 participants in each condition, but the number of boys and girls weren't fully balanced in these three groups. Ideally, we should have 20 participants in each gender in each condition. Besides, as 9- to 11-year-old children was said to be an age group that has developed complex self-knowledge (Harter, 1998) and marked abilities of mental time travel (Coughlin et al., 2014; Wang et al., 2014), it would be good if we could extend the age range to 9 or 10 and collected more data in each group. As we didn't find significant results in the youngest group, probably that's because their mental time travel ability hasn't fully developed to do moral judgment for themselves yet. Adding senior children in primary school to our participants pool might help us to observe the developmental of children moral judgments for the past and future from a cross-sectional perspective.

Second point concerns about the children's baseline prosocial tendency. We did random assignment in the grouping for the current study, so we didn't test the baseline prosocial tendency of each child and considered high prosocial tendency and low prosocial tendency children were randomly assigned to different groups. The latter finding would receive more concise results if the baseline prosocial tendency, as well as children's verbal intelligence ability was controlled when doing the final analysis.

The third part is about the possibility of doing cross-culture comparisons between

Chinese and American children on their moral judgments towards the past and future. European Americans were said to be able to consistently produce more specific details than Chinese for future events than they did for past events (Qi Wang, Yubo Hou, Huizhen Tang, & Alicia Wiprovnick, 2011). It's worthwhile to figure out whether the similar pattern would show up on American children, as well as whether this pattern would show up at a younger age compared to East Asia children.

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*Appendix*

# 指导语

"We are going to play a fun game. We'll pretend that something happened to you and your friends last week. I'm going to ask you some questions. You can reply in any way you want. There are no right or wrong answers. You'll see it's going to be fun. Are you ready?"

接下来让我们一起玩一个有趣的游戏。我们假装上个星期一些事情发生在了你和你的朋友身上，然后我会根据这些事情问你一些小问题~这些问题没有正确答案，请你按照你的感觉来回答~这会是个很有趣的游戏的！现在准备好了吗~

上个星期你和你的朋友一起去吃冰激凌。她/他选了香草味的冰激凌，你选了哪个口味？

"Last week, you and your friend went to have ice-cream together. He or she chose the vanilla ice-cream. Which favor did you choose?"

你觉得这个口味的冰激凌有多好吃？（介绍 rating scale）最好吃请选择…比较好吃请选择…一般请选择…不太好吃…不好吃…

展示情景描述

好，这幅图是第一个情景，这个情景发生在上个星期。

下面请回答这些问题~

{Immoral 组，1-5 重复问题，6,7 只问一次}

1. How much do you think you should be punished?
   你在多大程度上觉得你会受到惩罚？请在这张图片上选出你认为自己会受到惩罚的程度。

2. Why do you think you should be punished this much? 为什么你觉得你会受到这么多惩罚？

3. Did you feel bad for taking away the candy without paying and didn't tell your mother? 你在多大程度上感觉很糟糕？请在这张图片上选出你认为自己会感觉很糟糕的程度。

4. Did other children think that you are a bad boy/girl because you took away the candy without paying and didn't tell your mother?
   其他小朋友会觉得你是个坏孩子么？请在这张图片上选出你认为其他小朋友觉得你是个坏孩子的程度。

5. Did something similar happen to you in the past? 类似的事情在过去发生过吗？

    Yes____    No____

   【6,7 最后问一次】

6. **How far away does the last week feel to you? 你感觉上个星期离你有多远**？
   请在这张图片上选出你认为上个星期距离你的远近程度。

7. **Did we talk about the past or the future? 我们刚刚说的是上个星期还是下个星期？**

   Yes, we talk about the past____

No, we talk about the future____

{Moral 组，8-12 重复问题，13,14 只问一次}

8. How much do you think you should be rewarded?
   你在多大程度上觉得你会受到表扬？请在这张图片上选出你认为自己会受到表扬的程度。

9. Why do you think you should be punished this much? 为什么你觉得你会受到这么多表扬？

10. Did you feel bad for taking away the candy without paying and didn't tell your mother? 你在多大程度上感觉很开心？请在这张图片上选出你认为自己会感觉开心的程度。

11. Did other children think that you are a bad boy/girl because you took away the candy without paying and didn't tell your mother?
    其他小朋友会觉得你是个好孩子么？请在这张图片上选出你认为其他小朋友觉得你是个好孩子的程度。

12. Did something similar happen to you in the past? 类似的事情在过去发生过吗？

    Yes____    No____

【13,14 单次问题】

13. How far away does the last week feel to you? 你感觉上个星期离你有多远？请在这张图片上选出你认为上个星期距离你的远近程度。

14. Did we talk about the past or the future? 我们刚刚说的是上个星期还是下个星期？

    Yes, we talk about the past____

    No, we talk about the future____

<div align="center">Coding Sheet</div>

年龄 ____
性别 ____
年级 _____
实验者 _____
分组(P/F) _____
Q7 _____

| 情境 | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 |
|---|---|---|---|---|---|---|
| 杯子 | | | | | | |
| 玩具 | | | | | | |
| 弄哭朋友 | | | | | | |
| 自行车 | | | | | | |
| 黑板 | | | | | | |
| 积木 | | | | | | |
| 安慰朋友 | | | | | | |
| 三明治 | | | | | | |

Q1  原因

实验备注

IM: 1. Last week you broke your teacher's favorite mug. When your teacher asked who did it, you blamed it on a friend.

上个星期你打破了老师最喜欢的杯子。当老师问到是谁打破的时候，你把这件事怪在你的朋友身上。

2. Last week a friend was playing with a very cool toy. You really wanted it. So you took it away from him (her) without asking.

上个星期你的朋友正在玩一个很酷的玩具，你也很想玩，于是你没有经过朋友同意就把玩具拿走了。

3. Last week you got mad at a friend. You said really mean things to him (her) and made him (her) cry.

上个星期你对你的朋友生气了。你对你的朋友说了很过分的话并把他/她弄哭了。

4. Last week you saw a friend ride a new bike. You wanted to try it. So you pushed him (her) off the bike and hurt his (her) knees.

上个星期你看到一个朋友在骑一辆新的自行车，你很想骑，所以你把朋友推下了自行车，弄伤了他/她的膝盖。

M: 5. Last week all your friends went outside to play during recess. You stayed in to help your teacher clean the blackboard.

上个星期你所有的朋友都在课间休息时出去玩了，只有你主动留下来帮老师擦黑板。

6. Last week you and a friend played Lego. you built a house that was really nice but broke easily. Your friend was sad that he (she) couldn't build one. So you let him (her) play with your Lego house.

上个星期你和你的朋友在玩积木。你搭了一个很棒的房子，但是很容易倒。你的朋友很难过他/她搭不出来这样的房子，所以你让他/她玩你搭好的房子。

7. Last week a friend tripped and fell. You stopped playing and went over to comfort him (her) and made him (her) feel better.

上个星期你的朋友摔倒了。你本来在一边玩，看到之后就过去安慰他/她，在你的安慰下他/她感觉好多了。

8. Last week a friend forgot to bring lunch. You brought your favorite sandwich. Even though you wanted to eat it all, you gave half of it to your friend.

上个星期你的朋友忘记带午饭了。你带了你最喜欢的三明治,虽然你很想把三明治全部吃掉，你还是分给了你的朋友一半。