Time Travels: The Spatial Representation of Time Across Cultures and Languages

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CHAPTER 3

Time After Time: A Short-Term Longitudinal Examination of the Ego- and Time-Moving Representations

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ABSTRACT

When asked to move next Wednesday's meeting two days forward, English speakers tend to disagree on whether it will move to *Friday* or *Monday* depending on their use of ego- or time-moving representations of time. We examined the stability of answers over a five-month interval in a sample of 345 undergraduates (78.6% female) from New Zealand. Most participants answered *Monday* but there was no group consensus, confirming the ambiguity of the question. Results showed overall stability in answers, with observed over-time change due to female participants shifting their answers from *Friday* to *Monday*. Associations between time representations and time orientations were not statistically significant, but the findings suggest time- and ego-moving representations to be more associated with future and present orientations, respectively.

Keywords: future-oriented cognition; space-time metaphors; ego-moving; time-moving; longitudinal; future time perspective

INTRODUCTION

Imagine you are asked the following question: *Next Wednesday's meeting had to be moved forward by two days. What day is the meeting happening now?* Perhaps you are certain the answer is *Monday*, or perhaps you are equally certain the answer is *Friday*. Both answers are plausible and you are not alone in feeling uncertain regarding this ambiguous Wednesday question. When posed to English speakers it does not yield a single majority answer: about half of the respondents answer *Monday* whereas the other half answers *Friday* (Boroditsky, 2000; Gentner et al., 2002; McGlone & Harding, 1998; Rothe-Wulf et al., 2015). The variability in answers has been attributed to various situational characteristics and individual differences (Boroditsky & Ramscar, 2002; Duffy & Feist, 2014). The present study addresses whether one's response to this question changes over time. First, however, we review literature indicating that the variability in answers reflects the way future time is cognitively represented (e.g., Bender & Beller, 2014; Gentner et al., 2002; Núñez & Cooperrider, 2013).

Scholars have distinguished future-oriented cognition – the ability to represent what might happen in the future or prospection – into three broad domains (Szpunar, Spreng, & Schacter, 2014): goals/intentions (desired future states that one is committed to attain), expectations/predictions (judgments of the likelihood of specific future events to occur), and imagery/simulation (mental representations/ images about future events). The Wednesday question fits within the last domain and is linked to space-time relations. When talking about temporal events we often employ spatial terms, saying such things as *the approaching deadline*, *bad days we left behind*, or *a short vacation*. We represent time in terms of space, which follows from embodied accounts of cognition and particularly Conceptual Metaphor Theory (Barsalou et al., 2003; Lakoff & Johnson, 1980). Moreover, experiments not involving linguistic stimuli showed that our thinking about time is influenced by spatial cues but not vice versa, further corroborating the link between space and time (Casasanto & Boroditsky, 2008).

However, space can be used in different ways to represent time. In the ego-moving representation, time is represented by having the self move through space, towards future events lying ahead, leaving past events behind. Since forward movement is indicative of moving to a later moment in time, individuals that favor this time representation are more likely to move the meeting from *Wednesday* to *Friday*. The time-moving representation also represents time by having events laid out in space on a 'line', but rather than having the self pass the events, the events move pass the self. Here, forward movement is indicative of events moving towards an earlier moment in time, with individuals that favor this time representation more likely to move the meeting from *Wednesday* to *Monday*.

Most research on time representations has examined the extent to which situational characteristics (e.g., spatial cues) determine which time representation is used (e.g., Boroditsky, 2000; Boroditsky & Ramscar, 2002; Gentner et al., 2002), thereby underscoring a situated approach to cognition (Smith & Semin, 2007). To illustrate, Boroditsky and Ramscar (2002) showed that day-to-day experiences that trigger thinking about spatial motion (e.g., moving along a lunch line, travelling by airplane, or embarking/alighting a train) affect one's time representation: participants whose own movement through space is salient are more likely to adopt an ego-moving representation than participants whose own movement through space is not salient. Similarly, research has shown that reading statements that employ either the ego- or time-moving representation activates that representation, and subsequent reading of a sentence employing the other representation is slowed (McGlone & Harding, 1998).

Although most research has examined the influence of situational characteristics on the ego- and time-moving representations, a growing number of studies have explored whether individual differences can explain variability in time representations. For example, Hauser, Carter, and Meier (2009) found that participants who scored higher on trait anger were more likely to use an ego-moving representation. Duffy and Feist (2014) found that higher levels of extroversion, lower levels of conscientiousness, and higher levels of procrastination are also linked to an ego-moving representation. The links between the ego-moving representation and both conscientiousness and procrastination have been further corroborated by Duffy, Feist, and McCarthy (2014) who used behavioral proxies of these traits and showed that an ego-moving representation is used by those who are running late for an appointment and who submit their academic essay close to the submission deadline. In a study more relevant to the present research, Richmond, Wilson, and Zinken (2012, Study 2) examined the relationships between time representations and time orientations among 128 undergraduate students (113 females). A series of *t*-tests showed that participants endorsing an ego-moving representation scored higher on future time orientation than those endorsing a time-moving representation (Cohen's d = 0.83); in contrast, participants endorsing a time-moving representation scored higher on present (both fatalistic and hedonistic) time orientations than those endorsing an ego-moving representation (d = 1.36 and 0.64, respectively).

The Present Study

Extending past research, which has attributed variation in time representation to personality characteristics as well as contextual, situated factors, we use a panel dataset to examine whether answers to the ambiguous Wednesday question are

stable over time. Data from 128 US undergraduates indicate about half of participants provide consistent answers over a four-week retest (Rothe-Wulf et al., 2015, Experiment 2). We extend this short-term retest by investigating stability across a five-month interval with a larger sample, allowing examination of Cattell's stability coefficient (see Watson, 2004). By examining time representations in New Zealand participants we will also test its ambiguous characteristics for English speakers in a different cultural context. Previous studies have traditionally considered English speakers from the US (Boroditsky, 2000) and the UK (Richmond et al., 2012). Studies examining time representation in other languages than English have found the question to be mostly unambiguous: group consensus is observed in studies sampling speakers of Swedish, Mandarin, and German (Bender et al., 2010; Rothe-Wulf et al., 2015).

Finally, we also examine the relationship between time representations and time orientations, specifically the relations between a future orientation and the time-moving and ego-moving representations. Past research has not only confirmed a high predictive power of time orientations in many domains (for a review, see Stolarski, Fieaulaine, & van Beek, 2015) but also revealed a conceptual overlap with certain time representations. Namely, both a future orientation and an ego-moving representation are grounded in an agentic self, which 'moves' towards future goals/events; conversely, a present time orientation and an time-moving representation are grounded in a more passive self with agency/movement assigned to the environment/events (Hauser et al., 2009; McGlone & Pfiester, 2009; Richmond et al., 2012; Zimbardo & Boyd, 1999). Despite their conceptual relations to our knowledge only Richmond et al. (2012, Study 2) have examined the empirical relations between the ambiguous Wednesday question and time orientations directly, reporting that future and present orientations are related to ego- and time-moving representations, respectively. (See de la Fuente et al. (2014) for relations between future-to-back/future-to-front representations and time orientation.) We test whether the association between a higher future orientation and an ego-moving representation Richmond et al. (2012) observed replicate in our sample.

METHOD

Participants

We re-analyzed data comprising a sample of 345 first-year psychology students who completed online surveys at two time-points (March and July 2014; see Watson & Milfont, 2017 and Appendix A). The majority were female (78.6%), New Zealand European (80.3%) and born in New Zealand (76.2%), with ages ranging between 17 and 39 years (M = 18.65, SD = 2.18).

Measures

Time representation

Participants completed the ambiguous Wednesday question that read: Please consider the situation below and indicate your answer: Next Wednesday's meeting had to be moved forward by two days. What day is the meeting happening now? (McGlone & Harding, 1998). They chose *Monday*, *Tuesday*, *Wednesday*, *Thursday* or *Friday*, which appeared vertically beneath each other. Responses other than *Monday* and *Friday* (Time 1: 5 participants, 1.4%; Time 2: 10 participants, 2.9%) were treated as missing. *Monday* and *Friday* answers were dummy-coded as time-moving and ego-moving representations, respectively.

Time orientations

Participants completed the future subscale of the Zimbardo Time Perspective Inventory (ZTPI; Zimbardo & Boyd, 1999) and the 14-item version of the Consideration for Future Consequence (CFC) scale (Joireman, Shaffer, Balliet, & Strathman, 2012). The ZTPI-Future consists of 13 items (e.g., ''I complete project on time by making steady progress", and ''There will always be time to catch up on my work" – reversed) rated on a 5-point scale (1 = very uncharacteristic and 5 = very characteristic). The CFC-14 distinguishes concern for future consequences (e.g., CFC-Future: ''I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes") and immediate consequences (e.g., CFC-Immediate: ''My convenience is a big factor in the decisions I make or the actions I take"), with items rated on a 7-point scale (1 = very uncharacteristic of me and 7 = very characteristic of me). We report results for the overall CFC score as well as the specific sub-dimensions. Scale scores were computed by averaging over items after reverse coding relevant items. Table A1 presents the descriptive statistics and correlations among the measures.

RESULTS

Most participants in our sample chose *Monday* in response to the ambiguous Wednesday question, indicative of a time-moving representation (Time 1: 229 participants, 66.4%; Time 2: 248 participants, 71.9%). However, the question ambiguity is evidenced by the large proportion of respondents who chose *Friday*, indicative of an ego-moving representation (Time 1: 111 participants, 32.2%; Time 2: 87 participants, 25.2%).

We then examined whether participant's time representations changed over time considering only those who selected *Monday* or *Friday* in both time points. Table 1

is a contingency table showing overall stability in participants' answers over the five-month retest, which is confirmed by a large stability correlation between the dummy-coded responses (r = 0.58, 95% confidence interval [CI] = [0.48, 0.68], p < .001, N = 330). However, examination of change in the off-diagonal elements in the contingency table with the McNemar's test statistic and Yates' continuity correction [i.e., $(|40 - 18| - 1)^2/40 + 18$] showed that preference changed significantly over the five-month period, $\chi^2(1) = 7.60$, p = .006. Participants were more likely to select the time-moving representation in July (N = 246, 75%) than in March (N = 224, 68%) when they were first surveyed.

TABLE 1. Contingency Table Displaying Participants' Preference for Ego- or Time-Moving Representations at Each Measurement Point

	July		
March	Ego-moving (Friday)	Time-moving (Monday)	Total
Ego-moving (Friday)	66	40	106
Time-moving (Monday)	18	206	224
Total	84	246	330

We ran exploratory analysis examining whether over-time change in time representation preference was distinct for female and male participants. Calculation of the McNemar's test for female $[(|32 - 14| - 1)^2/32 + 14]$ and male $[(|8 - 4| - 1)^2/8 + 4]$ participants showed that preference changed significantly for female participants, $\chi^2(1) = 6.28$, p = .012, but not for male participants, $\chi^2(1) = 0.75$, p = .388. This suggests that the observed over-time change in preference was driven by female participants, who were more likely to select the time-moving representation in July (N = 200, 77%) than in March (N = 182, 70%; for details see Table A2).

We then examined the relations between time representation and future orientation with t-tests. As shown in Table 2 (see below), participants favoring a time-moving representation tend to score higher on future orientation measures and lower on the present orientation measure; notably, however, these differences are not statistically significant. Differences were in the same direction but non-statistically significant at Time 2 (see Table A3). These findings together with the correlational results in Table A1 indicate that individuals' preference for ego-moving or time-moving representations is not related to their future orientation.

TABLE 2. Independent Sample t-Test Analyses of the Time Orientation Scores as a Function of Time Representation at Time 1

Time orientation	Time representation (ambiguous Wednesday question)						
	Ego-moving (Friday; N = 111)		Time-moving (Monday; N = 229)				
	M	*SD*	*M*	*SD*	*t*	*p*	Cohen's *d*
ZTPI-Future	3.51	0.55	3.55	0.54	0.59	0.558	0.07
	[3.41, 3.61]	[0.47, 0.61]	[3.48, 3.62]	[0.49, 0.58]			
CFC-Total	4.44	0.71	4.53	0.78	1.04	0.297	0.12
	[4.31, 4.57]	[0.62, 0.80]	[4.44, 4.63]	[0.71, 0.84]			
CFC-Future	4.72	0.83	4.83	0.81	1.20	0.233	0.13
	[4.56, 4.87]	[0.73, 0.92]	[4.73, 4.94]	[0.74, 0.88]			
CFC-Immediate	3.84	0.80	3.77	0.93	-0.67	0.501	0.08
	[3.86, 3.99]	[0.70, 0.90]	[3.65, 3.88]	[0.85 1.01]			

Note. *df* = 338. ZTPI-Future = future subscale of the Zimbardo Time Perspective Inventory; CFC = Consideration of Future Consequences. Numbers in brackets are 95% confidence intervals based on bias-corrected accelerated bootstrapping with 10,000 re-samples.

DISCUSSION

Future-oriented cognition might refer to desired future states that one is committed to attain (goals/intentions), judgments of the likelihood of specific future events to occur (expectations/predictions), or mental representations/images about future events (imagery/simulation; see Szpunar et al., 2014). In the present study, we examined the longitudinal stability of mental images about future events that represent time by having events laid out in space on a 'line' but differ in the relation between self and events. While in an ego-moving representation events are static and the self moves along the time line, in a time-moving representation the self is static and events pass the self.

By using panel data, we contributed to the literature in three ways. First, we confirmed the ambiguity of the Wednesday question in our New Zealand sample by showing that (a) a clear majority of participants (>93%) selected either *Monday* or *Friday* as their answers to the question, and that (b) there was no group consensus since participants' overall preference for a time-moving representation was less than 75%. While group consensus is clearly observed (>84%) in participants who speak other Germanic languages (Bender et al., 2010; Rothe-Wulf et al., 2015), our findings

support previous findings showing that the question is unquestionably ambiguous for English speakers (Rothe-Wulf et al., 2015). By showing lack of group consensus in another cultural context, our findings provide further evidence that the ambiguity of the question is due to conventions in the English language. Our findings also suggest that preference for one representation over the other might vary across different English speakers. While most studies using US samples seem to indicate a preference for the ego-moving representation (Lai & Boroditsky, 2013; Rothe-Wulf et al., 2015), our New Zealand participants favored the time-moving representation. Future studies comparing different English speakers could replicate this finding and explore the reason behind this variability. These studies should also take into consideration the work by Duffy and Feist (2014) and Feist and Duffy, (2015) showing that the lifestyle typical to the sample (student vs. administrators) and linguistic factors (lexical items chosen and grammatical person) influence the interpretation of the Wednesday question.

Second, we arguably provide the first long-term retest of answers to the Wednesday question. Our results showed that participants' answers (particularly those of male participants) are overall consistent over the five-month interval, and extended the four-week retest findings reported by Rothe-Wulf et al. (2015, Experiment 2). The available evidence thus suggests that ego- and time-moving representations reflect stable individual differences. Measures included in our study assessing different constructs also afford a comparative test of stability (see Watson, 2004). For example, additional analyses reported in Table A1 show that the self-control measure had a higher stability correlation than that for time representations (0.72 vs. 0.58; $z = 3.18$, $p < .01$, two-tailed). This finding illustrates Conley (1984) "hierarchy of consistency" by showing that time representations are relatively less stable than other personality characteristics. That across-time variation in time representations was only observed among female participants deserves further examination, especially given the small male sample in our study. We could not locate any other study examining gender differences in time representations, but perhaps women (compared to men) are more prone to shift time representations.

Finally, we could not replicate the results reported by Richmond et al. (2012, Study 2) on the associations between time representations and future orientation. They found that participants using an ego-moving representation scored significantly higher on the same future subscale of the Zimbardo Time Perspective Inventory, $t(110) = 4.34$, $p < .0001$, $d = 0.83$. Albeit non-statistically significant, our results indicate the opposite pattern: individuals who favor a time-moving representation had higher scores on future orientation measures, while those who favor an ego-moving representation score higher on consideration of immediate consequences (see Table

2). Differences in sample characteristics as well as research design might underlie the discrepancy in the results. However, closer examination of the broader literature seems to support the directional trend we observed. Studies have shown that an ego-moving representation is associated with procrastination, lower conscientiousness and tardiness (Duffy & Feist, 2014; Duffy et al., 2014). Other studies have shown that future orientation is negatively correlated with procrastination (Sirois, 2014), and that future-oriented individuals hold conscientiousness traits and are more likely to be punctual as they tend to wear watches, use day planners and complete course requirements well in advance (Zimbardo & Boyd, 1999). The nomological net of time representations and future orientations thus supports the view that time- and ego-moving representations are more likely to be associated with future and present orientations, respectively.

Further work examining the associations between time representations and individual differences (e.g., Duffy et al., 2014; Hauser et al., 2009; Richmond et al., 2012) will provide better understanding of the nomological net of these time representations and the underlying individual differences they project. It is worth noting, however, that these representations are influenced by situational characteristics (e.g., Boroditsky, 2000; Boroditsky & Ramscar, 2002). An interesting avenue for future research is to examine interactions between context and individual differences in shaping ego- and time-moving representations. Future studies examining the influence of situational characteristics on time representations could also test whether this influence is stronger among female participants.

We have no reason to believe that the results depend on other characteristics of the participants, materials, or context. However, it is worth noting that our data is limited to a relatively short interval between measurement points, that our sample size was modest and based on university students, and that the interpretation of the association between future orientation and ego- and time-moving representations is based on non-significant results. We believe the examination of the long-term stability of time representations (using benchmark measures for comparative tests of stability; see Watson, 2004) and their associations with other aspects of psychological time are theoretically and empirically important.

APPENDIX A

Further Information on Sampling and Procedure

The panel data was collected as part of a larger research project (see Watson, 2015). The panel data had 345 participants, who completed both waves of the survey, but the full Time 1 dataset comprised 621 participants and the full Time 2 dataset comprised 529 participants. Some explanation on the divergent sample size and attrition is in order.

The data were drawn from a compulsory "mass testing" survey completed online by students at the start of their introductory psychology courses in the first and second half of the 2014 academic year. Introductory psychology courses are very popular and attract hundreds of students in our university. Students who are majoring in psychology must take both introductory psychology courses ran at distinct semesters. These students might take the first introductory psychology course and complete the mass testing, and only decide to take the second introductory course in the subsequent year. Students majoring in other subjects might take the first introductory psychology course in one semester but not enroll in any subsequent psychology course, so they would not complete another mass testing. This situation results in attrition due to many students not completing the mass testing during the second introductory psychology course (e.g., not completing psychology as a major, electing to drop from psychology, electing to complete an assignment instead of taking part of studies for course credit, etc.). Considering these constraints, we included in the analysis all students who completed both mass testing sessions in the same academic year. We believe the approach we took is the most parsimonious given the constraints of acquiring panel data from students completing mass testing at our university.

Ethical approval was obtained from the Human Ethics Committee from the authors' university (reference number RM020759). Participants were given information about the survey, and provided informed consent prior to the administration of the survey at each time-point. The mass-testing surveys took about 1 hour to complete as they included a battery of questions from other research projects.

Open Practices

All data and measures have been made publicly available via the Open Science Framework and can be accessed at osf.io/nwdpq.

The focus of the broader research project was to investigate the longitudinal and physiological associations between related constructs (see Watson, 2015). The panel

data have been used for another publication examining the cross-lagged associations between control-related and time-related measures (see Watson & Milfont, 2017). The analyses reported in the present article and in Watson and Milfont (2017) were not pre-registered.

Although using the same dataset, the research questions and focus of these publications are markedly distinct.

The original dataset included measures of self-control and delay of gratification, which has been linked to time orientation. For this reason, and for the sake of completeness, we report the associations between ego- and time-moving orientations with these measures as well. Table A1 presents descriptive statistics and correlations among all relevant measures.

Participants' self-control was measured using the 13-item Brief Self-Control Scale (BSCS; Tangney, Baumeister, & Boone, 2004). Examples of items include "I am good at resisting temptation", and "I wish I had more self-discipline", rated on a scale from 1 (not at all like me) to 5 (very much like me). Participants' inclination to favor long-term rewards over short-term, immediate satisfaction was measured using the 10-item short-form version of the Delaying Gratification Inventory (DGI-10; Hoerger, Quirk, & Weed, 2012). Examples of items include "I would have a hard time sticking with a special, healthy diet" and "I cannot be trusted with money", rated on a scale ranging from 1 (strongly disagree) to 5 (strongly agree).

TABLE A1. Descriptive Statistics and Zero-Order Correlations (Pearson's r) among Measures at Each Time Point

	M	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. T1 Ego-Moving	—	—	—													
2. T1 ZTPI-Future	3.54	.54	-.03	(.78)												
3. T1 CFC-Total	4.50	.76	-.06	.52	(.82)											
4. T1 CFC-Future	4.80	.82	-.07	.48	.87	(.86)										
5. T1 CFC-Immediate	3.80	.90	.04	-.44	-.90	-.56	(.79)									
6. T1 BSCS	2.82	.61	-.03	.52	.44	.32	-.46	(.84)								
7. T1 DGI-10	3.51	.48	-.04	.48	.49	.43	-.43	.53	(.67)							
8. T2 Ego-Moving	—	—	**.58**	.04	.02	.03	-.01	.02	.05	—						
9. T2 ZTPI-Future	3.47	.57	-.09	**.69**	.39	.37	-.32	.48	.40	-.03	(.81)					
10. T2 CFC-Total	4.44	.78	-.02	.42	**.58**	.50	-.52	.35	.38	-.01	.57	(.81)				
11. T2 CFC-Future	4.69	.89	-.05	.44	.57	**.55**	-.46	.29	.38	-.01	.57	.89	(.88)			
12. T2 CFC-Immediate	3.81	.88	-.02	-.31	-.46	-.34	**.46**	-.33	-.30	.02	-.44	-.89	-.58	(.84)		
13. T2 BSCS	2.83	.57	.05	.39	.34	.22	-.37	**.72**	.44	.07	.47	.48	.38	-.49	(.84)	
14. T2 DGI-10	3.44	.52	-.02	.39	.39	.33	-.36	.47	**.65**	.02	.54	.60	.57	-.50	.57	(.74)

Note. $N = 345$. T1 = Time 1 (March, 2014). T2 = Time 2 (July, 2014). ZTPI-Future = Future subscale of Zimbardo Time Perspective Inventory. CFC-Total = Consideration of Future and Immediate (reversed) Consequences. CFC-Future = Consideration of Future Consequences. CFC-Immediate = Consideration of Immediate Consequences. BSCS = Brief Self-Control Scale. DGI-10 = 10-item version of the Delaying Gratification Inventory. Values in the diagonal are Cronbach's alphas, and values in bold are the stability correlations. All correlations greater than .10 are statistically significant at $p < .001$.

TABLE A2. Contingency Table Displaying Participants' Reference for Ego- or Time-Moving Representations at Each Measurement Point for Female and Male Participants

	July		
March	Ego-moving (Friday)	Time-moving (Monday)	Total
Ego-moving (Friday)	f=168/m=38	f=14/m=4	f=182/m=42
Time-moving (Monday)	f=32/m=8	f=45/m=21	f=77/m=29
Total	f=200/m=46	f=59/m=25	f=259/m=71

TABLE A3. Independent Sample *t*-Test Analyses of the Time Orientation Scores as a Function of Time Representation at Time 2

	Time representation (ambiguous Wednesday question)						
	Ego-moving (Friday; *n* = 87)		Time-moving (Monday; *n* = 248)				
Time orientation	*M*	*SD*	*M*	*SD*	*t*	*p*	Cohen's *d*
ZTPI-Future	3.45 [3.33, 3.56]	.56 [.49, .62]	3.48 [3.41, 3.56]	.58 [.53, .63]	.54	.588	.05
CFC-Total	4.43 [4.27, 4.58]	.74 [.60, .87]	4.45 [4.35, 4.55]	.81 [.73, .88]	.24	.815	.03
CFC-Future	4.69 [4.52, 4.85]	.81 [.68, .93]	4.70 [4.59, 4.81]	.92 [.84, 1.01]	.11	.912	.01
CFC-Immediate	3.83 [3.66, 4.01]	.87 [.72, 1.01]	3.80 [3.69, 3.90]	.88 [.80, .96]	-.32	.747	.03

Note. *df* = 333. ZTPI-Future = future subscale of the Zimbardo Time Perspective Inventory; CFC-Future = Consideration of future consequences. CFC-Immediate = Consideration of immediate consequences. Numbers in brackets are 95% confidence intervals based on bias-corrected accelerated bootstrapping with 10,000 re-samples.

Additional Analyses

One anonymous reviewer was interested to see whether participants who changed their answers to the Wednesday question scored differently on the ZTPI-Future when compared to those participants who gave the same answer over time. We have re-coded the answers to the Wednesday question to have three groups: those who consistently answered Monday or Friday, and those who changed their answers. We

then computed an ANOVA to examine whether these three group of participants differ in their time orientation scores. We report these findings in Table A4, and the findings show no difference between the groups.

TABLE A4. Analysis of Variance Comparing Participants Who Gave the Same Answer to the Wednesday Question over Time and Those Who Changed Their Answers on Their Time Orientation Scores at Time 2

		N	*M*	*SD*	*F*	*p*
ZTPI-Future	Time-moving (Monday)	206	3.50	0.56	0.63	0.53
	Change answer	58	3.43	0.62		
	Ego-Moving (Friday)	66	3.42	0.56		
CFC-Total	Time-moving (Monday)	206	4.46	0.77	0.12	0.89
	Change answer	58	4.40	0.86		
	Ego-Moving (Friday)	66	4.45	0.80		
CFC-Future	Time-moving (Monday)	206	4.73	0.87	0.63	0.53
	Change answer	58	4.58	1.02		
	Ego-Moving (Friday)	66	4.71	0.84		
CFC-Immediate	Time-moving (Monday)	206	3.81	0.87	0.03	0.97
	Change answer	58	3.78	0.86		
	Ego-Moving (Friday)	66	3.81	0.94		

Note. Total *df* = 329.