Moving Through Time: The Role of Personality in Three Real-Life Contexts

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**Abstract**

In English, two deictic space-time metaphors are in common usage: the Moving Ego metaphor conceptualizes the ego as moving forward through time and the Moving Time metaphor conceptualizes time as moving forward toward the ego (Clark, 1973). Although earlier research investigating the psychological reality of these metaphors has typically examined spatial influences on temporal reasoning (e.g., Boroditsky & Ramscar, 2002), recent lines of research have extended beyond this, providing initial evidence that personality differences and emotional experiences may also influence how people reason about events in time (Duffy & Feist, 2014; Hauser, Carter, & Meier, 2009; Richmond, Wilson, & Zinken, 2012). In this article, we investigate whether these relationships have force in real life. Building on the effects of individual differences in self-reported conscientiousness and procrastination found by Duffy and Feist (2014), we examined whether, in addition to *self-reported* conscientiousness and procrastination, there is a relationship between conscientious and procrastinating *behaviors* and temporal perspective. We found that participants who adopted the Moving Time perspective were more likely to exhibit conscientious behaviors, while those who adopted the Moving Ego perspective were more likely to procrastinate, suggesting that the earlier effects reach beyond the laboratory.

**Keywords:** Moving Ego; Moving Time; Time; Metaphor; Procrastination; Conscientiousness; Personality; Self-report; Behavior

1. Introduction

It has often been observed that in English, language from the relatively concrete domain of space is recruited to talk about the relatively abstract domain of time (e.g.,
Clark, 1973; Evans, 2004; Lakoff & Johnson, 1999; Traugott, 1978). Indeed, many metaphor theorists have claimed that the sensory and motor representations that derive from constant successful functioning in the cultural and physical environment are recycled to support abstract thought (Gibbs, 1994; Kövecses, 2000; Lakoff & Johnson, 1980, 1999). In the domain of time, for instance, these representations derive from the human experience of navigating through, orienting within, and observing motion in space. While there are various types of spatial metaphors for time in English, particular attention has been paid to two deictic space-time metaphors: the Moving Ego metaphor conceptualizes time as a stationary landscape that the active ego moves across, for example, We’re approaching Christmas and the Moving Time metaphor conceives of time as a conveyor belt that events move along, relative to a stationary ego, for example, Christmas is approaching (Clark, 1973; Lakoff & Johnson, 1999). In seminal research investigating the psychological reality of these two metaphors, Boroditsky (2000; Boroditsky & Ramscar, 2002) devised a series of experiments to examine whether engaging in thought about spatial motion under various circumstances might prime different construals of time. In one experiment, participants were asked to imagine moving toward a stationary object or to imagine an object moving toward them before answering the ambiguous question: Next Wednesday’s meeting has been moved forward 2 days. Which day is the meeting now that it’s been moved? (cf. McGlone & Harding, 1998). Based on the assumption that people’s understanding of time is grounded in their experiences in space (Lakoff, 1993; Lakoff & Johnson, 1999), it was hypothesized that imagining moving through space toward a stationary object would encourage participants to adopt the Moving Ego perspective (responding Friday) and imagining a moving object traveling through space toward the self would encourage participants to adopt the Moving Time perspective (responding Monday). As predicted, participants tended to respond in a prime-consistent manner to the Wednesday’s meeting question, suggesting that different ways of thinking about motion in space may influence a person’s conceptualization of time and their concomitant interpretation of a temporally ambiguous question. These preliminary results have been extended, with demonstrations that non-deictic spatial schemas (Kranjec, 2006; Núñez, Motz, & Teuscher, 2006), fictive motion schemas (Matlock, Ramscar, & Boroditsky, 2005; Ramscar, Matlock, & Dye, 2010) and abstract motion schemas (Matlock, Holmes, Srinivasan, & Ramscar, 2011) can also influence how people reason about events in time.

In addition to time, a variety of abstract domains draw upon the concrete domain of space, including emotions, health, social status, personality traits, etc. (Lakoff & Johnson, 1980), raising the possibility that these domains may be connected to time via shared spatial schemas. Although the majority of research investigating abstract thinking about time has hitherto been primarily focused on investigating spatial influences on temporal reasoning, recent lines of research have provided initial evidence that personality differences and emotional experiences may also influence an individual’s approach to time and resulting resolution of temporal ambiguity (Duffy & Feist, 2014; Hauser, Carter, & Meier, 2009; Richmond, Wilson, & Zinken, 2012; see also Lee & Ji, 2014; Margolies & Crawford, 2008; Ruscher, 2011). For example, Hauser et al. (2009)
investigated the link between the seemingly unrelated but similarly embodied abstract domains of anger and time, reasoning that anger is spatially grounded in approach-related motivations, which cause the active self to approach a goal (Harmon-Jones, 2003), much in the way that the self approaches the future in the Moving Ego metaphor. As such, Hauser et al. (2009) hypothesized that this approach-related spatial motivation could serve as an embodied cognitive link between the two domains. To test this hypothesis, they had participants complete a series of questionnaires for measuring trait anger (that is, anger as part of their personality) before responding to the Wednesday’s meeting question (Hauser et al., 2009). The results showed that participants who reported higher trait anger scores were more likely to adopt the Moving Ego perspective (responding Friday) than to adopt the Moving Time perspective (responding Monday), thus providing initial evidence for a relationship between anger and representations of time.

In another study, Richmond et al. (2012), reasoning that people with a strong sense of personal agency (Vallacher & Wegner, 1989) would be more likely to conceive of themselves as moving through time, investigated the relationship between level of perceived personal agency and temporal perspective. In one experiment, participants responded to the Wednesday’s meeting question before completing a questionnaire for assessing individual differences in the level of perceived personal agency (Richmond et al., 2012; Study 2). They found that participants who adopted the Moving Ego perspective reported significantly higher agency scores than participants who adopted the Moving Time perspective. These findings thus extend the range of spatially grounded individual differences that may influence people’s representations of time, demonstrating that people’s conceptualization of time likely results from a culmination of factors, rather than a single factor (Richmond et al., 2012).

More recently, Duffy and Feist (2014) investigated whether individual differences in conscientiousness (John, 1990) and procrastination (Lay, 1986) would contribute to a person’s view of time and, hence, to their interpretation of the ambiguous Wednesday’s meeting question. Personality research shows that in contrast to procrastinators, who tend to defer or postpone action (Milgram, Mey-Tal, & Levison, 1998; Milgram & Tenne, 2000), conscientious individuals tend to prioritize action (Back, Schmukle, & Egloff, 2006; John & Srivastava, 1999). In other words, procrastination involves the movement of tasks “forward” into the future, in a direction defined by the ego’s movement through time (in line with the Moving Ego perspective) while conscientiousness involves the movement of tasks “forward” toward the present, ergo toward the ego (in line with the Moving Time perspective). Thus, Duffy and Feist (2014) hypothesized that the habitual movement of tasks may be a contributor to the temporal perspective adopted in response to the Wednesday’s meeting question, with procrastinators favoring the Moving Ego perspective, and conscientious individuals favoring the Moving Time perspective. To test these predictions, they had participants complete a questionnaire for measuring trait conscientiousness (John, 1990) and trait procrastination (Lay, 1986). Sample items included I do not do assignments until just before they are to be handed in (procrastination) and I see myself as someone who does things efficiently (conscien-
tiousness). Participants then responded to the Wednesday’s meeting question. Consistent with the predictions, participants who adopted the Moving Ego perspective (answering Friday) averaged higher procrastination scores, as well as lower conscientiousness scores than participants who adopted the Moving Time perspective (answering Monday).

While recent research has provided initial evidence that individual personality differences that may be conceptualized spatially may also influence an individual’s approach to time and resulting resolution of temporal ambiguity, all of these studies have relied on participants’ self-reports regarding personality traits, leaving open the question of whether these relationships have force in real life. To address this question, three experiments examined the resolution of temporal ambiguity, using as our impetus Duffy and Feist’s (2014) investigation of conscientiousness and procrastination in relation to temporal perspective. Thus, the current study compares the resolution of temporal ambiguity to the timeliness of workers traveling to work, that is, if they were early, on time, or late (Experiment 1), to the timeliness of students submitting an essay (Experiment 2), and to the time of arrival for a scheduled appointment (Experiment 3). The results from these three experiments provide further validation of the initial findings while also providing evidence that individual differences in time management as observed in real-life contexts may influence how people think about time and how they resolve temporal ambiguities.

2. The present studies

2.1. Experiment 1

While many kinds of behavior may be associated with conscientiousness and procrastination, one measure that has been demonstrably related to both of these personality variables across a number of studies is that of punctuality (e.g., Ashton, 1998; Back et al., 2006; Díaz-Morales, Ferrari, Díaz, & Argumedo, 2006; Roberts, Bogg, Walton, Chernyshenko, & Stark, 2004; Solomon & Rothblum, 1984). For instance, in one study investigating reasons for procrastinating among students, Solomon and Rothblum (1984) found lack of punctuality to be the measure of behavior that correlated most significantly with self-reported procrastination. In another study investigating the influence of personality on punctuality in a real-life setting, Back et al. (2006) found that participants who reported higher conscientiousness scores tended to arrive earlier for their scheduled appointment. Thus, punctuality provides an objectively observable real-world reflex of procrastination and conscientiousness.

Taken together, these findings suggest a way to extend Duffy and Feist’s (2014) results using a measure of real-life behavior: we hypothesized that there would be differences in temporal reasoning between people who are on time for work and those who are not. To test this, in Experiment 1, we interviewed people at a bus station who were en route to work. We predict that, in response to the Wednesday’s meeting question, people who are
running early would be more likely to adopt the Moving Time perspective (responding Monday), whereas people who are running late would be more likely to adopt the Moving Ego perspective (responding Friday).

2.1.1. Participants

One hundred and four adults with an age range of 18–59 years and a mean age of 33 years participated in this experiment in exchange for a small reward. Twenty participants were male and 65 were female. All participants were native speakers of English.

2.1.2. Materials and procedure

The experiment took place on a Wednesday morning between 7.30 am and 9.30 am at Newcastle Haymarket bus station. People waiting for a bus were approached individually by an experimenter. The experimenter greeted each person and asked if they were traveling to work. People who responded Yes were then asked if they would be willing to take part in a brief survey. Following informed consent, participants provided demographical information (age, gender, and native language) before answering two test questions and the Wednesday’s meeting question. For the first test question—Are you on time for work—participants answered using one of the three options provided: Yes, No, or Not applicable. For the second test question—If yes or no which applies most to you?—participants rated the extent to which they were on schedule for work using one of five options: Very late, Late, On time, Early, or Very early. The order in which these options were presented was counterbalanced across participants. Participants then provided a response to the ambiguous temporal question: Next Wednesday’s meeting has been moved forward 2 days. What day has the meeting been rescheduled to? All questions were administered orally and all responses were written down by the experimenter throughout the exchange.

2.1.3. Results and discussion

The answers to the two test questions were compared against the answer to the Wednesday’s meeting question for each participant. As predicted, participants who were on schedule or early were more likely to adopt the Moving Time perspective (responding Monday), whereas participants who were running late were more likely to adopt the Moving Ego perspective (responding Friday). Concretely, 62.7% of participants on schedule responded Monday in comparison to 17.2% of participants who were not. A chi-square test revealed a reliable difference in the proportion of Monday and Friday responses between the two groups: \( \chi^2_{1,104} = 17.262, p < .0001 \) Cramer’s V = 0.407. For the second test question, which measured the extent to which each participant was on schedule for work, responses were coded with a number from 1 to 5, with 1 denoting I am very late and 5 denoting I am very early. As predicted, participants who adopted the Moving Time perspective (responding Monday) were more likely to be running early (\( M = 3.279; SD = 0.760 \)) than participants who adopted the Moving Ego perspective (responding Friday) (\( M = 2.635; SD = 0.908 \)). \( t(102) = 3.279, p < .001, d = 0.643. \)

Building on the effects of self-reported conscientiousness and procrastination on temporal reasoning found by Duffy and Feist (2014) Experiment 1 provides converging
evidence that, in addition to self-reported conscientiousness and procrastination, there is a relationship between conscientious and procrastinating behaviors and temporal perspective, as observed in a real-life setting. The results, however, raise further questions. One shortfall is that the measure of behavior relied on participants’ self perceptions of the extent to which they were on schedule for work; thus, giving rise to the question of whether the effects have observable, real-world consequences using more objective measures. To address this, in Experiment 2 we sought a more objective measure of behavior, surveying students as they arrived to submit an assignment.

2.2. Experiment 2

Procrastination is argued to be especially common in the academic domain, with up to 95% of students procrastinating consistently with academic tasks such as studying for examinations, keeping up-to-date with weekly seminar reading and writing essays (e.g., Ellis & Knaus, 1977; Ferrari & Beck, 1998; see also Solomon & Rothblum, 1984; Steel, Brothen, & Wambach, 2001). Researchers investigating psychological explanations for procrastination among students have assessed procrastinating behavior via the times taken by students to submit assignments (Beswick, Rothblum, & Mann, 1988). Similarly, research investigating conscientiousness and its relation to professionalism among medical students has made use of on-time submission of assignments as an objective measure of conscientiousness (Finn, Sawdon, Clipsham, & McLachlan, 2009; McLachlan, Finn, & Macnaughton, 2009). Because the punctuality of the submission of an assignment provides an objectively observable index of conscientiousness/procrastination, Experiment 2 investigated whether students submitting their assignment further in advance of the deadline would reason about time differently from students submitting their assignment closer to the deadline, as evidenced by the temporal perspective they adopted in response to the Wednesday’s meeting question. We predict that students who submit their essay earlier would be more likely to adopt the Moving Time perspective (responding Monday), whereas students who submit their essay later would be more likely to adopt the Moving Ego perspective (responding Friday).

2.2.1. Participants

Sixty undergraduate students from Northumbria University, with an age range from 19 to 30 and a mean age of 21 years, participated in this experiment. Twenty-one participants were male and 39 were female. All participants were native speakers of English.

2.2.2. Materials and procedure

The experiment took place on a Wednesday. Participants were approached individually by an experimenter at the Student Advice and Support Centre on the Northumbria University campus, where students based in the Faculty of Arts and Social Sciences are required to submit their assignments for formal assessment. The experimenter greeted each participant and asked if they would be willing to take part in a brief survey. Following
informed consent, participants provided demographical information (age, gender, and native language) before answering the test question *How far in advance of the deadline did you submit your assignment?* and then providing a response to the ambiguous temporal question *Next Wednesday’s meeting has been moved forward 2 days. What day has the meeting been rescheduled to?* All questions were administered orally and all responses were written down by the experimenter throughout the exchange.

2.2.3. Results and discussion

The answer to the test question was compared against the response to the Wednesday’s meeting question for each participant. As predicted, participants who adopted the Moving Ego perspective (responding *Friday*) were submitting their assignment closer to the deadline ($M = 145$ min prior; $SD = 82$ min) than participants who adopted the Moving Time perspective (responding *Monday*) ($M = 208$ min prior; $SD = 116$ min), $t(58) = 2.495, p = .015, d = 0.635$. The results thus extend upon the findings in Experiment 1, providing further evidence that the relationship between temporal perspective and self-reported procrastination and conscientiousness is matched by the relationship between temporal perspective and procrastinating/conscientious behaviors.

Across two experiments, we have observed connections between time-management behaviors and temporal perspective sampled outside the laboratory. However, as in much related research, the findings rely on the interpretation of a single ambiguous question; thus, giving rise to the question of whether we would observe similar effects using different dependent variables for measuring temporal perspective. If the Wednesday’s meeting question is a robust and reliable measure of temporal perspective, we would expect to observe a similar pattern of results using other ambiguous temporal questions that make use of different temporal units, for example, hours within the day, *Tomorrow’s noon meeting has been moved forward 2 hours* and months within the year, *The October meeting has been moved forward 2 months* (cf. Kranjec, Cardillo, Schmidt, & Chatterjee, 2010; Lai & Boroditsky, 2013; Núñez et al., 2006). Indeed, research shows that people tend to be consistent in their representations of time, such that people who imagine moving forward a meeting scheduled for Wednesday by 2 days to Monday (as opposed to Friday) are also more likely to imagine moving forward a meeting scheduled for noon by 2 hours to 10 am (as opposed to 2 pm) (Núñez et al., 2006; cf. Richmond et al., 2012). However, these measures have yet to be used in conjunction with the sampling of real-world behaviors.

To address this issue, Experiment 3 investigated whether people arriving earlier for a scheduled appointment would reason about time differently to people arriving later for a scheduled appointment (cf. Back et al., 2006). Extending on from the Wednesday’s meeting question, participants responded to two different questions intended to measure temporal perspective: the noon meeting question and the October meeting question. Building on earlier findings, we predict that people who arrive early would be more likely to adopt the Moving Time perspective (indicated by *10 am* and *August* responses), whereas people who arrive late would be more likely to adopt the Moving Ego perspective (indicated by *2 pm* and *December* responses).
2.3. Experiment 3

2.3.1. Participants

Forty-five adults with an age range of 19–65 years and a mean age of 38 years participated in this experiment in exchange for a gift voucher. Eighteen participants were male and 27 were female. All participants were native speakers of English.

2.3.2. Materials and procedure

The experiment took place between January and March. Participants were recruited through flyers that were distributed in local shops and restaurants, as well as through an online advertising website. To take part in the study, participants were instructed to contact the experimenter via email. They were then allocated an appointment time and instructed that they should arrive at a specified meeting point—namely, the entrance of the Lipman coffee shop on the Northumbria University campus—at the time allocated. The experimenter recorded the arrival time of each participant. Lateness was calculated by the number of minutes between the appointment time and the time of the participant’s arrival and earliness was calculated by the number of minutes between the appointment time and the time of the participant’s arrival multiplied by $-1$ (cf. Back et al., 2006); hence, positive scores indicate late arrival and negative scores indicate early arrival (e.g., 5 min late; 0 min on time; −5 min early). Following informed consent, all participants completed the study using a pen while sitting down at a table. To begin with, participants provided demographical information (age, gender, native language, occupation, and highest level of education) before undertaking a study comprised of six tasks that were unrelated to the current experiment. The two ambiguous meeting test questions appeared on separate pages and were interspersed between the different tasks (cf. Boroditsky, 2000). Specifically, the first test question appeared after task 3 (a vocabulary task) and the second test question appeared after task 5 (an author recognition task). Participants read each test question before indicating when the meeting had been rescheduled to. The order of the two test questions was counterbalanced across participants.

2.3.3. Results and discussion

The time of arrival ranged from 22 min early to 25 min late. On average, participants arrived 2.89 min before their appointment time ($SD = 9.14$). Thirty participants were early, 0 were exactly on time, and 15 were late. As predicted, participants who arrived early for their appointment were more likely to adopt the Moving Time perspective (indicated by 10 am and August responses), whereas participants who arrived late were more likely to adopt the Moving Ego perspective (indicated by 2 pm and December responses). Concretely, for the noon meeting question, 63.3% of participants who arrived early responded 10 am in comparison to 36.7% of participants who arrived late. A chi-square test revealed a reliable difference in response: $\chi^2_{1,45} = 4.132$, $p = .042$ Cramer’s $V = 0.303$. Similarly, for the October meeting question, 66.7% of participants who arrived early responded August in comparison to 33.3% of participants who arrived late. Again, a chi-square test showed a reliable difference in response: $\chi^2_{1,45} = 4.500$, 

$p = .034$ Cramer’s $V = 0.316$. Participants were also highly consistent in their answers. Those who responded 10 am also answered August (88.0%), and those who responded 2 pm also answered December (95.0%): $\chi^2_{1,45} = 30.633, p < .0001$ Cramer’s $V = 0.825$.

Looked at another way, for the noon meeting question, participants who adopted the Moving Time perspective arrived earlier on average ($M = -6.130; SD = 8.465$) than participants who adopted the Moving Ego perspective ($M = 0.750; SD = 8.744$), $t(45) = 2.585, p = .013, d = 0.799$. Similarly, for the October meeting question, participants who adopted the Moving Time perspective arrived earlier on average ($M = -5.800; SD = 8.367$) than participants who adopted the Moving Ego perspective ($M = 0.750; SD = 8.944$), $t(45) = 2.531, p = .015, d = 0.756$.

These results provide corroborating evidence that time-management behaviors, as sampled in real-world situations, correlate with the perspective adopted in the resolution of temporal ambiguity. Furthermore, Experiment 3 extends the findings to two additional temporal reasoning questions, strengthening our confidence in the relationships uncovered and suggesting that the original effects observed were not due to the specific item being used, that is, the Wednesday’s meeting question.

3. General discussion

Hitherto, research investigating abstract thinking about time has typically been concerned with investigating spatial influences on temporal reasoning. However, the influence of space as a source domain for metaphor extends beyond time, encompassing other abstract domains such as emotion, social status, and personality traits. Our understanding of the workings of metaphor is incomplete without an investigation of potential connections among similarly grounded abstract domains.

Recent lines of research have extended beyond demonstrating the psychological reality of space-time metaphors, providing initial evidence that personality differences and emotional experiences, particularly those grounded in spatial schemas, may also influence an individual’s approach to time and resulting resolution of temporal ambiguity (Duffy & Feist, 2014; Hauser et al., 2009; Richmond et al., 2012; see also Lee & Ji, 2014; Margolies & Crawford, 2008; Ruscher, 2011). However, these studies have all relied on participants’ self-reports regarding personality traits, introducing a measure of uncertainty into the conclusions regarding the connections uncovered. Building on insights from Duffy and Feist (2014) who found that individual differences in self-reported conscientiousness and procrastination may contribute to a person’s view of time and, hence, to their interpretation of the ambiguous Wednesday’s meeting question, we sought to investigate whether these relationships have force beyond the laboratory. Across three experiments, we examined whether, in addition to self-reported conscientiousness and procrastination, there is a relationship between conscientious and procrastinating behaviors and temporal perspective.

In Experiment 1, we investigated whether the extent to which a traveler was on time for work would influence the temporal perspective they adopted in response to the
Wednesday’s meeting question. Consistent with earlier findings which showed that high degrees of self-reported conscientiousness are demonstrably related to the Moving Time perspective (Duffy & Feist, 2014) and that conscientious behavior is associated with punctuality (Ashton, 1998; Back et al., 2006), we found that people who adopted the Moving Time perspective (responding Monday), were more likely to be running early than were people who adopted the Moving Ego perspective (responding Friday).

In Experiments 2 and 3, we moved beyond self-assessment of timeliness, investigating the relationship between objectively observable on-time behavior and temporal perspective. Experiment 2 examined whether students submitting their assignment further in advance of the deadline would reason about time differently from students submitting their assignment closer to the deadline, while Experiment 3 examined the relationship between temporal perspective and timeliness for a scheduled appointment, while also extending the sampling measure to two new temporal reasoning questions. In line with earlier findings, we found in both cases that participants who adopted the Moving Ego perspective were meeting their obligations later on average than participants who adopted the Moving Time perspective, thus extending earlier findings to encompass more objectively measurable behaviors.

Taken together, the results from these experiments provide further validation of earlier findings that individual differences in conscientiousness and procrastination may influence how people think about time and how they resolve temporal ambiguities (Duffy & Feist, 2014), suggesting psychologically real connections between similarly grounded abstract domains. In addition, the results extend prior work in two ways. First, these results provide evidence of a relationship between naturally occurring conscientious and procrastinating behaviors and temporal perspective, thus taking the findings beyond the laboratory to strengthen our confidence in the relationships uncovered. Secondly, by drawing on additional measures of adopted temporal perspective, these studies generalize previous findings to temporal reasoning at different time scales, suggesting a consistency between temporal reasoning and the ways in which we move through time.

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Notes

1. In line with the opposed directionality of task movement, personality research suggests that procrastination tends to operate in parallel to (lack of) conscientiousness
in predicting behavior (e.g., Lay, 1997; Johnson & Bloom, 1995; Schouwenburg & Lay, 1995).

2. Twelve participants were unwilling to disclose their age; thus, the range and mean is calculated on the basis of the remaining 92 participants.

3. No participant chose the Not applicable option.

4. In line with earlier findings, this student population demonstrated a preference for answering Friday (58.3%) in comparison to Monday (41.7%) (cf. Boroditsky, 2000; Duffy & Feist, 2014; Núñez, 2007; Sullivan & Barth, 2012).

5. Similarly to the Wednesday meeting question, the noon meeting and the October meeting questions are ambiguous, giving rise to two possible responses: 10 am or 2 pm (the noon meeting question) and August or December (the October meeting question).

References


time-reference-point distinction in metaphorical construals of time. Metaphor and Symbol, 21(3), 133–146.
Ramscar, M., Matlock, T., & Dye, M. (2010). Running down the clock: The role of expectation in our
Personality and Individual Differences, 18, 481–490.
Personality and Individual Differences, 30, 95–106.
Sullivan, J. L., & Barth, H. C. (2012). Active (not passive) spatial imagery primes temporal judgements. The
Quarterly Journal of Experimental Psychology, 65(6), 1101–1109.
Ferguson, & E. A. Moravcsik (Eds.), Word structure: Universals of human language (Vol. 3, pp. 369–
Personality Processes and Individual Differences, 57(4), 660–671.