
Openness to Attitude Change as a Function of Temporal Perspective

C. Nathan DeWall

Florida State University

Penny S. Visser

Lindsey Clark Levitan

University of Chicago

Three studies investigated the impact of temporal perspective on people's dominant social goals and explored the implications of these goals for openness to attitude change. Participants who perceived time as limited expressed social preferences in accordance with emotion-regulation goals (Study 1), were more prone to modify their attitude to bring it into line with the attitude of an anticipated social partner (Study 2), and were more likely to go along with peer consensus opinion on a campus issue (Study 3) than were participants who perceived time as expansive. These studies demonstrate that perception of time plays a vital role in motivating social goals within the persuasion context.

Keywords: attitudes; persuasion; temporal perspective; socioemotional selectivity theory

An awareness of time pervades virtually all dimensions of human life. Although our lives unfold in the present moment, much of the time our attention is riveted on the past or the future. We ruminate about the choices we have made, the behaviors we have engaged in, and the opportunities we have missed. We also revel in memories of our past achievements and happy occasions, and we worry about upcoming challenges, fantasize about new prospects, and plan for anticipated events.

Even when our attention is focused on the present moment, awareness of time pervades our experience. Our reactions to a particular outcome are powerfully shaped by our memories of the outcomes that preceded it (e.g., Gardiner & Java, 1993), and the decisions we make in the present moment often are heavily influenced by anticipated future consequences (e.g., Bechara, Damasio, Damasio, & Lee, 1999; Mellers,

Schwartz, & Ritov, 1999). This chronic awareness of time is a fundamental aspect of human life, arguably one that sets humans apart from other mammals (Roberts, 2002). Indeed, some scholars have asserted that the monitoring of time was instrumental in the evolution of human thought and cognition (Suddendorf & Corballis, 1997).

Recent research has demonstrated that awareness of time has important implications for social life. Perhaps most notably, in support of socioemotional selectivity theory, Carstensen and colleagues (e.g., Carstensen, 1993, 1995; Carstensen & Frederickson, 1998; Carstensen, Isaacowitz, & Charles, 1999) have demonstrated that perceptions of time as limited or expansive profoundly shape the priority assigned to various social goals. People who perceive time as limited tend to place a high priority on regulating their affective experience through harmonious interactions with others. In contrast, people who perceive time as expansive generally prioritize the acquisition of accurate information about the world, which enables them to prepare for the future. These motives shape the choices that individuals make in social situations.

The current research builds on these prior findings, exploring the impact of temporal perspective on the social goals that people pursue within the persuasion

Authors' Note: This research was supported in part by National Science Foundation Grant BCS-0242194 to Penny S. Visser. Correspondence concerning this article should be addressed to C. Nathan DeWall, Department of Psychology, Florida State University, Tallahassee, FL 32306-1270; e-mail: dewall@darwin.psy.fsu.edu.

PSPB, Vol. 32 No. 8, August 2006 1010-1023

DOI: 10.1177/0146167206288009

© 2006 by the Society for Personality and Social Psychology, Inc.

context and tracing the implications of these goals for susceptibility to attitude change. Specifically, we explore the notion that when people perceive time as limited they may become quite malleable, prepared to modify their attitudes as necessary to remain in step with the opinions expressed by their peers or anticipated social partners in an effort to facilitate harmonious social encounters. The perception that time is expansive, in contrast, may lead to a more resistant stance in service of the overriding goal of achieving and maintaining an accurate understanding of the world. Individuals who perceive time as expansive may be quite unwilling to adopt the attitudes of those around them without a cogent rationale for doing so.

We begin below by reviewing the basic tenets of socioemotional selectivity theory, from which our hypotheses about temporal perspective and openness to attitude change were derived. We then report three studies that test these hypotheses.

SOCIOEMOTIONAL SELECTIVITY THEORY

At the heart of socioemotional selectivity theory is the notion that the goals people pursue in their interactions with others are intimately linked with their temporal perspective (Carstensen et al., 1999). In particular, the theory differentiates two basic classes of social motives: those that are geared toward regulating one's emotional state through social interactions and those aimed at acquiring accurate knowledge about the social and physical world. These goals sometimes come into conflict, forcing individuals to prioritize one goal over the other when choosing a course of action. According to socioemotional selectivity theory, one determinant of the relative priority attached to these goals is the perception of time as expansive (extending long into the future) or as limited by an impending endpoint.

The theory suggests that when time is perceived as expansive, knowledge acquisition goals tend to dominate over emotion-regulation goals. In an effort to prepare for the challenges and opportunities that lie ahead, people are less motivated to ensure pleasant social encounters at the expense of opportunities to expand their knowledge base. But when time is perceived as limited, emotion-regulation goals tend to take precedence over knowledge acquisition. Preparing for the future naturally recedes in importance and people's attention shifts to the present moment and how to enhance its affective quality by maximizing enjoyment and minimizing strife in whatever time remains.

Perhaps the most salient metric available to people as they monitor the time available to them is the distance

to their own eventual death. As a result, socioemotional selectivity theory makes clear predictions about changes over the adult life course in the dominance of knowledge acquisition and affect regulation goals. The theory posits that young adults typically perceive time as expansive, motivating them to prioritize the acquisition of knowledge. As people age, however, time is increasingly perceived as a limited resource, causing people to focus less on preparing for the future and more on regulating their current affective states.

A great deal of empirical evidence supports these various predictions. For example, a number of studies have demonstrated systematic differences between young adults and older adults in their social preferences. Given a choice, older adults tend to prefer social partners with whom they anticipate having a pleasant interaction, whereas young adults tend not to show this preference (e.g., Fredrickson & Carstensen, 1990; Fung, Carstensen, & Lutz, 1999). More recent evidence suggests that older adults exhibit a variety of processing preferences or biases that indicate a "positivity effect" in attention and memory relative to younger adults (Carstensen & Mikels, 2005; Mather & Carstensen, 2005). Older adults tend to devote more attention to and have better recall for positive images compared to younger adults (Charles, Mather, & Carstensen, 2003; Mather & Carstensen, 2005), and older adults spend more time reviewing positive features and less time reviewing negative features of choice options than do younger adults (Mather, Knight, & McCaffrey, 2005).

Similar discrepancies have been found between individuals who differ not in age but in distance to a significant endpoint. For example, in the months immediately preceding the return of Hong Kong to the People's Republic of China (bringing about a highly salient end to a political era), young and old Hong Kong residents alike exhibited a preference for familiar social partners with whom pleasant interactions were assured over social partners who may provide new information (Fung et al., 1999). One year after the transition, however, the age differences in social partner preferences reemerged: With no impending endpoint on the horizon, young adults tended to choose social partners from whom they anticipated learning new things, whereas older adults continued to choose social partners with whom pleasant interactions were assured.

Systematic differences also have been documented among young men who vary in health status (HIV negative, HIV positive but asymptomatic, HIV positive with symptoms). The closer these young men were to the anticipated end of their lives, the more their representations of social partners tended to be organized around the dimension of affective potential (Carstensen & Fredrickson, 1998). College seniors (for whom an ending

point was quickly approaching) also have been shown to devote less of their attention to sad faces in a visual attention task compared to college 1st-years (for whom time was extending long into the future), presumably out of a motivation to maintain a positive emotional state (Pruzan & Isaacowitz, in press). Similarly, older adults who imagine a medical breakthrough that guarantees to add 20 additional years to their lives make social choices that mirror those of young adults (e.g., Fung et al., 1999). These results suggest that temporal perspective, and not age per se, regulates the social motives that govern people's day-to-day lives.

Taken together, a diverse body of evidence supports the basic tenets of socioemotional selectivity theory, suggesting that the presence of a salient endpoint powerfully shapes the priority that individuals assign to particular social goals, and these goals influence a range of cognitive and behavioral outcomes.

Implications of Temporal Perspective for Attitude Strength

One set of outcomes that has not yet been explored with respect to temporal perspective involves the durability of people's attitudes. Some attitudes are very firm, resistant to even the strongest challenges and persistent over long spans of time. Other attitudes are quite pliable, yielding to the slightest provocation and fluctuating greatly over time. Roughly a dozen attitude features that differentiate strong from weak attitudes have been identified (e.g., the accessibility of the attitude, the volume of knowledge upon which the attitude is based, the certainty with which the attitude is held; for review, see Visser, Bizer, & Krosnick, in press).

Recently, however, attitude strength researchers have broadened the scope of their investigations. In addition to these intraindividual factors, scholars have begun to explore various features of the social context that may have implications for attitude strength. For example, the attitudinal composition of an individual's social network has been shown to contribute to the strength and durability of his or her attitudes: People who are embedded within attitudinally congruent social networks (i.e., made up of others who share one's views on an issue) are more resistant to attitude change than people who are embedded within attitudinally diverse social networks (Visser & Mirabile, 2004).

Time may be another aspect of the social context with implications for attitude strength. Specifically, if an impending endpoint motivates people to regulate their affective states through positive social encounters, it may induce a general state of flexibility and openness to social influence. In contrast, if perceiving time as expansive motivates people to acquire accurate knowledge

about the world, it may lead them to adopt a more skeptical orientation to the social world. Adopting a malleable orientation to the social world may be a highly effective way of minimizing conflict and maximizing the likelihood of enjoying smooth social interactions, whereas pursuing knowledge-acquisition goals may lead people to be relatively insensitive to such social cues as the attitudes of others, instead requiring a solid evidentiary base for adopting new attitudes and changing old ones.

This is not to suggest that the relation between particular social goals and attitude flexibility or rigidity is invariant. To the contrary, people often meet their dominant social goals in different ways under different circumstances. Although the dominant goal of having pleasant social interactions may usually lead people to adopt a flexible stance, there may well be circumstances under which attitudinal rigidity will better serve the goal. Although the preparatory goal inspired by an expansive temporal perspective may tend to lead people to adopt a skeptical stance, there are likely to be conditions under which the dominant goal is better served by being quite open to attitude change. This is an issue to which we return in the General Discussion.

Present Research

We conducted three experiments to test the hypothesis that temporal perspective influences the social goals that people pursue within the persuasion context, with important implications for openness to attitude change.

In three studies, temporal perspective was manipulated by having college-age participants (for whom the default is to perceive time as expansive) read an essay that portrayed time as limited, an essay that portrayed time as expansive, and an essay that was neutral with respect to time. The time-limited essay was designed to focus participants' attention on an upcoming endpoint in their own lives: graduation from college. This manipulation was motivated by empirical evidence that graduation provides a powerful punctuation point for college students that, similar to other kinds of endpoints, inspires patterns of social behavior that reflect affect-regulation goals (Fredrickson, 1995). We expected that focusing participants' attention on this upcoming endpoint would make salient for them the limited amount of time remaining in the current chapter of their lives. The time-neutral essay, in contrast, was designed to leave intact participants' natural sense of time extending long into the future. The time-expansive essay was intended to portray time as extending into the future and was thematically comparable to the time-constraint essay. The time-expansive essay

focused participants' attention on a salient beginning point from their own lives: entering college. The full contents of each essay are presented in the appendix.

Study 1 explored the impact of temporal perspective on participants' social preferences within the interpersonal persuasion context. In particular, we explored the notion that a salient endpoint would lead participants to endorse social strategies geared toward facilitating pleasant interactions rather than defending their own points of view (e.g., not pointing out weaknesses in another person's argument, going along with others' views in an effort to get along with them, avoiding topics that are likely to induce disagreement). In our second and third studies, we explored the implications of this shift in social goals for openness to attitude change. In Study 2, we explored participants' tendencies to adjust their attitudes to bring them into line with the attitude of an anticipated discussion partner. In Study 3, we assessed the flexibility of participants' attitudes in response to the ostensible attitudes of their peers on a controversial campus policy. Study 3 also examined whether openness to attitude change was specific to participants who perceived time as limited or whether features of the essay material (e.g., level of interest in material, relation to affiliation goals) could explain this effect. In each of these studies, we expected that an impending endpoint would lead participants to adopt a flexible stance, making them especially likely to modify their own attitudes by bringing them into line with others' views to facilitate harmonious social interactions down the road.

STUDY 1

We set out to explore the impact of temporal perspective on the endorsement of social strategies that serve different motives—the facilitation of harmonious interpersonal interactions versus the defense of one's point of view.

Method

PARTICIPANTS

Forty-four undergraduates participated in this study.

MATERIALS AND PROCEDURE

Participants were approached at various university locations and were asked to complete a brief survey regarding student life.

Temporal perspective manipulation. The survey began with one of two essays designed to manipulate temporal perspective. Half of the participants read an essay that made salient an upcoming endpoint in their lives: their

own graduation from college. Participants were told that the essay, titled "Closing Time," had been written by an undergraduate at their institution the previous year. The essay contained a first-person account of the author's thoughts as graduation approached. In an effort to minimize differences across the experimental conditions in participants' moods, the essay included both positive (e.g., the excitement of a moving to a new city, the opportunity to use one's education in the real world) and negative (e.g., saying goodbye to friends, leaving behind familiar places) events involved in graduating from college. Participants were instructed to read the essay carefully and to try to empathize with the thoughts and feelings the author was experiencing at the time. To bolster the strength of the manipulation, participants were asked to briefly describe the thoughts and feelings they expected to experience before their own graduation.

Other participants read an essay that was neutral with respect to time so as not to interfere with participants' already expansive perception of time. The essay was purportedly written by a student from another university who was majoring in agricultural business. The essay contained a first-person account of the author's thoughts about current industrial agricultural practices. As in the time-limited condition, participants were asked to read the essay carefully and to try to empathize with the thoughts and feelings the author was experiencing at the time. After reading the essay, participants were asked to list the thoughts and feelings they experienced as they read the essay.

Affect. Immediately after reading and listing their thoughts about the essays, participants completed several measures taken from the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). The internal reliability of the positive and negative affect items was adequate (Cronbach's $\alpha = .78$ and $.67$, respectively) so responses were averaged to create positive affect and negative affect indices.

Social preferences. Participants next completed a series of items designed to reveal their currently salient social goals. In particular, the items assessed the relative importance that participants placed on ensuring pleasant social interactions when discussing their views with others versus articulating and defending their positions. Participants reported the degree to which they agreed or disagreed with the statements, "There's nothing wrong with going along with what others say in order to get along with them," "I think it is desirable to go along with the opinions of others when confronted with a controversial issue," "I think it is usually better not to point out a weakness in another person's argument, even if I am good friends with that person," and

“Although I may enjoy the value of a good argument, it is sometimes more important to be a good listener.” Participants expressed their endorsement of each statement on a fully labeled, 7-point, bipolar scale ranging from *disagree strongly* to *agree strongly*. Responses were reverse-scored when necessary so that higher scores always reflected a stronger preference for facilitating smooth social interactions.

Demographic measures. After completing the social preference items, participants completed a brief demographic questionnaire assessing age, sex, race, and year in school.

Results

Participant gender and year in school. There were no significant effects related to participant gender or year in school in this or any of the other studies reported in this article. These variables are therefore not mentioned further.

Positive and negative affect. We first explored the possibility that the experimental manipulation of temporal perspective influenced participants' mood states. To do so, we conducted a one-way ANOVA on both the positive and the negative affect indices. The temporal perspective manipulation did not influence participants' positive or negative affective states, $F(1, 42) = .24$, *ns*, and $F(1, 42) = 1.65$, *ns*, respectively.

Social preferences. In a series of ANOVAs, we next assessed the impact of temporal perspective on participants' social preferences. Contrary to expectations, the items did not form a reliable scale. Therefore, we performed analyses that examined each item separately. As predicted, participants for whom an impending endpoint was salient endorsed social strategies that facilitated positive interactions with others to a greater extent than participants for whom time was perceived as expansive. Participants in the time-constraint condition found it more desirable to go along with the opinions of others when confronted with a controversial issue, and they were more inclined to think that it is best not to point out a weakness in another person's argument, $F(1, 42) = 9.17$, $p = .004$, and $F(1, 42) = 4.39$, $p = .04$, respectively. Participants in the time-constraint condition also were more likely to agree that there is nothing wrong with going along with what others say to get along with them and to say that although they may enjoy the value of a good argument, it is sometimes more important to be a good listener, $F(1, 42) = 4.78$, $p = .03$, and $F(1, 42) = 5.04$, $p = .03$, respectively. Thus, participants who contemplated an upcoming endpoint expressed social preferences that were aimed at facilitating positive interactions with others rather

than articulating and defending their own points of view.

Discussion

With their lives stretching out before them, young adults naturally perceive time as expansive and tend to place a high priority on knowledge acquisition goals. Nevertheless, young adults do sometimes experience temporal constraints and, in these situations, their goal priorities shift accordingly (e.g., Fredrickson & Carstensen, 1990). In the current study, we focused some of our participants' attention on an impending endpoint in their lives in an effort to temporarily alter their temporal perspectives. As expected, doing so led them to prefer social strategies that facilitate pleasant social encounters as opposed to those that enable them to staunchly defend their views.

These results provide preliminary support for the notion that changes in temporal perspective lead to changes in social goals that are relevant to the persuasion context. When time was perceived as limited, participants seemed to adopt a flexible, “go along to get along” approach to social interactions likely to render them susceptible to persuasion. They were disinclined to point out the weaknesses in others' arguments or stand their ground in a disagreement, preferring instead to adopt the opinions of others when a controversial topic arises. The results of Study 1 also provide evidence that the temporal perspective manipulation did not produce any changes in currently experienced positive or negative affect. All of this is consistent with the notion that temporal perspective is a social contextual feature with important implications for openness to attitude change.

STUDY 2

Study 1 suggested that a salient endpoint led participants to adopt affect-regulation social goals. The current study further explored the role of affect-regulation interpersonal goals in increasing openness to attitude change. If the salience of an approaching endpoint causes people to pursue emotion-regulation goals via harmonious interpersonal interactions, then people should be particularly likely to adopt the attitude of an individual with whom they anticipate interacting.

The current study was patterned after Chen, Shechter, and Chaiken's (1996) studies on social motives and openness to attitude change. Specifically, Chen et al. (1996) demonstrated that people who were dispositionally high in the motivation to facilitate smooth social interactions and those who had been nonconsciously primed with the goal of having a harmonious social

interaction tended to modify their own opinions to bring them into line with the perceived views of an anticipated discussion partner. In the current study, we explored the possibility that a salient endpoint would induce similar social motives, leading people to modify their attitudes to ensure a pleasant interaction with an anticipated social partner.

Method

PARTICIPANTS

Ninety-two undergraduates participated in this experiment. Data from 7 participants were excluded from all analyses, 4 due to expressed suspicion regarding the existence of their discussion partner and 3 due to experimenter error.

MATERIALS AND PROCEDURE

Participants arrived at the laboratory in groups of two to four for a study ostensibly investigating the ways in which people discuss their opinions on various issues. Participants were told that one more person was expected to participate in the study, so the experimenter decided to delay the start of the study until he or she arrived. This delay was necessary to provide justification for later procedures (described below). After a brief delay, the experimenter announced that they would begin the study.

Participants were instructed that each of them would be randomly paired with another participant who was being run in a separate session down the hall. The experimenter instructed participants that they would be provided with some information about a social, political, or campus issue chosen at random from a large set of issues. They were told that after they had finish reading about the issue, they would be asked to complete a participant information sheet for record-keeping purposes and a questionnaire designed to get a feel for the ways people develop their ideas on issues. Participants were told that after completing both forms, they would be introduced to their discussion partner and would be given a few minutes to acquaint themselves with one another, after which the actual discussion would commence. Participants were shown an audio cassette recorder/microphone combination system and were told that their discussion with their partner would be recorded to allow the researchers to understand the ways in which people discuss their opinions with others.

Temporal perspective manipulation. The experimenter then informed participants that he or she had to check on the other session being run down the hall, which would take a few minutes, and asked participants informally if they would be willing to read and respond to a

short essay as part of a pretesting project being conducted in the lab. All participants agreed to complete the pretesting measure. This pretest was actually the temporal perspective manipulation used in Study 1. By random assignment, each participant was given either the time-constraint essay or the time-neutral essay.

Discussion partner's attitude. After approximately 6 min, the experimenter returned and collected the completed essays and related thought-listings. The experimenter explained that because the session had started late, participants would not have time to become acquainted with one another before the discussion, as originally planned. As an apparently impromptu solution, the experimenter decided that the participants would exchange with their discussion partners the initial participant information sheets that had ostensibly been collected for record-keeping purposes. The experimenter explained that their discussion partners had already read about the issue that they would be discussing and had filled out a participant information sheet. The experimenter gave participants the information sheet ostensibly completed by his or her partner and asked participants to complete their own information sheet.

The participant information sheet contained several demographic variables (e.g., age, race, and gender) and other personal information (e.g., hometown, major area of study). The information sheet concluded with an open-ended section labeled "comments on the experiment." For participants in the positive attitude condition, their ostensible discussion partner had written, "I think this is an interesting issue. I'm really in favor of a mandatory student service policy. In fact, on the scale I circled a 6." For participants in the negative attitude condition, the same first sentence was followed by, "I really don't agree with the mandatory student service policy. In fact, on the scale I circled a 2."

Attitudes. The experimenter returned shortly thereafter and handed participants a questionnaire packet that contained an essay describing a new policy, which would serve as the topic of conversation with their discussion partner. The policy, which participants were led to believe their university was considering, would require that students take over some of the university maintenance tasks (e.g., landscaping, clerical work) to avoid a tuition increase. After they read about the policy, participants were presented with a survey containing several questions about the policy and were told that their responses would be shared with their discussion partner. Of particular interest, participants expressed their own attitudes toward the policy using a 7-point, fully labeled, bipolar scale (with endpoints labeled *strongly in favor* and *strongly opposed*) and three

7-point, semantic differential items (with endpoints labeled *good-bad*, *wise-foolish*, and *beneficial-harmful*). These four items exhibited good internal reliability (Cronbach's $\alpha = .92$) and were averaged to create an attitude index.

Positive and negative affect. When participants had completed the questionnaire, the experimenter returned with an additional packet that contained the full version of the PANAS (Watson et al., 1988). Participants were instructed to answer each question as honestly as possible and were told that their responses would not be shared with their partner. The internal reliability of the positive affect (Cronbach's $\alpha = .79$) and negative affect (Cronbach's $\alpha = .61$) subscales were reasonable; therefore, scores were summed to create positive and negative affect indices.

After completing these measures, participants were told that there would not be a discussion and that the experiment was finished. Participants were then probed for suspicion and thoroughly debriefed.

Results

Positive and negative affect. We began by exploring potential differences across the two temporal perspective conditions in terms of positive and negative affect. Two one-way ANOVAs were conducted using temporal perspective as the independent variable and scores on the positive and negative affective subscales of the PANAS (Watson et al., 1988) as dependent measures. Replicating the results of Study 1, no differences emerged in negative or positive affect, both $F_s < 1.60$, *ns*.¹

Attitudes. We expected that participants for whom an impending endpoint had been made salient would be especially motivated to ensure that the interaction with their discussion partner was pleasant. To that end, we expected them to modify their own attitudes to bring them into line with the attitudes of their discussion partner to a greater extent than participants for whom time was perceived as relatively expansive. A 2 (temporal perspective: limited vs. expansive) \times 2 (partner attitude: positive vs. negative) ANOVA yielded the predicted interaction, $F(1, 81) = 3.94$, $p = .05$ (see Figure 1).

Simple effects tests indicated that participants in the time-constraint condition expressed a more positive attitude toward the mandatory student service policy when their discussion partner favored the policy ($M = 4.48$, $SD = 1.53$) than when their partner opposed the policy ($M = 2.78$, $SD = 1.14$), $F(1, 41) = 15.84$, $p < .001$. In contrast, participants who perceived time as relatively expansive did not differ in their attitudes toward the issue regardless of whether their partners favored or opposed the policy ($M = 3.15$, $SD = 1.55$ and $M = 2.68$, $SD = 1.36$), respectively, $F(1, 40) = 1.11$, *ns*. Thus, participants who perceived time as limited were quite

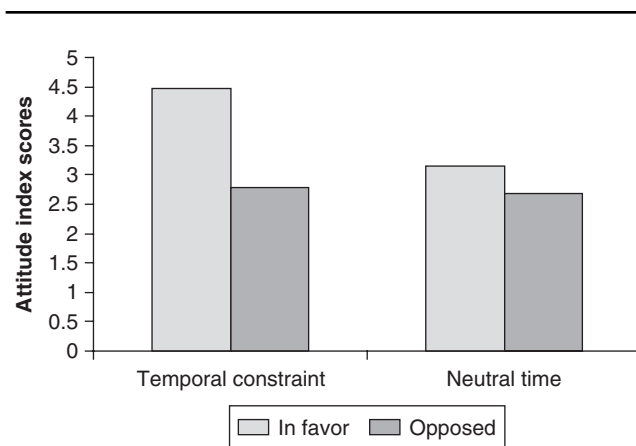


Figure 1 Interactive effect of temporal perspective and opinion of an anticipated social partner on openness to attitude change (Experiment 2).

malleable, willing to adjust their attitudes to minimize disagreement with an anticipated social interaction partner, whereas participants who perceived time as relatively expansive exhibited greater attitudinal rigidity.

Discussion

The results of Study 2 provide evidence that perceiving time as limited elicits a dominant social goal of regulating one's emotions by facilitating positive interpersonal interactions, and this motivation can render people highly susceptible to attitude change. Participants who perceived time as relatively limited modified their attitudes to remain in step with the views expressed by a discussion partner. In contrast, participants who perceived time as relatively expansive were unmoved by their partner's opinion, tending instead to hold steadfastly to their viewpoint even when doing so was likely to result in a contentious interaction.

These findings replicate and extend the results of Study 1, providing more direct evidence that a salient endpoint motivated participants to pursue social goals aimed at fostering a positive experience with a social partner with whom they anticipated interacting. As in Study 1, these results seem not to be attributable to differences in positive affect or negative affect resulting from the temporal perspective manipulation.

STUDY 3

In our final study, we sought to extend our initial findings by exploring the implications of a temporal perspective on openness to attitude change in another

context. If the perception that time is limited leads people to prioritize harmonious interactions with others, they should be more willing to modify their own positions to bring them into line with the views of their peers. Doing so would enable individuals to remain in step with those around them, minimizing the potential for uncomfortable disagreements with social partners.

In the current study, participants were presented with information about a fictitious campus issue and were asked for their opinions about the issue. Embedded within the information presented to participants were the ostensible results of a recent survey indicating the views of their fellow students. Some participants were led to believe that most other students held favorable views on the issue, whereas other participants were led to believe that most other students held negative views. We expected that participants for whom an impending endpoint was made salient would be especially responsive to the perceived views of their peers because agreeing with others provides a highly effective means of maintaining interpersonal harmony.

Our final study also addressed two limitations of the first two studies. In particular, two alternative interpretations raise the possibility that the results of Studies 1 and 2 were due to factors other than the manipulation of temporal perspective. First, participants may have found the time-limited essay to be inherently more personally relevant and engaging than the neutral essay. As a result, participants in the time-limited condition may have been more deeply involved in the study than were participants in the neutral condition. Although this potential confound would not account for differences in the social preferences that emerged in Study 1, it could account for the findings of Study 2. If participants in the time-limited condition were more engaged, they may have attended more closely to the experimental stimuli (e.g., the views of their ostensible discussion partner) and therefore been more strongly affected by them.

In addition, the specific topics addressed within the time-limited and -neutral essays were quite different. In particular, whereas the time-limited essay included several references to friendships and social connections, the neutral essay was relatively asocial. Thus, the time-limited essay may have directly activated affiliation goals, yielding the observed effects. We directly addressed these limitations and alternative explanations in our third study.

To do so, Study 3 included an additional temporal perspective manipulation (time expansive) that was similar in theme and personal relevance to the time-limited essay but focused on a new beginning rather than an impending endpoint. Specifically, the time-expansive essay focused on the experience of beginning

college. In addition to emphasizing the expansiveness of time and the many opportunities and challenges that lie ahead, the essay included material that was directly relevant to affiliation goals (e.g., beginning new friendships). Thus, the time-limited and time-expansive essays were comparable in terms of their relevance to our participants and in their potential to directly activate affiliation motives. Differences between the conditions in the current study, therefore, can be more confidently attributed to the effects of temporal perspective.

We also included a series of items designed to assess the extent to which participants perceived the content of the temporal perspective essays as interesting and relevant to affiliation goals and the degree to which the essays made salient an impending endpoint. These manipulation checks were included to provide further clarity about the observed effects.

Method

PARTICIPANTS

One hundred seven undergraduates participated in this experiment.

MATERIALS AND PROCEDURE

Participants arrived at a large classroom in groups of 20 to 50 for a study ostensibly concerning campus issues and student life. Participants were instructed that to save time and maximize efficiency, researchers from the Department of Psychology had combined two short, unrelated studies into a single questionnaire packet that they would complete during the experimental session.

Temporal perspective manipulation. The experimenter informed participants that the first study was concerned with student life and that they would read and respond to a short essay written by a college student. This initial study was actually the temporal perspective manipulation. By random assignment, participants were assigned to one of three temporal perspective conditions: time constraint, time neutral, or time expansive. Participants in the time-constraint and time-neutral conditions read and responded to the same essays used in those conditions in Studies 1 and 2. Participants in the time-expansive condition read an essay that made salient the expansiveness of time. Participants were instructed that the essay, titled "A New Beginning," had been written by an undergraduate at their institution the previous year. The essay contained a first-person account of the author's thoughts as the student began college. The content of the time-expansive essay was modeled closely after the time-constraint essay in terms of including both positive (e.g., the excitement of building a life in a new town, the opportunity to gain knowledge that

one could eventually use in the real world) and negative (e.g., losing touch with friends from high school, searching for new places to relax) events involved in beginning college. When all participants had finished reading the essay, they were instructed to list the thoughts they expected to experience before their own college graduation (time-constraint condition), had experienced when they began college (time-expansive condition), or thoughts that occurred to them while they read the essay (time-neutral condition).

Fictitious campus issue. Immediately following the manipulation of temporal perspective, participants were presented with a brief passage describing a fictitious campus issue. The passage suggested that the university was considering changing the way students register for courses, abandoning the online registration system currently in use in favor of a telephone-based registration system. The message provided information about the proposed change as well as the results of a preliminary survey that the student newspaper had purportedly conducted to assess student sentiment. Half of the participants, chosen at random, were told that 67% of their fellow students were in favor of the proposed switch to telephone registration. The other half of the participants were told that 67% of the students at their university were opposed to the proposed change.

Attitudes. When they had finished reading the passage, participants reported their attitudes toward the proposed change using the same four items used to assess attitudes in Study 2. The four items had good internal reliability (Cronbach's $\alpha = .92$) and responses were averaged to create an attitude index.

Manipulation checks. After reporting their attitudes toward the proposed change, participants completed a series of manipulation checks. To provide a check of the effectiveness of the temporal perspective manipulation, participants responded to three questions designed to measure the degree to which the author of the essay described the situation in terms of there being a definite ending point in time that was quickly approaching (e.g., "To what extent did the author of the essay describe his or her situation in terms of there being a definite ending point in time that was quickly approaching?"). The internal reliability of the three temporal perspective items was good (Cronbach's $\alpha = .74$) and responses were averaged to create a constrained temporal perspective index. To assess the degree to which the content of the temporal perspective essays was perceived as relating to affiliation goals, participants completed four items that assessed the degree to which the essay material described activities and thoughts related to making friends and connecting with others (e.g., "To what extent did the author of the

essay mention connecting with other people?"). The four affiliation items had good internal reliability (Cronbach's $\alpha = .81$) and responses were averaged to create an affiliation index. Participants also completed four items designed to assess the degree to which they perceived the essay material as interesting (e.g., "To what extent did you find the material in the essay enjoyable to read?"). The four items had good internal reliability (Cronbach's $\alpha = .85$) and were averaged to create an essay evaluation index. Following the completion of the manipulation check items, participants completed a brief demographic questionnaire and were debriefed.

Results

Manipulation checks. We began by assessing the extent to which participants in the three temporal perspective conditions perceived the content of the essay they read as describing time in a manner that made salient an upcoming ending point. Results revealed that time-constraint participants ($M = 5.15$, $SD = 1.13$) perceived the essay material as describing time as a limited resource more than both time-neutral ($M = 3.21$, $SD = 1.25$), $F(1, 69) = 47.35$, $p < .001$, and time-expansive ($M = 3.15$, $SD = 1.01$) participants, $F(1, 71) = 63.68$, $p < .001$. Time-neutral and time-expansive participants did not differ in their constrained temporal perspective index scores, $F < 1$, *ns*. Thus, the time-constraint essay material made an upcoming ending point that was quickly approaching substantially more salient than the time-neutral and time-expansive essays.

To test whether participants perceived the material as relating to affiliation goals, we conducted a one-way ANOVA using scores on the affiliation index as the dependent measure. Results revealed that time-constraint participants ($M = 4.71$, $SD = 1.32$) perceived the essay material as related to affiliation goals more than time-neutral participants ($M = 2.60$, $SD = 1.14$), $F(1, 69) = 51.32$, $p < .001$. In addition, time-expansive participants ($M = 4.15$, $SD = 1.33$) also perceived the essay to be more highly related to affiliation goals than did time-neutral participants, $F(1, 68) = 26.91$, $p < .001$. Time-constraint participants did not differ significantly from time-expansive participants in terms of the extent to which they perceived the essay material to be related to affiliation, although there was a marginally significant trend for time-constraint participants to perceive the essay material as more relevant to affiliation than time-expansive participants, $F(1, 71) = 3.30$, $p < .08$. Thus, the time-constraint and time-expansive essays contained material that was more relevant to affiliation than the time-neutral essay, but the time-constraint essay was not perceived as related to affiliation more than the time-expansive essay.

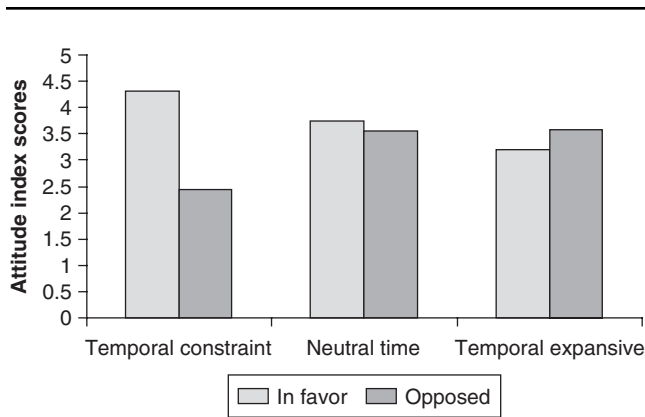


Figure 2 Interactive effect of temporal perspective and peer consensus opinion on openness to attitude change (Study 3).

An ANOVA on essay evaluation index scores did not reveal significant variation between the three temporal perspective conditions, $F(2, 104) = 1.88, p = .16$. Thus, participants did not differ in terms of the extent to which they perceived the essay material as interesting.

Attitudes. We predicted that time-constraint participants, for whom an upcoming ending point had been made salient, would be more motivated than time-neutral and time-expansive participants to establish harmonious agreement with their peers. To satisfy this goal, time-constraint participants should be more likely than participants in the other conditions to change their attitudes to remain in agreement with the consensus opinion of their peers. A 3 (temporal perspective: time constraint, time neutral, time expansive) \times 2 (consensus: in favor, opposed) ANOVA revealed the predicted interaction on attitude index scores, $F(2, 101) = 7.01, p = .001$ (see Figure 2).²

To explore this interaction further, we examined the extent to which participants expressed attitudes in line with peer consensus opinions separately for each of the temporal perspective conditions. Results revealed that time-constraint participants reported more favorable attitudes when their peers favored the proposed change in the course registration system ($M = 4.31, SD = 1.36$) than when their peers opposed the proposed change ($M = 2.45, SD = 1.27$), $F(1, 35) = 18.54, p < .001$. Time-expansive participants, in contrast, expressed equivalent attitudes regardless of whether their peers favored ($M = 3.20, SD = 1.27$) or opposed the proposed change ($M = 3.59, SD = 1.37$), $F < 1, ns$. Time-neutral participants also were unaffected by whether their peers favored ($M = 3.74, SD = 1.34$) or opposed ($M = 3.55, SD = 1.40$) the proposed change, $F < 1, ns$. Thus, time-constraint participants changed their attitudes to remain

in agreement with peer consensus opinion, whereas time-expansive and time-neutral participants were unaffected by peer consensus opinion on the issue.

Discussion

The results of Study 3 offer further evidence that perceiving time as limited instills in people a motivation to pursue emotion-regulation goals, which in turn renders people highly susceptible to attitude change. Participants who perceived time as limited changed their attitudes to remain in agreement with peer consensus opinion. This openness to attitude change was not observed among participants who read a neutral essay that did not alter their expansive temporal perspective or among participants who read an essay that portrayed time as expanding into the future.

The current study also ruled out several alternative explanations for the effects that have been observed in all three studies. First, the findings cannot be attributed to differences in the degree to which the essay material is related to affiliation goals. The time-constraint and time-expansive essays were equally social in nature and did not differ in the degree to which they addressed affiliation goals. Furthermore, controlling for the affiliative nature of the essay content did not alter the impact of the temporal perspective manipulation. Second, participants did not rate the essay material differently in terms of the extent to which it was interesting and personally engaging. This suggests that differences across the conditions are not attributable to differences in the degree to which the essay material was perceived as interesting or relevant to participants.

GENERAL DISCUSSION

Increasingly, social psychologists interested in attitudes have turned their attention to the social context in which attitudes are formed, maintained, and expressed, exploring the impact of factors such as group membership and social identity, culture, social roles, social networks, and social norms. Perhaps not surprisingly, each of these social contextual factors has been shown to have important implications for attitude properties, processes, and functions (DeBono, 1987; for a recent review, see Terry & Hogg, 2000). Recently, psychologists have begun to explore temporal perspective as another social contextual factor with implications for attitudes (e.g., Malkoc, Zauberan, & Ulu, 2005; Trope & Liberman, 2000). The current work contributes to this growing literature, attesting to the notion that the perception of time as expansive versus limited powerfully influences the strength and durability of people's attitudes.

As outlined in socioemotional selectivity theory (Carstensen et al., 1999; Carstensen & Mikels, 2005), when time appears to be extending long into the future, people tend to pursue goals associated with broadening their understanding of the world by acquiring accurate knowledge. Doing so enables people to prepare for the challenges and opportunities that await them. Perceiving time as limited, in contrast, brings about a shift in attention. Rather than preparing for the future, people turn their attention to the present and pursue social goals aimed at regulating their affective states through positive interactions with others.

These social goals, in turn, regulate the strategies that people pursue in social interactions. People who perceive time as limited adopt strategies that enable them to enjoy pleasant interactions with others, thereby regulating their affective states. As a result, these individuals maintain an openness to attitude change, receptive and responsive to social cues from their interaction partners. People who perceive time as expansive, in contrast, adopt strategies aimed at establishing and maintaining an accurate understanding of the world around them, even if doing so puts them at odds with social partners. Thus, perceiving time as limited appears to induce a pliant, flexible orientation to the social world, whereas perceiving time as expansive appears to foster a more resolute stance.

Temporal Perspective and Attitude Functions

Our findings raise the interesting possibility that temporal perspective may have implications for the psychological function that attitudes serve. Participants in our temporally constrained condition appeared to be highly motivated to adopt attitudes that would facilitate smooth interactions with social partners. This is consistent with the notion that their attitudes served a social-adjustive function (e.g., DeBono, 1987; Katz, 1960). In contrast, participants who perceived time as expansive appeared to adopt attitudes that reflected the positive or negative attributes of the attitude object. For these participants, attitudes may have served a utilitarian function (e.g., Katz, 1960).

Previous investigations have demonstrated that persuasive messages are more effective when they directly target the psychological function being served by the attitude (e.g., Snyder & DeBono, 1985). All of this may suggest that a person's attitudes will be susceptible to different types of persuasive appeals depending on his or her temporal perspective. When time is short, messages targeting a social adjustive motive may be especially persuasive. When time is expansive, on the other hand, utilitarian messages may be more effective. We look forward to future research that directly examines

the relation between temporal perspective and attitude functions.

Opposite Effects?

It is worth noting, however, that the relation between temporal perspective and attitude strength may be more complex than our results imply. Our findings suggest that perceiving time as limited renders people quite malleable, willing to modify their own attitudes to facilitate harmonious interactions with others in their social environment. Under some limited conditions, however, the motivation to ensure pleasant social encounters may instead solidify and strengthen people's attitudes. Specifically, when all of the members of an individual's social community hold a particular attitude, steadfastly maintaining that attitude may be the best way to ensure positive social interactions. Under these circumstances, attitude rigidity rather than flexibility might best serve their dominant social motive.

Similarly, we have proposed that because people who perceive time as expansive are motivated to establish and maintain a veridical understanding of the social and physical world, they may have a high threshold for attitude change, requiring a solid evidentiary base for adopting new attitudes and changing old ones. This orientation, we argued, may render people's attitudes relatively firm. Under certain circumstances, however, the motivation to accurately understand the world may render people quite open to attitude change (e.g., Petty & Cacioppo, 1979). In particular, when people who perceive time as expansive encounter novel information that they deem valid and compelling, they may be highly receptive to it. Under these circumstances, readily adjusting their attitudes to accommodate reliable and convincing new information may best enable people to prepare for the future.

In each of these cases, temporal perspective would have influenced the social goals that people pursue in the social context, as socioemotional selectivity theory suggests, and these social goals would have regulated the orientation that people adopt in the interpersonal persuasion context, consistent with our findings. But the precise implications of this orientation for attitude durability may depend on particular aspects of the immediate social context (e.g., the cogency of the persuasive message). In many cases, foreshortened temporal perspective seems likely to increase malleability, as it did in our studies. But in some cases, people's dominant social goal of interpersonal harmony may be better served by resolutely maintaining consensual attitudes, and an expansive temporal perspective may tend to solidify people's attitudes, raising their threshold for attitude change, but under some circumstances, an accuracy

motive may render people especially responsive to new information. Thus, we view the current findings as a first step in the exploration of the relation between temporal perspective and openness to attitude change rather than the final word on this relation.

The Role of Negative Affect

From the outset, we anticipated that our manipulation of temporal perspective may produce differences across the two conditions in mood. This seemed quite plausible because the temporal perspective manipulation caused our college-age participants to reflect on the closing of an important chapter in their lives. This would introduce mood differences as an alternative account for the pattern of results we observed. In fact, comparisons of participants' affective states in Studies 1 and 2 yielded no differences. This suggests that the impact of our temporal perspective manipulation on the social strategies that participants endorsed and the patterns of attitude change they exhibited cannot be attributed to differences across the two conditions in affective states.

This is not to suggest, however, that affect never plays a role in temporal perspective effects. Impending endpoints may sometimes induce negative mood states, which may in turn cause people to engage in mood repair efforts, and fostering pleasant social interactions may provide one such mood repair strategy. Negative moods seem not to be necessary to induce the motivation to facilitate pleasant social encounters, however. Simply perceiving time as limited seems to focus people's attention on making the most of the present moment. Regardless of their current mood state, time limits appear to motivate people to cultivate positive interpersonal interactions and avoid conflictual exchanges in an effort to protect and enhance the affective quality of the current moment.

Openness to Attitude Change Over the Life Course

These findings may shed new light on an old question regarding openness to attitude change over the adult life course. A good deal of evidence suggests that openness to attitude change varies systematically with age (Visser & Krosnick, 1998; Visser & Mirabile, 2004). Of greatest relevance here, openness to change is relatively low during middle adulthood and rises during the late adult years. Changes in temporal perspective may partially account for this age-related fluctuation in openness to change.

As people age, their own eventual death poses an increasingly salient limit on the remaining time available to them, causing individuals to place an increasingly higher priority on pleasant interpersonal experiences (Carstensen et al., 1999). This may lead older adults to respond differently than middle-age adults to an attitude

challenge. Disagreement with a conversational partner creates social tension, so older adults may be especially disinclined to disagree with people who express points of view that differ from their own. If a conversational partner expresses a counterattitudinal assertion, older adults may be especially willing to accept it in the flow of the interaction, making attitude change more likely to occur. Thus, changes in temporal perspective and the shifting goal priorities that follow may partially explain the rise in openness to attitude change late in life.

Attitude Change in Nonsocial Contexts

Socioemotional selectivity theory explicitly focuses on the goals that people pursue in social situations. In line with this social focus, the studies that we have conducted have explored openness to attitude change in response to social cues. In Study 1, we examined the strategies that people endorse in conversational situations, and in Studies 2 and 3, we explored the responsiveness of people's attitudes to the views of potential social partners. It may be that temporal perspective influences attitude durability only within social settings. When confronted with a challenge to their attitudes through nonsocial channels, temporal perspective may not regulate openness to attitude change. For example, an impending endpoint may not render people more likely to change their views when they encounter a persuasive newspaper editorial or a televised counterattitudinal speech by a political candidate. The motivation to facilitate pleasant social interactions may be irrelevant to these nonsocial contexts.

On the other hand, facing a foreshortened horizon may induce a more general flexibility. When the future is limited, articulating and staunchly defending one's views may recede in importance. People may become habituated to a stance of nonguarded openness, a willingness to adapt oneself to one's environment. Rather than scrutinizing attitude-challenging information, people may be responsive to persuasive messages, even those that are obtained through nonsocial channels. Future work exploring these possibilities seems worthwhile and may further clarify the relation between temporal perspective and openness to attitude change.

Concluding Remarks

Attitudes do not exist in a vacuum. Instead, attitudes are held by people who are embedded within a rich and elaborate social context. Psychologists have only begun to explore the implications of the myriad distinct elements of the social context for attitude formation and function. Indeed, understanding the complex interface between external social and contextual factors and internal attitudinal processes represents one of the biggest challenges for contemporary attitude researchers.

The current work suggests that temporal perspective is one contextual factor worthy of close scrutiny. Where people stand in relation to a meaningful endpoint powerfully influences the social goals they pursue, with fascinating implications for attitude processes.

APPENDIX

TIME-NEUTRAL ESSAY

“Roundup Unready”

One of the most pervasive chemicals in modern agriculture is a herbicide called glyphosate, which is better known by its trade name, Roundup. When it was first introduced in 1974, by Monsanto, no one could have predicted its current ubiquity or the way it would change farming. Roundup was safe, effective, and relatively benign, environmentally speaking. It became one of the essential tools that made no-till farming—a conservation practice in which farmers spray weeds rather than plowing the ground—increasingly popular. But what really made Roundup pervasive was the development of genetically modified crops, especially soybeans, cotton, and corn, that could tolerate having Roundup sprayed directly on them. The weeds died but these crops, designated Roundup Ready, thrived.

But nature, in turn, has been developing some Roundup Ready plants of her own, weeds that can tolerate being sprayed with Roundup. Two weeds, mare’s tail and water hemp, have already begun to show resistance, and others will certainly follow. This is simply natural adaptation at work.

No one is saying that Roundup will lose its overall effectiveness any time soon. But while Monsanto executives and scientists are doing their best to protect the herbicide, nature is also throwing all her resources at defeating it. In a very real sense, nature has been given an enormous advantage by the sheer ubiquity of Roundup, just as some bacteria are given an edge by the ubiquity of agricultural antibiotics. The logic of industrial farming is to use your best tools until they’re worthless, and to hasten their worthlessness by using them as much as you can.

This is precisely why there has been so much opposition to marketing a variety of corn that includes a BT gene, which creates a toxin that kills an insect called the corn-borer. BT is a safe, natural, and effective weapon for gardeners and farmers, and to lessen its effectiveness by overusing it, like Roundup, would be a terrible waste. Industrial agriculture is always searching for a silver bullet, forgetting that eventually a silver bullet misfires.

TIME-CONSTRAINED ESSAY

“Closing Time”

I am a senior here at the Florida State University and I am increasingly becoming aware that I am nearing the end of my

time at the university. This is both bitter and sweet. It is sweet in that I will be leaving Tallahassee indefinitely, using my education in the “real world.” However, it will be bitter in that I will be leaving most of my close friends, my girlfriend, my apartment, and all of the other things that have made Tallahassee home to me over the past 4 years.

I am realizing that this ending will be a gradual process instead of a single event. In fact, it seems that the process of finality has already started. I am beginning to look for employment in various cities and have a few promising leads. It will be exciting to find a new apartment and meet new friends, but it will be difficult to not miss my friends from FSU.

In less than 2 months I will be saying goodbye to one of my best friends who is graduating this December. He and I have been best friends since freshman year and have been roommates for the past 3 years. Whether it was a night of fun at Bulwinkle’s or a casual lunch at Cool Grindz coffee shop, I only have limited time to spend with this friend before he moves away. Taken together with finals week and Thanksgiving, I really only have a month left with my best friend.

I think that most college students go through this period when they have a short amount of time left at their university. I know that I will be fine and that I have had a great experience here. The only point that I am trying to make is that individuals who are nearing the end of their time at the Florida State University (or any other college or university) do begin to feel an endpoint approaching and take into account all of the various things that will change after you walk across the stage and receive your diploma.

TIME-EXPANSIVE ESSAY

“A New Beginning”

I am a freshman here at the Florida State University and I am increasingly becoming aware that this is a new beginning for me. This is both bitter and sweet. It is sweet in that I will be beginning a life in Tallahassee, gaining education so that I can exist in the “real world.” However, it will be bitter in that I will have to make new friends, get a new apartment, and all of the other things that will make Tallahassee home to me over the next 4 years.

I am realizing that this beginning will be a gradual process instead of a single event. In fact, it seems that the process of beginning has already started. I am beginning to look for part-time employment at various places in town and have a few promising leads. It is exciting to find a new apartment and meet new people but it will be difficult to make new friends at FSU.

A little less than 2 months ago I said goodbye to one of my best friends who had graduated with me last May. He and I had been best friends since our freshman year of high school. Whether it was a night of fun watching a local band or a casual lunch at a coffee shop, I now have a lot of time in

the future to make new friends now that this person isn't around me.

I think that most college students go through this period when they realize that they are at the start of a long journey. I know that I will be fine and that I have will have a great experience here. The only point that I am trying to make is that individuals who are beginning at the Florida State University (or any other college or university) start to feel a new beginning is happening and take into account all of the various things that will change as you begin the process of being in college.

NOTES

1. Given the relatively low internal reliability of the negative affect subscale, we also explored potential differences across conditions on specific negative affect items (e.g., sad, upset). No significant differences emerged on any of the negative affect items.

2. This interaction remained significant when controlling for the degree to which participants perceived the essay to relate to affiliation goals, $F(2, 100) = 6.78, p = .002$.

REFERENCES

- Bechara, A., Damasio, H., Damasio, A., & Lee, G. P. (1999). Different contributions of the human amygdala ventromedial prefrontal cortex to decision making. *Journal of Neuroscience, 19*, 5473-5481.
- Carstensen, L. L. (1993). Motivation for social contact across the life span: A theory of socioemotional selectivity. In J. E. Jacobs (Ed.), *Nebraska symposium on motivation: 1992, Developmental perspectives on motivation* (Vol. 40, pp. 209-254). Lincoln: University of Nebraska Press.
- Carstensen, L. L. (1995). Evidence for a life-span theory of socioemotional selectivity. *Current Directions in Psychological Science, 4*, 151-156.
- Carstensen, L. L., & Fredrickson, B. L. (1998). Influence of HIV status and age on cognitive representations of others. *Health Psychology, 17*, 494-503.
- Carstensen, L. L., Isaacowitz, D. M., & Charles, S. T. (1999). Taking time seriously: A theory of socioemotional selectivity. *American Psychologist, 54*, 165-181.
- Carstensen, L. L., & Mikels, J. A. (2005). At the intersection of emotion and cognition: Aging and the positivity effect. *Current Directions in Psychological Science, 14*, 117-121.
- Charles, S. T., Mather, M., & Carstensen, L. L. (2003). Aging and emotional memory: The forgettable nature of negative images for older adults. *Journal of Experimental Psychology: General, 132*, 310-324.
- Chen, S., Shechter, D., & Chaiken, S. (1996). Getting at the truth or getting along: Accuracy- versus impression-motivated heuristic and systematic processing. *Journal of Personality and Social Psychology, 71*, 262-275.
- DeBono, K. G. (1987). Investigating the social-adjustive and value-expressive functions of attitudes: Implications for persuasion processes. *Journal of Personality and Social Psychology, 52*, 279-287.
- Fredrickson, B. L. (1995). Socioemotional behavior at the end of college life. *Journal of Social and Personal Relationships, 12*, 261-276.
- Fredrickson, B. L., & Carstensen, L. L. (1990). Choosing social partners: How old age and anticipated endings make people more selective. *Psychology & Aging, 5*, 335-347.
- Fung, H. H., Carstensen, L. L., & Lutz, A. M. (1999). Influence of time on social preferences: Implications for life-span development. *Psychology & Aging, 14*, 595-604.
- Gardiner, J. M., & Java, R. I. (1993). Recognizing and remembering. In A. F. Collins, S. E., Gathercole, M. A. Conway, & P. E. Morris (Eds.), *Theories of memory* (pp. 169-188). Hillsdale, NJ: Lawrence Erlbaum.
- Katz, D. (1960). The functional approach to the study of attitudes. *Public Opinion Quarterly, 24*, 163-204.
- Malkoc, S. A., Zauberaman, G., & Ulu, C. (2005). Consuming now or later? The interactive effect of timing and attribute alignability. *Psychological Science, 16*, 411-417.
- Mather, M., & Carstensen, L. L. (2005). Aging and motivated cognition: The positivity effect in attention and memory. *Trends in Cognitive Sciences, 9*, 496-502.
- Mather, M., Knight, M., & McCaffrey, M. (2005). The allure of the alignable: Younger and older adults' false memories of choice features. *Journal of Experimental Psychology: General, 134*, 38-51.
- Mellers, B., Schwartz, A., & Ritov, I. (1999). Emotion-based choice. *Journal of Experimental Psychology: General, 128*, 332-345.
- Petty, R. E., & Cacioppo, J. T. (1979). Issue-involvement can increase or decrease persuasion by enhancing message-relevant cognitive responses. *Journal of Personality and Social Psychology, 37*, 1915-1926.
- Pruzan, K., & Isaacowitz, D. M. (in press). An attentional application of socioemotional selectivity theory in college students. *Social Development*.
- Roberts, W. A. (2002). Are animals stuck in time? *Psychological Bulletin, 128*, 473-489.
- Snyder, M., & DeBono, K. G. (1985). Appeals to image and claims about quality: Understanding the psychology of advertising. *Journal of Personality and Social Psychology, 49*, 586-597.
- Suddendorf, T., & Corballis, M. C. (1997). Mental time travel and the evolution of the human mind. *Genetic, Social, and General Psychology Monographs, 123*, 133-167.
- Terry, D. J., & Hogg, M. A. (2000). *Attitudes, behavior, and social context*. Mahwah, NJ: Lawrence Erlbaum.
- Trope, Y., & Liberman, N. (2000). Temporal construal and time-dependent changes in preference. *Journal of Personality and Social Psychology, 79*, 876-889.
- Visser, P. S., Bizer, G., & Krosnick, J. A. (in press). Exploring the latent structure of strength-related attitude attributes. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 38). New York: Academic Press.
- Visser, P. S., & Krosnick, J. A. (1998). The development of attitude strength over the life cycle: Surge and decline. *Journal of Personality and Social Psychology, 75*, 1389-1410.
- Visser, P. S., & Mirabile, R. R. (2004). Attitudes in the social context: The impact of social network composition on individual-level attitude strength. *Journal of Personality and Social Psychology, 87*, 779-795.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063-1070.

Received August 23, 2005

Revision accepted January 26, 2006