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The Social Language of Time: The Time Perspective–Social Network Connection

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Time perspective (TP) is a pivotal cognitive process through which people perceive, interpret, and negotiate their physical and social worlds. This study identifies unique patterns in the quality of social relationships that were associated with different TP dimensions. Low support and high conflict with family characterized past-negative TP. Large networks and high support from family distinguished past positive TP. Large networks with more support and companionship from friends/acquaintances typified present hedonistic TP. Having highly supportive significant others was associated with high future TP. Multidimensional time perspective is an essential cognitive process influencing human social behavior.

> Time is our window on the world.
> With time we create order and shape the kind of world we live in.
> *Time Wars* (Rifkin, 1987, p. 1)

Time is one of our most precious resources. We constantly use it, save it, spend it, waste it, lose it, and often wish we had more of it. We think of it as a healer, a friend, and sometimes a foe. For some, time is the essential ingredient and foundation for life as we know it. Its passage helps create our identities and frames both our perspective on where we have come from and the direction toward which we are headed (Rifkin, 1987). Without a complete sense of time's flow, we would have no personal history or sense of self, no ambition to strive for distant goals, no pride in our accomplishments, and no vivid sense of our mortality. Life would consist of disjointed momentary episodes devoid of the consciousness that symbolically represents those moments in meaningful temporally ordered sequences.

Social relationships are another fundamental resource essential for human development, health, and well-being (Baumeister & Leary, 1995; House, Landis, & Umberson, 1988). Human beings have a basic need to "belong" and to develop satisfying interpersonal attachments (Bowlby, 1969; Maslow, 1968; see Baumeister & Leary, 1995, for a review). Indeed, we live within social networks (SN) that provide the material resources, emotional support, companionship, and information we need to survive (see Gottlieb, 1981). But despite the centrality of both time and social relations in human functioning—and psychology's long-standing theoretical interest in them—relatively little work has been done to examine how these vital domains of human life coexist (cf. Carstensen, Isaacowitz, & Charles, 1999; DeWall, Visser, & Levitan, 2006). In fact, McGrath and Kelly (1986), pioneering investigators into the links between time and human interaction, were distressed that the social psychology of time was essentially "timeless"—given how little awareness there is of its vital role. Our goal was to address this gap by initiating a program of research exploring the connection between our temporal and social worlds.

UNDERSTANDING TIME PERSPECTIVE

Over the past century, psychologists have suggested that time perspective (TP) is a "nonconscious process" that

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lays the foundation from which conscious thought and meaningful behavior emerge (James, 1890; Karniol & Ross, 1996; Kelly, 1955; Lewin, 1942; Zimbardo & Boyd, 1999). TP provides the deep context that humans use to make sense of their life experiences and organize their behavior (Fraisse, 1963; James, 1890; Kelly, 1955; Zimbardo, 1994). As such, TP is a pivotal cognitive filter that parses the ongoing stream of conscious experience and awareness into past, present, and future domains, or time zones, thereby exerting a powerful influence on current thought, feeling, and behavior (Zimbardo, 1994). In essence, TP is a foundational process from which a host of secondary processes are derived, many of which may influence social relations (e.g., achievement, guilt, self-efficacy, revenge, retaliation).

Despite the proposed centrality of TP to psychological and social processes, however, the literature on TP remains quite limited. Until recently TP has been viewed and measured as a unidimensional, stable personality construct (present- or future-oriented; e.g., Strathman, Gleicher, Boninger, & Edwards, 1994; Zuckerman, 1994). But TP is also malleable in that it expands as cognitive development occurs and is responsive to changing life situations—life stress and adversity may powerfully affect an individual's sense of time and its passing (see Carstensen et al., 1999; Holman & Silver, 1998; Lavi & Solomon, 2005). At the same time, however, if one domain of TP (past, present, future) is habitually and chronically overused it may become a more rigid dispositional style that predicts subsequent behavior (e.g., past-orientation following trauma; Holman & Silver, 1998). Hence, we view TP as a multidimensional, semiflexible cognitive process that shapes and is shaped by the social and cultural worlds in which we live.

Several qualitative and quantitative studies have been conducted to advance empirical work on TP by developing and validating a multidimensional measure of TP—the Zimbardo Time Perspective Inventory (ZTPI; Zimbardo & Boyd, 1999). Confirmatory factor analyses conducted across several studies identified five domains of TP—past-positive, past-negative, present hedonism, present fatalism, and future orientation. Past-negative TP was reflected in a generally negative, aversive focus on the past (e.g., ''I think about bad things that have happened in my life''); past-positive TP was reflected in a warm, glowing attitude about the past (''I get nostalgic about my childhood''); present hedonism involved having a pleasure-seeking, risk-taking approach to time and life in general (''I take risks to put excitement in my life''); present-fatalism reflected a fatalistic, powerless approach to controlling one's own life and future (''You can't really plan for the future because things change so much''); and a single future TP dimension emerged reflecting a goal-oriented approach to life (''I am able to resist temptations when I know there is work to be done.''). This five-factor structure has been replicated across a variety of different cultures, in Russia, France, Brazil, Turkey, and other countries. High reliability and validity was found in an investigation of more than 1,000 respondents, age 14 to 81, from 18 Russian cities across that nation (Sircova et al., 2007). Although subsequent research has shown these dimensions of TP to be associated with health and risk-taking behaviors, less is known about how they are related to social experiences (cf. Goldberg & Maslach, 1996). The research reported herein represents an initial attempt to examine systematically how these different domains of TP are related to social network characteristics and the quality of one's social relationships.

SOCIAL NETWORK CHARACTERISTICS

The influence of social networks on human behavior and well-being has been an important topic of social science research for several decades (e.g., Festinger, 1950; Gottlieb, 1981). Social networks consist of ties among people from various life domains: significant others (spouse, romantic partner), family, friends, acquaintances, coworkers, and so on. These networks have many structural characteristics: size, density, composition (i.e., what categories of people are most represented), and length of relationships (Wellman, 1981). Social ties within our networks serve many vital functions that include providing access to needed resources, support, control, and companionship (see Rook, 1987a, 1987b). But the interpersonal characteristics of our social networks may also include social constraints and/or conflict (e.g., Lepore, 1992; Lepore, Silver, Wortman, & Wayment, 1996). Moreover, the recent interest in social network influence on interpersonally relevant cognitive processes (e.g., attitudes, judgment) has demonstrated a dynamic interplay between social networks and human thought/behavior (e.g., Saribay & Andersen, 2007b; Visser & Mirabile, 2004). Here we explore how these structural and interpersonal characteristics of respondents' social networks are related to time perspective.

TIME PERSPECTIVE AND SOCIAL RELATIONS

As a culturally bound form of nonverbal communication, time plays a critical, though nonobvious, role that powerfully influences the flow of social interactions—the very ''dance of life'' (Hall, 1959). A growing body of research has recently begun to address how our experiences of time influence the social networks in which we

live. Socioemotional selectivity theory (SST; Carstensen et al., 1999) suggests that when a significant ending is near (e.g., death, graduation) people become less future oriented and tend to focus on their present emotional needs. This shift in TP is thought to precipitate changes in people's selection and pursuit of social goals by prioritizing emotionally satisfying social relationships and minimizing the importance of relationships focused on knowledge-based activities for future goals. Shifts in TP may also motivate people to change their attitudes to conform with social consensus when responding to persuasive messages (DeWall et al., 2006). In sum, shifting one's temporal horizon from an expansive long-term future orientation to a more limited focus on the present may be critically linked to the choices people make regarding their social relationships in order to meet their immediate socio-emotional goals (see Carstensen et al., 1999; Trope & Liberman, 2003).

Although SST focuses on the social implications of shifting from future to present TP, other studies suggest that past-orientation is associated with the emphasis people place on family relationships: Individuals with high past-positive TP report greater involvement with family and family rituals, whereas individuals with high past-negative TP report less involvement with family (Goldberg & Maslach, 1996). A small body of clinically based research further suggests that disturbances in TP (e.g., overfocus on the past, present, or future) may contribute to "desynchronized transactions" with others that lead to interpersonal discord and conflict (Melges, 1982, p. 285).

A common manifestation of this disturbance may occur through "transference"—when cognitive representations of important past relationships are thought to be triggered by people in the current environment (see Saribay & Andersen, 2007a).[1] This tendency may impact current social relationships by increasing the likelihood that individuals will interpret and respond to a new person's behavior in ways consistent with the social dynamics–expectations drawn from the past relationship (Andersen & Berk, 1998; Andersen & Chen, 2002; Berenson & Andersen, 2006; Melges, 1982). To the extent that transference involves a positive (or negative) self-other representation it may influence the new, current interaction positively (or negatively; Saribay & Andersen, 2007a). One of the critical mechanisms responsible for unconscious transference effects is the chronic accessibility of representations of significant others (Andersen, Glassman, Chen, & Cole, 1995). Hence it would seem logical that individuals who often think about the past might inadvertently reinforce transference-related processes in their social relationships. And as "transference *is* the process by which attachment styles with key figures in one's life (e.g., primary caregiver) are perpetuated across other relationships," it makes sense that family members, especially parental figures—our earliest "primary caregivers"—would be highly salient in the social networks of past-oriented individuals (Saribay & Andersen, 2007a, p. 185).

LIMITATIONS OF PRIOR RESEARCH

Although these lines of research provide provocative insights into potential links between TP and the quality and nature of social relationships, much remains unknown. Does the degree to which a person focuses on the past, present, or future influence the constituency of one's social network and the quality of social relations within that network? Does being strongly present oriented mean you *generally* prefer to maintain smaller, emotionally closer networks than do future-oriented people, even prior to considering life endings? Some might argue that the tendency for present-focused individuals to attend to situational context-specific factors (and subordinate goals) more than global ideals (and superordinate goals) would foster a preference for smaller, more intimate social networks (see Trope & Liberman, 2003). However, we would argue that because we are by nature "social beings," focusing on the present when not coping with the stress of an "ending" allows individuals to attend to thoughts, feelings, and desires that may stimulate interest in connecting with others (e.g., to have fun). Thus, in our view, present TP, when not the result of an "ending" or stressor might promote larger social networks and more social companionship by freeing individuals from the time press and constraints of solitary striving toward future goals and allowing them to engage with others in the present moment. To the extent that friends and acquaintances provide companionship and support in dealing with the day-to-day business of life, we would also expect present-oriented individuals to include relatively more friends and acquaintances in their social networks. If the present TP is hedonistic we would expect to see social networks with more companionship, support, and less conflict. In contrast, if the TP is fatalistic we would expect to see less support and more conflict due to the negativity commonly found with this TP (Zimbardo & Boyd, 1999).

[1]The authors acknowledge that the concept of transference requires inference that cannot be directly measured by an observer. However, we feel there is a body of experimental social psychology research that provides substantial evidence that unconscious cognitive processes influence social behavior in a variety of social settings (Andersen & Berk, 1998; Andersen & Chen, 2002; Saribay & Andersen, 2007a). Hence, without discounting the possibility of alternative behavioral explanations for observed phenomena, we find the social-cognitive explanations offered for the appearance of cognitive representations of past social relationships in the present more compelling.

Construal level theory (CLT) might also be used to suggest that future TP would foster endorsement of a large, diverse constituency in one's network because it encourages expansive, superordinate global thinking (Trope & Liberman, 2003). However, to the extent that future-oriented individuals are pursuing future goals, they may have less discretionary time available to nurture social relationships outside those most essential, and instrumental, to their daily lives (e.g., significant other, close family). Thus, we would not expect future TP to be associated with larger networks. Instead, we would expect highly future-oriented people to place greater emphasis on significant others and perhaps close family members in their social networks.

Although research on transference and the relational self sheds light on social-cognitive processes that may bring the past into our present relationships (Andersen & Chen, 2002), very little has been done to explore the social network characteristics associated with past TP (cf. Goldberg & Maslach, 1996). Because family relationships include our earliest experiences with "primary caregivers" (i.e., parents) and represent people with whom we grew up who helped shape our identities, we would expect family members to be highly salient in the social networks of past-oriented people. Specifically, because highly past-positive individuals are more involved with family and share a more glowing view of their pasts (Goldberg & Maslach, 1996), past-positive TP should encourage larger networks that include relatively more family members, with more supportive and less conflicted interactions especially with family. Similarly, because highly past-negative individuals are less involved with family and tend to have a more aversive view of their pasts (Goldberg & Maslach, 1996), past-negative TP would likely discourage respondents from including family members in their networks, and encourage them to report less support and more conflict, especially with family.

THE CURRENT STUDY

This study was designed to explore the associations between TP and the structural and interpersonal characteristics of respondents' social networks. We specifically hypothesized the following:

1. Past-positive TP will be associated with (a) having larger social networks that include more family members, and (b) higher levels of social support and lower levels of social conflict, especially with family.
2. Past-negative TP will be associated with (a) reporting fewer family members in one's network, and (b) lower levels of social support and higher levels of social conflict, especially with family.
3. Future TP will be (a) unrelated to social network size, but (b) associated with higher levels of social support and lower levels of social conflict, especially with significant others.
4. Present-hedonist TP will be associated with reports of larger social networks that include proportionally more friends and acquaintances.
5. Present hedonists will report more social support and companionship, and less social conflict especially with friends and acquaintances.
6. Present-fatalist TP will be associated with reports of smaller networks, less social support and greater conflict with friends and acquaintances.

METHOD

Recruitment and Procedures

Five-hundred eighty-nine undergraduates enrolled in introductory psychology courses at three Bay Area universities participated in this research in exchange for course credit and/or an opportunity to win cash prizes (College of San Mateo, $N = 165$; San Francisco State University, $N = 214$; Stanford University, $N = 210$).[2] This diverse sample was 67% female, 45% Caucasian, 33% Asian, 10% Latino, 8% interethnic mix, 2% African American, and 2% other. The students ranged in age from 17 to 52 when they completed the questionnaire with an average age of 20.3 years ($SD = 4.20$).

Questionnaire packets were distributed to undergraduates in their psychology classes. Students were given a brief description of the study and asked to complete the questionnaire in private and without interruptions during the subsequent week. One week later, students deposited their questionnaires in a sealed box as they entered their classroom.

Three months after students had completed the first questionnaire, they were asked to complete a follow-up questionnaire in exchange for the opportunity to win a cash prize. As with the original questionnaire, students were given the questionnaire in their psychology class and asked to complete it in private and without interruptions during the subsequent week. The questionnaire was collected from students as they entered their classes one week after it was distributed. A total of 352 students completed both questionnaires, representing a 58% return rate at Wave 2. The students who completed both questionnaires were included in a lottery

[2]Because of restrictions in the number of measures we were allowed to administer to the Stanford students, some of the analyses reported in this article are based only on data provided by the San Francisco State and College of San Mateo students ($N = 387$).

to win one of four $50 prizes. A computer program randomly selected the four winners from the pool of eligible students.

Wave 1 Measures

The questionnaire included several measures including assessments of demographics, TP, the structure of respondents' social networks, the quality of respondents' interactions within their network (social support, conflict, undermining), and psychological distress.

Time Perspective

TP was assessed in this study using the ZTPI. This 56-item measure has been developed and tested in several different contexts and cultures and has been shown to have good reliability and validity (see Zimbardo & Boyd, 1999). The ZTPI includes items assessing five different TP factors: past-negative, past-positive, present hedonist, present fatalist, and future. Respondents are asked to indicate "how characteristic or true is this of you?" using a 5-point scale ranging from 1 (*very untrue*) to 5 (*very true*). Each subscale was found to have relatively good reliability: past-negative $\alpha = .81$, past-positive $\alpha = .74$, present hedonist $\alpha = .76$, present fatalist $\alpha = .69$, and future $\alpha = .74$.

Social Network Structure

Respondents' social networks were assessed using a modified version of Norbeck's Social Support Questionnaire (Norbeck, Lindsey, & Carrieri, 1981). This scale was originally adapted by Urbanowicz (1992) and further modified for this study. Respondents were asked to identify up to 20 of the most important individuals in their lives and list their gender, relationship to the respondent, and the length of that relationship. From this measure we obtained information regarding the relative size of each student's network (0–20); gender preferences in network composition; the relative predominance of family, friends, or others in the social network; and the length of relationships represented in the network.

Interpersonal Characteristics of Social Network

A second set of measures was used to assess the interpersonal characteristics of respondents' social networks more broadly. For these measures respondents were asked to answer a set of questions about each of four groups of people—their significant other/spouse, family/close relatives, close friends, and acquaintances. These items were separate from the measure of social network structure previously described.

Social support. Several measures of support were obtained. First, respondents indicated how many of the people listed in their social network actually provided different types of support (e.g., give advice or information, discuss private matters, provide encouragement), both in general and in the past month. Respondents also answered a series of nine questions about the frequency with which they had received different types of support in the previous month. Items were taken from a measure of social support developed by Abbey, Abramis, and Caplan (1985) and were rated on a 5-point frequency scale ranging from 1 (*never*) to 5 (*all the time*). The subscale had excellent reliability for each of the four sets of support providers (αs = .91–.94).

Social undermining and conflict. Social undermining was assessed with five items developed by Abbey et al. (1985). Respondents were asked to indicate how often in the previous month they had experienced "undermining" interactions (e.g., others had criticized them, made them feel unwanted, made their lives difficult) with each of the four groups of people (significant other/spouse, family/close relatives, close friends, and acquaintances). Items were rated on a five-point frequency scale ranging from 1 (*never*) to 5 (*all the time*).

Social conflict was assessed using five items from Lepore's (1992) social conflict scale. Items in this scale address fights or arguments with another person, being upset with someone, having a disagreement with someone, being openly angry with someone, and being highly critical of someone. Respondents answered these questions in reference to their interactions with each of the four groups of people (previously described) in the past week. All items were rated on a 5-point scale ranging from 1 (*never*) to 5 (*all the time*).

Factor analysis of social support, conflict, and undermining items suggested seven underlying factors accounting for 58% of the total variance. Social support items consistently loaded highly (>.45) together for significant other, family/close relatives, close friends, and acquaintances. Social conflict and undermining items also consistently loaded highly together for each group within the social network as well, suggesting a general underlying construct reflecting negative social interactions. Reliability alphas for the social conflict/undermining subscales ranged from .82 to .94.

Social companionship. Social companionship was assessed with a three-item measure addressing the frequency with which respondents had visited, shared a meal, or gone out with their friends in the previous month. Items were measured using a 5-point scale ranging from 0 (*never*) to 4 (*almost daily*). The scale had very good reliability ($\alpha = .83$).

Psychological Distress

Psychological distress was assessed using the Brief Symptom Inventory (BSI; Derogatis & Melisaratos, 1983), a 53-item scale assessing psychopathological symptomatology. The BSI has been found to be reliable and valid in normative populations, and its scores are highly correlated with comparable SCL–90–R scores (Derogatis & Melisaratos, 1983). Respondents indicated how distressed they were by each symptom in the previous week using a 5-point intensity scale ranging from 0 (*not at all*) to 4 (*extremely*). The items were averaged to produce the Global Severity Index, which is an overall measure of psychological distress. This measure had excellent internal consistency ($\alpha = .96$).

Wave 2 Measures

The Wave 2 survey included measures identical to the first survey for TP, social support, conflict, and undermining with the four groups of people, and psychological distress. Factor analyses and reliability estimates for measures taken in Wave 2 were comparable to those in Wave 1 for all ZTPI, social support, conflict/undermining, and BSI scales.

Analytic Strategy

Hierarchical multiple regression was used to address the relationships between continuous ZTPI scores and the overall size and composition of respondents' social networks (e.g., number of parents, siblings, friends). Variables were tested in blocks (demographics, distress, size of social network, TP scores), and final models were trimmed to include significant variables ($p < .05$). Generalized Estimating Equations (GEE), which allows more parsimonious analysis of longitudinal data, was used to examine correlates of social support, conflict, and undermining as assessed at our two time points for each of the four groups of network members. These analyses were conducted with the continuous TP scores and the social support, conflict/undermining scores from both time points configured as longitudinal variables. Because current distress was associated with both TP scores and some social network variables, it was entered before the ZTPI scores in all the analyses reported herein. These analyses also adjusted for age, gender, ethnicity, and size of the social network as appropriate. Tests of multicollinearity indicated that the independent variables were not sufficiently correlated to bias our results.

RESULTS

Time Perspective and Social Network Characteristics

Bivariate correlations between ZTPI scores and the characteristics of social relationships are presented in Table 1. Hierarchical multiple regression was used to examine how TP was associated with the total number of people respondents reported having in their social networks at Wave 1. After adjusting for age, gender, ethnicity, and current distress, higher past-positive

TABLE 1
Bivariate Correlations Between Wave 1 ZTPI Scores and Wave 1 Social Network Characteristics, Social Support, Undermining, and Conflict

	Wave 1 ZTPI Subscale						
	PN	*PP*	*PF*	*PH*	*F*	*M*	*SD*
Social network size[a]	−.01	.14**	.06	.13*	.04	11.86	5.65
M length of relationships[a]	−.17**	.12*	−.17**	−.06	.10*	10.24	4.50
No. of parents in SN[a]	−.13**	.20**	−.01	.01	.07	1.53	0.86
No. of extended family in SN[a]	−.07	.14**	−.04	.11*	.11*	1.34	1.99
Social support–All[b]	−.25***	.34***	−.20**	.07	.22***	3.56	0.62
Significant other	−.21***	.19**	−.15**	.00	.19**	3.83	0.96
Family	−.26***	.35**	−.20**	−.02	.16**	3.76	0.83
Friends	−.13**	.26***	−.14**	.09*	.16**	3.78	0.78
Acquaintances	−.13**	.18**	−.13**	.08	.13**	2.93	0.83
Social undermining/Conflict–All[2]	.40***	−.20**	.26***	.08	−.09*	1.85	0.57
Significant other	.37***	−.08	.15**	.04	−.02	2.09	0.81
Family	.38***	−.25***	.23***	.07	−.08	2.06	0.86
Friends	.27***	−.11*	.21***	.07	−.10*	1.67	0.64
Acquaintances	.21**	−.03	.18**	.09	−.05	1.65	0.66

Note. ZTPI = Zimbardo Time Perspective Inventory; PN = past negative; PP = past positive; PF = present fatalist; PH = present hedonist; F = future; SN = social network.

[a] $N = 386$. [b] $N = 549$.

*$p < .05$. **$p < .01$. ***$p < .001$.

TABLE 2
Regression Models Assessing the Relationship Between Time Perspective and Characteristics of Social Network

	Size of SN[a]		*M Length of Relationship*[b]		*No. of Parents*[c]	
Variable	*β*	*T*	*β*	*T*	*β*	*T*
Past negative	−0.02	−0.28	−0.12	−2.24*	−0.13	−2.52**
Past positive	0.12	2.30*	0.16	3.38***	0.12	2.30*
Present fatalist	0.07	1.17	−0.03	−0.58	0.08	1.41
Present hedonist	0.09	1.69†	−0.01	−0.20	−0.06	−1.07
Future	0.04	0.71	0.02	0.31	0.10	1.98*

Note. All analyses were tested for age, gender, ethnicity, current distress, and time perspective scores. Significant variables from preliminary analyses were included in the final models reported. Mean length of relationships and number of parents analyses were also adjusted for size of social network before entering time perspective scores. SN = social network.

[a] $\Delta R^2 = .03$, $F(\Delta R^2) = 2.69$, $p < .02$, $N = 376$. [b] $\Delta R^2 = .04$, $F(\Delta R^2) = 4.35$, $p < .001$, $N = 377$. [c] $\Delta R^2 = .04$, $F(\Delta R^2) = 3.89$, $p < .001$, $N = 374$.

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

scores were significantly associated, and present hedonist scores were marginally associated with having larger social networks (Table 2).

The relationship between ZTPI scores and the average length of the social relationships reported by the students was examined with adjustments for age, gender, ethnicity, current distress, and the size of their social network. TP was significantly associated with the average length of relations reported (in years), $\Delta F(5, 369) = 4.35$, $p < .001$. On average, the social networks of respondents with higher past-positive scores included longer lasting relationships whereas the networks of those with higher past-negative scores included shorter relationships (see Table 2). None of the other TP factors was related to the length of relationships reported in respondents' networks.

The relationship between the ZTPI subscale scores and constituency of respondents' networks (e.g., parent figures, siblings, friends) was then examined. After adjusting for significant demographics, current psychological distress, and the size of respondents' social networks, past-negative scores were negatively associated with the number of parent figures (parents, stepparents, grandparents, godparents; see Table 2) and the number of other relatives (e.g., aunts, uncles, cousins) that respondents reported having in their networks. In contrast, past positive and future scores were positively associated with the number of parent figures included in their social networks (see Table 2). TP scores were not associated with other constituencies within respondents' social networks (e.g., significant others, siblings, friends).

Time Perspective and Social Support Over Time

GEE analyses were used to examine the relationships between ZTPI scores and the frequency with which respondents reported receiving support from (a) all network members combined, (b) significant others (spouse, romantic partner), (c) family members/close relatives, (d) close friends, and (e) acquaintances over the 3-month period of our study (see Table 3). TP was strongly associated with the overall social support measure after adjusting for demographics and current distress (see Table 3). Past-positive, present hedonist, and future

TABLE 3
GEE Models Assessing the Relationship Between Time Perspective and Social Support From Different Members of Social Network

	All		*Sig Other*[a]		*Family*[b]		*Friends*[c]		*Acquaintances*[d]	
Variable	*β*	*z*	*β*	*z*	*β*	*z*	*β*	*z*	*β*	*z*
Past negative	−0.15	−2.32*	−0.09	−1.16	−0.19	−3.03**	−0.05	−0.72	−.09	−1.32
Past positive	0.27	4.65***	0.14	1.98*	0.40	7.16***	0.15	2.46*	.15	2.28*
Present fatalist	−0.04	0.52	−0.02	−0.26	−0.02	−0.26	−0.02	−0.34	−.06	−0.88
Present hedonist	0.16	2.26*	0.09	0.90	−0.04	−0.66	0.22	2.64**	.25	3.16**
Future	0.20	3.05**	0.26	3.09**	0.16	2.38*	0.16	2.10*	.10	1.28

Note. All analyses were adjusted for time, significant demographics, and current distress before entering the block of time perspective scores. Standardized *β* is presented as the effect size to allow comparisons within analyses of the relative importance of each variable. GEE = Generalized eralized Estimating Equations; Sig = significant.

[a] Wald $\chi^2(10, N = 464) = 178.29$, $p < .001$. [b] Wald $\chi^2(9, N = 323) = 67.80$, $p < .001$. [c] Wald $\chi^2(10, N = 461) = 166.06$, $p < .001$. [d] Wald $\chi^2(10, N = 452) = 106.88$, $p < .001$. [e] Wald $\chi^2(9, N = 436) = 65.27$, $p < .001$.

* $p < .05$. ** $p < .01$. *** $p < .001$.

TABLE 4
GEE Models Assessing the Relationship Between Time Perspective and Social Conflict and Undermining with Different Members of Social Network

	All[a]		*Sig Other*[b]		*Family*[c]		*Friends*[d]		*Acquaintances*[e]	
Variable	β	z	β	z	β	z	β	z	β	z
Past negative	0.13	2.51**	0.21	2.89**	0.18	2.93**	0.09	1.43	−.05	−0.71
Past positive	−0.13	−2.65**	−0.02	−0.23	−0.19	−3.54***	−0.01	−0.17	−.03	−0.43
Present fatalist	0.10	1.64	−0.14	−1.75	0.06	0.89	0.06	0.90	.15	1.88§
Present hedonist	0.03	0.51	−0.02	−0.24	0.09	1.34	0.01	0.03	.04	0.57
Future	−0.02	−0.37	−0.07	−1.04	−0.06	−0.92	−0.08	−1.01	.11	1.49

Note. All analyses were adjusted for time, significant demographics, and current distress before entering the block of TP scores. Standardized β is presented as the effect size to allow comparisons within analyses of the relative importance of each variable. GEE = Generalized Estimating Equations; Sig = significant.

[a]Wald $\chi^2(9,\ N=470)=248.89,\ p<.001$. [b]Wald $\chi^2(9,\ N=322)=87.72,\ p<.001$. [c]Wald $\chi^2(11,\ N=461)=170.51,\ p<.001$. [d]Wald $\chi^2(9,\ N=458)=105.29,\ p<.001$. [e]Wald $\chi^2(11,\ N=431)=150.77,\ p<.001$.

§$p=.06$. *$p<.05$. **$p<.01$. ***$p<.001$.

TPs were all associated with reports of receiving more social support, whereas past-negative TP was associated with reports of receiving less social support.

We had expected past TPs to be most strongly associated with respondents' relationships with family members, present TPs to be most relevant to respondents' relationships with friends and acquaintances, and future TP to be most meaningfully associated with the quality of respondents' relationships with their significant other. We found that although past-positive scores were significantly associated with the degree of support received from every group, the association was strongest for the degree of support received from family. As expected, past-negative TP was also strongly and negatively associated with the degree of support received from family. Present hedonism was strongly and positively associated with the degree of support received from close friends and acquaintances but not from family or significant others. Finally, although future orientation was also positively associated with the degree of support received from family and close friends, its strongest association was with support received from significant others.

Time Perspective and Social Conflict/Undermining

GEE analyses were also used to examine the relationship between TP scores and social conflict/undermining (see Table 4). Both past-positive and past-negative TPs were significantly associated with overall levels of social conflict/undermining after adjusting for all significant demographics and current distress, but in opposite directions (see Table 4). Individuals with higher past-negative TP reported more social conflict/undermining, whereas individuals with higher past-positive orientation reported significantly less social conflict/undermining within their social networks. In keeping with our hypotheses, these findings were most pronounced in respondents' family relationships—respondents with high past-negative TP reported the highest levels of social conflict/undermining in their family relationships, whereas respondents with high past-positive TP reported the lowest levels of social conflict/undermining in family relationships, after adjusting for demographics and current distress. Past negative TP was also significantly associated with higher levels of social conflict/undermining with significant others. Finally, present fatalism was marginally associated with higher social conflict/undermining but only with acquaintances (see Table 4).

Time Perspective and Social Companionship

As hypothesized we found that present hedonism was strongly associated with reports of social companionship after adjusting for significant demographics and current distress ($\beta=.20,\ t=3.93,\ p<.001$), $\Delta F(5, 363)=3.74,\ p<.003$. None of the other ZTPI scores was associated with social companionship.

DISCUSSION

This study provides preliminary empirical evidence suggesting that time perspective—broadly defined as a multidimensional, malleable cognitive process—is related to the structural and interpersonal characteristics of social networks. Specifically, past-positive TP was associated with reporting a larger social network comprised of long-lasting relationships, often with family, through which respondents received a great deal of support. Past-negative perspective, on the other hand, was associated with including fewer parent figures and

other relatives in one's network, lower levels of social support, and higher levels of social conflict/undermining, especially with family members. However, past-negative TP was also associated with more conflict/undermining in relationships with significant others. This finding might be explained by the theory of "the relational self," which suggests that transference is a mechanism by which our early attachments with primary caregivers are perpetuated in subsequent intimate relationships (Saribay & Andersen, 2007a). To the extent that respondents with a past-negative TP had negative social interactions with family members early in life, transference may have introduced negativity into their current relationships with significant others (Saribay & Andersen, 2007a), leading to reports of more social conflict/undermining in those relationships as well. It is also possible that respondents chose to list in their networks only those family members with whom they had conflict because these relationships were more salient than familial relationships that were comparatively more supportive and calmer. Under these circumstances it would be difficult to generalize our findings regarding specific TP–relationship category (e.g., family, friends) associations. Future research using objective measures of respondents' social networks to compare objective with subjective reports of social networks could clarify whether these reporting biases might affect the relationships between TP and social network characteristics.

We also found that respondents who were high on present hedonism reported higher levels of social companionship and more support from friends and acquaintances. These findings underscore the need to consider TP more broadly than merely in the context of "life-stage endings," because they suggest that people who are strongly present oriented *in general* may have larger networks and may make social partner choices that differ from those predicted by the SST paradigm. From the perspective of CLT, it might also be useful to examine intervening variables (e.g., life circumstances, extroversion) to explain how attending to context-specific factors and subordinate goals in the present might lead one to prefer larger social networks (see Trope & Liberman, 2003).

In partial support of our hypotheses, future TP was most closely linked to relations with significant others. However, we did not anticipate the strong relationship between future TP and support from family and close friends. Unlike findings from previous studies that suggest an expansive future orientation is associated with preference for unfamiliar social partners (see Carstensen et al., 1999; Fung, Carstensen, & Lutz, 1999), future TP was associated with having a social network that included more parent figures and extended family, as well as higher levels of social support received from significant others, family, and close friends. In fact, high future TP was *not* associated with social network size, companionship, or support provided by acquaintances—the least intimate, most unfamiliar component of respondents' social networks. These findings represent a substantial divergence from the expectations of SST, where future TP involves a focus on knowledge attainment that would lead to larger, more inclusive, and less intimate social networks (see Carstensen et al., 1999).

There are many potential explanations for these differences. SST studies focus on shifts in TP from an expansive future to a more present orientation in the context of dealing with an ending (end of life, graduation, etc.). Such endings are often emotionally laden experiences as they force individuals to face an unknown future or their own mortality (Pyszczynski, Greenberg, & Solomon, 1999). In so doing, perceived endings may enhance one's desire for emotionally meaningful relationships, increase one's need for emotional support, and thereby make us seek out emotionally close relationships that can buffer the effects of this anxiety (see Florian, Mikulincer, & Hirschberger, 2002). But we would suggest that TP is not just relevant to social relationships during perceived endings. Rather, we see TP as a pervasive cognitive process that influences the types of social encounters we seek out and create in our everyday lives, independent of the endings we all encounter. As such, it plays an important role in guiding our social behavior and shaping our view of the social world around us (DeWall et al., 2006; Levine, 1997). Hence, our research has attempted to measure (rather than manipulate) the multidimensional components of TP to evaluate the unique relationship between each TP and the structural and interpersonal characteristics of social networks in general.

It could also be argued that our findings diverge from CLT where a future TP—which focuses on global, more distant, and less intimate goals—might lead respondents to report less, rather than more, support from similar contacts (e.g., significant others) when compared to present TP, which focuses on context-specific, more intimate goals. But in our study future, not present, TP had the strongest association with support from significant others who represent the most intimate network members examined (see Liviatan, Trope, & Liberman, 2008). At the same time, because the relationship between future TP and social support weakened incrementally as the level of similarity with respondents decreased (i.e., from significant other to acquaintance), these findings could be interpreted as support for CLT in that social distance appeared to moderate the relationship between future TP and reports of support (e.g., Liviatan et al., 2008). To make sense of these differences, we would suggest the need to consider the role of world views (e.g., beliefs about the benevolence

of people and the world) or personality traits (e.g., extroversion, neuroticism) as possible moderators of the relationship between time perspective and social network characteristics as these overarching views are likely to influence how we construe others.

Finally, present fatalism was the only TP that did not show a consistent pattern of associations with social network characteristics. This negative finding was a bit surprising given the strong pattern of associations found between present fatalism and various personality traits (Zimbardo & Boyd, 1999). However, it is precisely the strongest of these associations that is likely to explain our negative findings. Present fatalism has been strongly and positively correlated with both depression and anxiety in previous studies (Zimbardo & Boyd, 1999). In this study we sought to eliminate the impact of potentially confounding dispositional affective styles on our findings by controlling for concurrent distress. We used a standardized measure of generalized distress that includes subscales of depression, anxiety, and somatization (Derogatis & Melisaratos, 1983). We suspect that present fatalist TP was not a strong correlate of social network characteristics after controlling for distress in part because it overlaps substantially with negative affectivity. Nonetheless, present fatalism was marginally associated ($p < .06$) with higher levels of conflict/undermining only with friends and acquaintances, *even after* controlling for distress, suggesting that the present fatalism is not just a proxy for negative affect.

An important contribution of this research is our focus on the multidimensional nature of TP. Prior to this study little had been done to examine the social network correlates of past TP, as most comparisons had focused on present versus future TP. Because past and future events have an impact on the present moment (Lewin, 1951), it is important to understand the role past, present, and future TP dimensions may have in shaping our immediate social environment. However, it is necessary to consider the impact social networks may have on different dimensions of TP. Given the recent work demonstrating how social networks can influence cognitive processes such as attitude strength (Visser & Mirabile, 2004), future research should explore how TP and social processes mutually influence one another. This is especially important as there is clinical evidence suggesting that overemphasizing any one TP may lead to out-of-synch interactions with others that evolve into destructive "emotional spirals" and progressively worsen the quality of one's social interactions (Melges, 1982, p. 69). We have reported elsewhere (Holman & Zimbardo, 2008) preliminary evidence that past-positive and future TPs may be part of a positive cycle through which socially supportive relationships increase past-positive and future TP over time, which in turn feed forward to reinforce socially supportive relationships. To the extent that individuals are able to maintain a past-positive as well as future orientation over time, they may improve well-being by promoting emotionally positive interactions with others (see Fredrickson, 2001; Löckenhoff & Carstensen, 2004). However, to examine reciprocity between TP and social relationships more carefully one would need to conduct a long-term prospective longitudinal study that includes (a) preassessments of personality, time perspective, and social network characteristics, and (b) multiple follow-up assessments.

Limitations

Several unanswered questions remain for future research consideration. We acknowledge that the correlational nature of this study necessitates caution when interpreting our findings—they should be considered preliminary evidence suggesting specific patterns of TP–social network relationships. As our sample was a convenience sample of college students we also cannot generalize beyond this study. Moreover, the longitudinal follow-up survey was completed by only 58% of the original sample so we have no way of knowing how this drop out may have affected our results. Nonetheless, we note that the majority of students in this study were recruited from universities that serve an ethnically diverse, generally lower socioeconomic population. We would also suggest that it is important in future research to consider the role of dispositional optimism and other personality characteristics (such as openness, impulsivity, extroversion) that may be confounded with TP to examine their independent influence on social behavior. By adjusting our analyses for psychological distress we were able to rule out, to a large degree, the potential confounding of negative affectivity with past negative and present fatalist TPs.

Although we have conducted studies suggesting that future orientation has substantial predictive power above and beyond its association with positive affect and optimism (Holman, 2000; Holman & Silver, 2005), it would be important for researchers to demonstrate a similarly robust set of findings between social relationships, past-positive, and future TP after adjusting for optimism and positive affect to make sure our findings are not a function of these potential confounds.

Finally, our measure of social networks was limited because respondents were free to choose who to include. Hence, our findings suggest that TP may influence who people consider "important" when reporting members of their social network, but we do not know the degree to which TP is related to an objective assessment of social network composition. Nonetheless, our findings underscore the importance of TP in people's subjective experience of social relationships. Given the resurgence

of interest in social networks, we believe it is important for future work to evaluate more closely how multidimensional TP may interact with other dynamic cognitive, emotional, and social processes (relational self, attribution, affect) to influence the structure and function of our social networks (Andersen & Chen, 2002; DeWall et al., 2006; Visser & Mirabile, 2004).

CONCLUSION

Together, these findings expand upon previous work by identifying TP as a powerful, pervasive, yet little recognized cognitive filter that helps shape the nature and quality of social relationships. The fact that we identified significant associations between TP and the characteristics of social networks in everyday circumstances speaks to the foundational nature of TP as a lens through which we perceive, interpret, and negotiate our physical and social worlds. Time perspectives frame our social context, give meaning to certain social experiences, and aid or hinder receipt of essential social support. But TP may also contribute to personal and social conflict by increasing the current accessibility of mental representations of negative interactions with important others from our past (e.g., Andersen et al., 1995).

Of importance, we suggest that time perspective can enhance the formation and maintenance of healthy, supportive social ties under ordinary, nontraumatic circumstances. As such, TP plays a central role in promoting psychological health and well-being (see Holman & Silver, 2005). It has been suggested that the ideal TP is represented by a balanced blend of multiple factors—in essence a combination of moderately high levels of past-positive, present hedonistic, and future TPs. As shown in the findings reported here and in earlier research, past negative (and perhaps present fatalist) TP may render individuals more vulnerable to negative affective states and dysfunctional social interactions (Holman & Silver, 1998; see also Boniwell & Zimbardo, 2003, 2004).

We hope that future investigations will build on this work to clarify patterns and mechanisms of mutual influence between our subjective time perspective and social relationships. Doing so may generate valuable insights on how to improve our ability to adapt to the world around us by preventing distress and promoting positive, healthy social relationships.

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