Measuring Stress Resilience and Coping in Vulnerable Youth: The Social Competence Interview

Craig K. Ewart and Randall S. Jorgensen
Syracuse University

Sonia Suchday
Uniformed Services University of the Health Sciences

Edith Chen and Karen A. Matthews
University of Pittsburgh

A brief interview to measure stress coping capabilities was developed and tested in 4 samples of African American and White adolescents in low-income neighborhoods of 2 large U.S. cities. The Social Competence Interview (SCI) is a 10-min social stressor that assesses physiological and social–emotional responses to a recurring real-life problem. A new behavioral coding system using audiotapes permits reliable and valid assessment of components of social competence, including Interpersonal Skills (expressiveness, empathy), Goal-Oriented Strivings in coping (self defense, social acceptance, competitiveness, stimulation–pleasure, approval, self improvement), and Social Impact (high vs. low affiliation/control). High SCI expressiveness and self-defensive striving create a critical–aggressive social impact, which is correlated with increased hostility and anger.

The Social Competence Interview (SCI) measures personal capabilities that affect vulnerability to stress-related illnesses. It is derived from a competence model of risk in which the frequency, intensity, and duration of health-damaging stress is influenced by a person's ability to relate to others and to regulate emotions under challenging circumstances. *Social competence* is defined broadly as the ability to select and pursue desired, attainable goals by achieving control over one's actions and emotions by understanding, connecting with, and influencing other people.

Although social competence is not a new concept—antecedents include Thorndike's writings on "social intelligence" in the 1920s—renewed interest in the topic has been stimulated by the success of therapies based on social learning and information-processing models of mental health and adjustment (Argyle, 1970, 1983; Bandura, 1986; McFall, 1982; Spivack, Platt, & Shure, 1976; Spivack & Shure, 1974). These include social-skills-based approaches to psychiatric disorders, substance abuse, smoking, aggression, child development, education, organizational behavior, and problems of aging, to name but a few (Hollin & Trower, 1986a, 1986b). Reviews of this literature (e.g., Spitzberg & Cupach, 1989) have suggested that dominant themes include "control" (problem recognition, decision making, goal-setting, performance), "collaboration" (empathic understanding, relationship building, communication), and "social adaptability" (flexibility in adjusting one's emotional and behavioral responses to situational constraints). Some theorists have tried to integrate the diverse aspects of social competence within conceptual frameworks suggested by control theory (Argyle, 1983; Carver & Scheier, 1982, 1984) or systems theory (D. H. Ford, 1987; M. E. Ford, 1982, 1992).

The value of a social competence framework for studying stress derives from its ability to integrate personal and contextual phenomena that (a) are capable of generating chronic and potentially health-damaging arousal, (b) have been subjected to scientific study, (c) can be measured reliably, and (d) represent causal mechanisms that might be modified by means of empirically validated behavioral interventions (Ewart, 1991, 1994). Such a framework is needed in research on stress and health, which for years has been characterized by epidemiologic studies that have been inadequately grounded in behavioral theory. Although it is important to know, for example, that scores on a trait hostility scale correlate with increased heart disease risk (Barefoot, Dodge,

Peterson, Dahlstrom, & Williams, 1989), it is difficult to apply this knowledge without understanding the physiological and behavioral mechanisms that underlie the association.

The SCI addresses this need by serving both as an ecologically valid social stressor for laboratory research and as a measure of social competence. In stress assessment, measures of cardiovascular responses, hormones, or other indices obtained during the SCI offer a perspective on physiology in daily coping situations which, to a large extent, involve challenging interpersonal transactions (Bolger, DeLongis, Kessler, & Schilling, 1989; Zautra, Burleson, Matt, Roth, & Burrows, 1994). The reliability and validity of the SCI as a standard laboratory stressor have been documented previously. Blood pressure and heart-rate responses to the interview match or exceed the responses typically elicited by stressors such as mental arithmetic, mirror-image tracing, and video games (Ewart, Jorgensen, & Kolodner, 1998; Ewart, Jorgensen, Schroder, Suchday, & Sherwood, 2002; Ewart & Kolodner, 1991), and have been found to be superior to those stressors when predicting blood pressure elevations during normal daily activities as assessed by ambulatory monitoring (Ewart & Kolodner, 1993). Moreover, the SCI has been shown to elicit in children and adolescents a distinctive pattern of physiological responses that are associated with elevated levels of family conflict (Salomon, Matthews, & Allen, 2000).

The second use of the SCI, and the focus of this report, is in the assessment of social–emotional regulatory mechanisms believed to influence exposure to chronic, health-damaging stress (Ewart, 1994). We here describe the development and validation of an observation-based system to measure competence in stress-related coping, using ratings of SCI audiotapes. The SCI was developed for research on chronic diseases of the cardiovascular and immune systems that begin early in life and develop gradually over many years (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001; Wallander, 2000). It is derived from a social–cognitive model of competence that integrates behavioral mechanisms capable of generating episodes of stressful arousal that are frequent, intense, and prolonged (Ewart, 1991, 1994). In this model, susceptibility to chronic arousal is viewed as a function of a persons' goals or strivings, interpersonal skills, and impact on others.

Components of Social–Emotional Competence

Goal-Oriented Strivings

Emotional responses to stressful situations are shaped by a person's goals or *strivings,* defined as what one is "typically trying to do in life" (Diener, Suh, Lucas, & Smith, 1999, p. 284). People who strive to maintain inflated views of their own superiority, for example, are more likely to become angry when criticized than people who are less concerned about appearing superior to others (Baumeister, Bushman, & Campbell, 2000). Competence in coping with life's problems is increased by pursuing goals that are intrinsically valued and self-selected, realistically attainable, facilitated by one's life context, and compatible with other valued strivings (Diener et al., 1999). Personal strivings can shape one's emotional reactions to others by influencing the way a social encounter is appraised initially (Lazarus, 1991), and by activating associative networks of related ideas, memories, and expressive-

motor responses that amplify arousal (Berkowitz, 1990). Even in the absence of an external stressor, threat-relevant goals may increase vigilance to possible challenges (Crick & Dodge, 1994), thereby "priming" one to experience fear or anger. Chronic priming, as much as stressful encounters themselves, may impair physical as well as emotional health. Identifying the goals that a person perceives to be threatened in a stressful situation, therefore, is critical to understanding emotional and physiological responses. Goal-oriented strivings can be inferred from a person's account of the outcomes they expect in a stressful situation, and how they would like the problem to be resolved.

Interpersonal Skills

Success in achieving one's goals usually depends in some measure on the actions of other people, and thus demands skill in forming supportive relationships. Interpersonal skills include motor, cognitive, and affective behaviors that elicit positive responses from others and foster collaboration. They range from microlevel phenomena such as speech stylistics to higher level cognitive and affective capabilities essential to empathic understanding and perspective taking (Spitzberg & Cupach, 1989). Interpersonal qualities relevant to stress exposure include (a) expressive skills, including the ability to convey thoughts and feelings effectively; (b) speech stylistics, including loudness and speaking rate, which are related to expression and are associated with changes in heart rate and blood pressure; and (c) relationship-enhancement skills, including empathic understanding and rapport building. All of these behaviors may be assessed in a semistructured interview.

Social Impact

Social competence is "relational" in that the effectiveness of an interpersonal act is determined partly by how others respond. Behavior that is effective in one social milieu may prove ineffective in another. Assessment of social competence thus entails the measurement of "social impact." This is especially important in health research because of the demonstrated relationship between interpersonal impact and cardiovascular risk. Individuals (especially men) who are perceived as overbearing, rude, and hostile during interview assessment of Type A behavior have been shown to exhibit a cluster of cardiac-prone personality traits, including anger, hostile mistrust, and dysphoria/depression, that are associated with increased risk for coronary heart disease (Ferketich, Schwartzbaum, Frid, & Moeschberger, 2000; Matthews & Haynes, 1986; Smith, 1992). Interpersonal theories of dysfunction suggest that actions that hurt others elicit hostile counter-responses, damage relationships, and foster persisting stress. A positive impact, on the other hand, evokes supportive responses that lower stress. In the present social–cognitive model (Ewart, 1994), a person's social impact is generated jointly by his or her strivings during a social encounter and by interpersonal skills. Research has shown that untrained observers can make surprisingly reliable judgments of social impact even from brief (e.g., 30-s) observations of behavior (Ambady & Rosenthal, 1992), which can be made from recordings obtained during a semistructured interview.

Development of the SCI Coding System

An observational coding system to measure the above competence components from audiotapes was developed by Craig K.

Ewart in Project Heart, a series of community-based studies in Baltimore that tested the hypothesis that impaired coping skills, lack of social support, and persisting environmental stress cause chronic emotional distress and elevate cardiovascular risk factors (e.g., blood pressure, lipid profiles) in urban youth. In the first Project Heart Study (PH1; 1987–1991), a behavioral coding system derived from the social competence model (Ewart, 1994) was tested on audiotape data from stress interviews. The second study (PH2; 1992–1995) evaluated the model's ability to generalize to a different adolescent sample and tested its predictions about the temporal stabilities of various SCI scales. In Project Heart 3 (PH3; 1995–1999), the SCI scales' factor structure was replicated in a larger analysis that combined data from a new sample of Baltimore adolescents with data from a comparable sample in Pittsburgh. The construct validity of SCI scales to measure interpersonal skills, goal-oriented strivings, and hostile–aggressive social impact was evaluated.

Study 1

A model of social competence (Ewart, 1994) generated a proposed set of scales and behavioral items, with a system for coding them from interview audiotapes, in PH1, a study that administered the SCI to participating high school students as part of a battery of laboratory stress tasks. Principal-components analyses were performed to determine whether the scales' factor structure corresponded to the theoretically important dimensions of competence specified by the model.

Method

Sample. The study was conducted in two geographically adjacent Baltimore public high schools that function as "magnet" schools, drawing students from all areas and social strata of the city. One school is an all-female public high school; the other offers coeducational programs in science and engineering. All students in Grades 9 and 10 were invited to participate in a health screening program after their parents had been contacted to provide parental consent. Health screening involved a blood pressure check, and students were invited to undergo further assessment if their blood pressure was in the "high normal" range, which was defined as a screening blood pressure reading above the 75th percentile for adolescents of their age and sex, compared against published norms (Task Force on Blood Pressure Control in Children, 1987). In this and subsequent Project Heart studies, participation rates were high, with more than 90% of parents giving consent and with an equivalent percentage of students with parental consent electing to participate. The resulting sample included 78 African American girls, 52 Caucasian girls, 67 African American boys, and 53 Caucasian boys. The mean age of the participants was 14 years ($SD = 0.5$). The racial composition of the sample closely reflected that of the two magnet schools, which, like the surrounding city, is about 66% African American.

Study design and procedure. In Study 1 and in subsequent Project Heart studies, students with parental consent were introduced to the project during a physical education class; those interested provided informed consent. All assessments were performed in the Project Heart field laboratory, which was located in a quiet and relatively secluded classroom on a lower level of one of the schools. At the first session, participants completed a battery of questionnaires assessing trait affect and stress-related attitudes, and underwent blood pressure and anthropometric screening. Several weeks later, participants returned to the Project Heart lab to engage in a stress assessment protocol in which the SCI was presented with a battery of stress tasks that included mental arithmetic, a video game, and

mirror-image tracing challenges. In each study, the order in which the stress task battery and SCI were presented was counterbalanced across participants.

SCI. The SCI was administered by student interviewers (graduate and undergraduate, male and female) who were trained by Craig K. Ewart following a detailed manual (Ewart, Suchday, & Sonnega, 1997). Ewart monitored interview tapes to ensure that interviewers adhered to the SCI protocol. Interviewers were unaware of the study hypotheses.

The interviewer explained to the participant that the SCI was designed to "reveal how blood pressure reacts to everyday problems." The participant then was handed a deck of six cards; each named a category of stressors (school, work, family, friends, money, neighborhood) and listed examples given by high school students in previous studies. The participant was told to sort the cards from most to least stressful, removing any card with a topic he or she did not want to discuss. The interviewer then initiated a discussion of the most stressful topic (after emphasizing that the participant could change the topic if desired).

First, the interviewer determined whether the problem frequently caused stress; if it did not, a different topic was selected. The interviewer then asked why the problem was stressful, how often it occurred, and invited the participant to describe a specific instance when the problem arose. The first 4–6 min of the SCI were spent reconstructing this situation, including visual details of the setting, people present, their words and actions, what the participant did and said, what they avoided doing or saying, what happened as a result, and how others responded. The interviewer neither challenged nor harassed the participant but tried instead to help the person relive the stressful moment using guided imagery and reflective listening. Questioning was facilitated by a standard set of probes, for example, "Describe what happened," "What went through your mind?" "How did it feel?" "What did you do?" "What happened next?" The remainder of the SCI focused on strivings and coping resources; participants were asked about their preferred resolution of the problem (e.g., "Pretend that the problem situation you described is a TV drama and you can make it end any way you want"), possible strategies for achieving this outcome, their level of confidence that they could resolve the problem satisfactorily, and consequences that might ensue. The interview was recorded on a dual-track audiotape by means of lapel microphones attached to the interviewer and the participant. In PH1, the interview was timed to last 14 min. It turned out, however, that all relevant behavioral and physiological data were obtained in the first 10 min. In PH2 and PH3, therefore, the interview was shortened to 10 min.

Behavioral coding system. A preliminary set of behavioral indices to assess interpersonal skills, goal-oriented strivings, and social impact was developed from audiotapes of the 240 PH1 interviews. All ratings were made using a 5-point Likert scale from 0 (*not at all*) to 4 (*very much*). The initial set of Interpersonal Skill items was derived from a review of more than 70 interpersonal competence measures (Spitzberg & Cupach, 1989); items that were selected had the potential to affect physiological stress responses and could be coded reliably. The item pool included items intended to assess expressiveness (e.g., "Unguarded," "Gives detailed—not monosyllabic—responses," "Voice easily expresses emotion"), speech stylistics (e.g., "Speaks loudly," "Speaks emphatically," "Speaks rapidly"), and relationship-building skills (e.g., "Admits own limitations," "Shows empathy," "Accepts responsibility").

Goal-oriented strivings were assessed by rating participants' descriptions of their problem and its preferred resolution. Theories of motivation (D. H. Ford, 1987; M. E. Ford, 1992; McClelland, 1985) suggested an initial set of goal descriptors that could be grouped into six preliminary categories representing types of strivings presumed to increase or diminish the frequency of stressful daily experiences, or to facilitate or impair emotional regulation. Three of the six goal categories pertained to interpersonal strivings, and were labeled Self-Defense (e.g., trying to stop hostile criticism, rumors, abuse, or to get even with someone), Acceptance–Affiliation (e.g., trying to secure someone's sympathetic sup-

port, affection, or understanding), and Competitiveness (e.g., trying to convince others that you are better than they are in a sport or school subject, striving to win respect from a teacher or coach who doubts your capabilities); the other three categories pertained to strivings for self-enhancement and were labeled Self-Improvement (e.g., trying to make the honor roll or an athletic team, striving to acquire a valued skill), Approval Seeking (e.g., wanting to please a parent, wanting to meet someone's expectations), and Stimulation–Pleasure (e.g., striving for money, better clothes, jewelry, or an exciting social life).

Social impact was assessed with four items derived from circumplex models of interpersonal relations (Benjamin, 1996; Kiesler, 1986; Leary, 1957; Wiggins & Broughton, 1985) that organize interpersonal behaviors on a circle whose underlying points are defined by a horizontal axis of "affiliation" (friendliness vs. hostility) and a vertical axis of "control" (control/dominance vs. submission/withdrawal). Four single-item rating scales were created to represent the four quadrants as follows: Responsible–Generous (high affiliation/high control), Modest–Dependent (high affiliation/low control), Critical–Aggressive (low affiliation/high control), Guarded–Oppositional (low affiliation/low control). In keeping with the interpersonal model (Kiesler, 1983), raters were told to consider their own personal reactions to a participant's remarks (e.g., reactions of tenderness, helpfulness, hostility, disengagement) when rating social impact. The four Social Impact scales are provided in Appendix A. The Critical–Aggressive Impact scale was deemed especially important, as it corresponds to a primary behavioral index of "coronary-prone" personality.

The audiotapes were coded independently by Craig K. Ewart and a graduate student. A random 33% of the 240 interviews were coded by both to permit assessment of interrater agreement. The correlations between the two raters' scores on each of the scales ranged from $r = .71$ to $r = .86$.

Results and Discussion

Principal-components analyses of the Striving items and the Interpersonal Skill items, followed by varimax rotation, indicated that the structure of the Striving items might be represented adequately by the proposed six scales. The analysis of the Interpersonal Skill items disclosed, however, that items in this domain were more appropriately represented by two scales rather than the proposed three. Expressiveness and Speech Stylistics items tended to load on the same factor and hence were combined into a single scale that subsequently was labeled Expressive. Most of the Relationship-Building items loaded on a second factor, labeled Reflective–Empathic. These results provided initial support for the proposed social competence model and coding system. Moreover, the pattern of factor loadings suggested modifications that were incorporated into a revised coding system tested in PH2.

Study 2

A second study, using data from PH2, evaluated the factor structure of the revised coding system, which included new scale items and a detailed instruction manual to enhance interrater reliability. This study also assessed the temporal stability of the SCI scales over a 3-month interval. Test–retest correlations were examined against predictions from the social competence model, which holds that interpersonal skills (Expressiveness, Reflective–Empathic) represent comparatively stable personal characteristics. Goal-oriented strivings, on the other hand, respond partly to situational coping demands; their temporal stability therefore should be affected by the extent to which the problem that elicited them persists over time. The stability of Social Impact scores, which are influenced both by interpersonal skills and goal-oriented strivings, also should be related to the stressor's temporal persistence.

Method

Sample. PH2 was a randomized trial of school-based aerobic exercise to lower blood pressure in high-risk girls. To ensure a sufficiently large sample, PH2 used a blood pressure value above the 66th percentile of normal pressure as a selection criterion to identify girls with "high normal" blood pressure. The study sample consisted of 71 African American girls and 32 Caucasian girls.

Study design and procedure. Informed consent, health screening, and interview procedures were identical to those used in PH1. The SCI was administered as part of a stress task battery that included a mirror-image tracing task; the order of the two tasks was counterbalanced across participants to control for sequence effects. One of two female interviewers (one African American and one Caucasian) administered the interview. Procedures were identical to those used in Study 1, except that the interview was shortened from 14 to 10 min as mentioned above (data analyses in PH1 reported above had used only the first 10 min of the interview). Girls were interviewed at the start of the semester on entering ninth grade, prior to randomization, and again 3 months later at posttest.

Coding procedure and interrater reliability. Coders were nine university students and three clinical psychologists who had been trained by Craig K. Ewart. Coders listened to each interview twice; Interpersonal Skills were coded after the first hearing and Goal-Orientation and Social Impact ratings were coded after the second hearing. Training materials included a detailed manual and recorded samples from PH1 interviews illustrating graded differences in speech rate, volume, and inflection, as well as goal-orientation and impact. Twenty-five of the interviews were coded independently by Ewart and three clinical psychologists; their ratings were used to generate consensus-based scores for each of the 25 interviews. Tapes of these interviews were then used to train the coding team. Fifteen of the interviews were designated "training" interviews; all coders independently rated these interviews and received corrective feedback from Ewart, the project coordinator, or both until they were judged to have mastered the coding system. Then they coded the remaining 10 training interviews, which were used as "calibration" interviews on which interrater reliability was assessed. Coders were retained in the study only if their ratings differed from the calibration standard by ≤ 1 scale unit (5-point rating scale) on at least 80% of items rated. After they began coding tapes for data collection purposes, their reliability was monitored by computing interrater agreement with other coders on a weekly basis. When interrater agreement failed to meet the calibration standard, the project coordinator reviewed the interview tape and resolved the disagreement by referring to the training manual. This was necessary in approximately 10% of the interviews.

All interviews were coded independently by at least two different coders; approximately one fifth of the interviews were also coded by one of the project coordinators and/or Craig K. Ewart to ensure accuracy. Interrater agreement was assessed by computing correlations between all coder pairs; Pearson coefficients of interrater agreement were .90 or higher for all scales except Competitive Striving ($r = .76$) and Reflective–Empathic ($r = .64$).

Results and Discussion

Factor analysis. The 17 Interpersonal Skill items in the initial item pool were subjected to principal axis factor analysis (principal components with squared multiple correlations serving as the communality estimates), which yielded a scree plot suggesting a two-factor solution. The analysis was then repeated with the number of factors set at two and subjected to varimax rotation, which generated a structure suggesting the existence of two independent

factors that together accounted for 53% of the total variance. The first factor, consisting of items describing expressive characteristics and speech stylistics, had an eigenvalue of 7.43 (40% of the variance), whereas the second factor, consisting of items describing capacity for empathic awareness and self-reflection, had an eigenvalue of 1.51 (13% of the variance). The items were then subjected to a promax (oblique) rotation, which generated the same factor structure, indicating that the factors were indeed orthogonal.

The factor loadings of the Interpersonal Skill items from the varimax rotation are shown in Table 1. All but one of the Expressive (EX) items loaded on the first factor and not the second, and all of the Reflective–Empathic (RE) items loaded on the second factor but not the first. Item EX 12 loaded about equally on both factors, suggesting that it captured both a tendency to be nonreflective or lacking empathy, as well as a lack of emotional expressiveness.

The six scales designed to measure Goal-Oriented Strivings were subjected to similar factoring procedures. The scree plot suggested a five-factor solution, which varimax and promax rotations identified as independent factors that together accounted for 56% of the total variance. Successive rotations with the number of factors set at four, three, and two yielded results that supported the superiority of the five-factor interpretation. Again, subsequent promax rotation generated the same factor structure.

Factor loadings of the Strivings items (varimax rotation) are shown in Table 2. The pattern was interpretable within the social–emotional competence framework, although there were a few inconsistencies. The first factor, with an eigenvalue of 9.25 (14% of the variance), consisted largely of Self-Defense (SD) scale items, which loaded positively, and Self-Improvement (SI) items, which loaded negatively. This pattern was consistent with a review of the interview tape contents, which revealed that individuals whose primary striving involved protecting themselves from hostile attack ("self defense") tended to focus almost entirely on the external interpersonal threat (e.g., a hostile person) and not on their need to enhance their own abilities, whereas individuals who were concerned with improving their personal capabilities tended to focus on their own internal struggles and aspirations rather than on other persons. The factor pattern thus appeared to be a consequence of the type of stress situation the individual chose to discuss and how the person framed the threat. The one Self-Defense item that did not load on Factor 1 was the item, "Get others to stop excluding or ignoring me," which loaded positively with the Acceptance–Affiliation (AA) items on Factor 2 in a manner suggesting that this item reflected a striving to affiliate rather than a response to indirect hostility (i.e., being ignored). The one Self-Improvement item that did not load on Factor 1 was the item SI 1, which loaded positively with the Stimulation–Pleasure (SP) items on Factor 4.

The AA items loaded on Factor 2, with an eigenvalue of 3.65 (14% of the variance), with the exception of one item, AA 5, which instead loaded negatively on Factor 1 along with the SI items in a manner suggesting that help seeking was related more to self enhancement than to affiliation. All but one Approval-Seeking (AS) items loaded on Factor 3, with an eigenvalue of 3.09 (11% of the variance), and a similar number of SP items loaded on Factor 4, with an eigenvalue of 2.35 (9% of the variance). Four of the

Table 1

Factor Loadings for Interpersonal Skill Items (Project Heart 2, N = 123)

Interpersonal Skill Scale	Factor 1	Factor 2
Expressive		
1. Is poised, self-assured	**.80**	.08
2. Speaks emphatically	**.85**	−.07
3. Gives detailed responses	**.79**	.24
4. Speaks loudly	**.72**	.13
5. Is aware of own emotions	**.67**	.36
6. Gives monosyllabic responses	**−.76**	−.31
7. Voice easily expresses emotion	**.69**	.16
8. Speech is slow, halting	**−.71**	−.06
9. Speaks rapidly	**.72**	.02
10. Speaks softly	**.79**	.08
11. Is open, easy to get to know	**.80**	.38
12. Is guarded, defensive	**−.65**	**−.54**
Reflective–Empathic		
1. Accepts responsibility	.04	**.49**
2. Appreciates others' motives	.25	**.48**
3. Shows empathy	.06	**.49**
4. Admits own limitations	.05	**.59**
5. Considers consequences of actions	.06	**.65**

Note. Values given in bold indicate the factor on which the items loaded.

Competitive Striving (CS) items loaded on Factor 5, with an eigenvalue of 1.84 (8% of the variance). Item CS 5 loaded equally on its own factor and on Factor 2 (AA), suggesting that a desire for admiration also reflected a concern about being accepted by others. Only 4 of the 36 Striving items failed to load on any of the factors: Items AS 5, SP 5, CS 1, and CS 2 failed to perform as expected.

Temporal stability. Items that loaded on the factors described above were used to construct scales corresponding to the two Interpersonal Skill factors and the five Striving factors, and pretest scores on each scale were correlated with posttest scores (obtained 3 months later) to assess temporal stability. As expected, the stressors that bothered participants most showed varying degrees of persistence; many participants chose to discuss different problems at pretest and posttest. Thus, the sample was divided into two subgroups consisting of (a) 42 participants (41% of the sample) who chose to discuss a stressful situation from the same general problem area at both the baseline and the follow-up interviews, and (b) 61 participants (59% of the sample) who chose to discuss a stressor from different problem areas on these two occasions. A change in general problem area was indicated if, at the beginning of the follow-up interview, the card the participant selected from the "stress deck" to represent his or her primary area of concern was not the same as the card selected during the baseline interview 3 months earlier. For example, a change in problem area would be recorded if an individual had selected the "Friends" card for discussion during the baseline interview but selected the "School" card at follow-up. Table 3 shows the screening and posttest means, standard deviations, and test–retest reliability coefficients for the two subgroups.

The stability of participant rankings on the 12 scale dimensions, as indicated by test–retest correlations in Table 3, varied according to the type of scale and whether or not the primary problem area had changed or had remained the same over time. As predicted,

Table 2
Factor Loadings for Goal-Oriented Strivings Items (Project Heart 2, N = 123)

Striving Scale	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Self-Defense					
1. Stop criticizing me	**.74**	.15	.11	−.10	−.02
2. Stop excluding me	.05	**.69**	−.10	−.06	.13
3. Stop demands on me	**.74**	−.07	.14	.12	−.10
4. Seeks revenge	**.48**	.07	−.22	−.06	.15
5. Stop hostile remarks	**.69**	.32	−.18	−.15	−.12
6. Protect myself	**.84**	.21	−.19	−.06	−.14
Acceptance–Affiliation					
1. Seeks affection	.22	**.60**	−.13	−.08	.09
2. Seeks sympathy	.28	**.56**	.13	.05	−.20
3. Seeks intimacy	.15	**.81**	−.12	−.09	−.07
4. Seeks to understand other	.18	**.80**	−.15	−.06	.15
5. Seeks help from others	**−.42**	.02	.07	−.16	−.23
6. Seeks acceptance	.21	**.85**	−.12	.10	−.18
Approval-Seeking					
1. Do activity to please other	−.04	−.02	**.40**	.09	−.09
2. Avoid disappointing other	−.21	−.16	**.86**	−.11	.04
3. Impress important adult	−.04	−.10	**.89**	−.02	.04
4. Meet significant other's expectations	−.07	−.13	**.92**	−.05	.11
5. Maintain status, save face	−.11	−.27	.19	−.21	.37
6. Win approval from others	−.13	−.21	**.86**	−.10	.23
Stimulation–Pleasure					
1. Do enjoyable activity	.16	−.14	.10	**.81**	.01
2. New clothes, jewelry	−.03	.04	.02	**.45**	−.08
3. Seeks higher income	−.16	−.04	−.12	**.60**	−.09
4. Seeks exciting social life	.02	.09	−.03	**.77**	.02
5. Seeks to escape boredom	.11	−.21	.01	.21	−.09
6. Pleasure-seeking	.07	−.09	−.06	**.91**	−.05
Competitive Striving					
1. Seeks higher status	.31	.14	.27	−.08	.32
2. Win recognition	−.07	−.12	.06	−.09	.23
3. Seeks superior achievement	−.14	−.23	.05	−.09	**.61**
4. Out-perform competitors	.07	.21	−.15	.01	**.71**
5. Wants to be admired	−.03	**.50**	−.09	.04	**.55**
6. Seeks superiority	−.08	.14	.11	−.05	**.72**
Self-Improvement					
1. Asserts independence	.31	.08	−.01	**.41**	−.10
2. Achieve self-standard	**−.62**	**−.43**	.23	−.25	.31
3. Develop good habit	**−.55**	**−.40**	.31	−.18	.28
4. Improve skill	**−.63**	**−.44**	.22	−.32	.19
5. Be a better person	**−.53**	**−.45**	.24	−.22	.36
6. Pursues self-mastery	**−.69**	**−.46**	.22	−.27	.26

Note. Values given in bold indicate the factor on which the items loaded.

Interpersonal Skill ratings were little affected by a change in problem area, as indicated by statistically significant positive correlations over the 3-month interval in both subgroups, with the EX scale proving to be especially stable. The stability of Goal-Oriented Strivings, on the other hand, was more variable and demonstrated the predicted relationship to persistence of problem focus. Thus, while significant positive test–retest correlations were obtained for four of the six Striving scales in the subgroup whose general problem area was the same on both assessment occasions (same focus group), these coefficients were significantly larger than the corresponding values in the different focus subgroup whose problem area had changed. The statistical significance levels of the differences between the reliability coefficients observed in the two subgroups all exceeded $p < .01$. In the different focus subgroup, none of Striving scales yielded significant test–retest correlations. Among the four Social Impact scales, all but

one of the test–retest coefficients were statistically significant in both participant subgroups. The exception was the Critical–Aggressive scale, which failed to exhibit a statistically significant test–retest correlation in the different focus group. In the same focus group, however, a significantly stronger test–retest correlation was observed ($p < .05$).

The level of the 12 scales, as judged by the scale means, proved to be stable in both groups. Changes in the means assessed by paired t-tests yielded only one significant result out of 24 test–retest comparisons: The mean AS score in the different focus group was lower at follow-up than at baseline. In the same focus group, however, the mean levels of AS observed at baseline and follow-up were virtually identical. Viewed together, the present test–retest pattern of scale means and stability coefficients generally is consistent with the pattern predicted by the social competence model: participants' inter-

Table 3
SCI Code Means (Standard Deviations) at Baseline and 3-Month Follow-Up, and Test–Retest Correlations, for Project Heart 2 Subgroups

SCI code	Different problem focus ($n = 61$)			Same problem focus ($n = 42$)		
	Baseline	3 months	r	Baseline	3 months	r
Interpersonal Skill						
Expressive	2.1 (0.6)	2.2 (0.5)	.60**	1.9 (0.6)	1.9 (0.6)	.64**
Reflective–Empathic	0.9 (0.5)	1.0 (0.5)	.28[a]	0.9 (0.5)	0.9 (0.6)	.25[a]
Goal Orientation						
Self Defense	0.7 (0.8)	0.7 (0.7)	−.06	0.6 (0.8)	0.5 (0.8)	.61**
Acceptance–Affiliation	0.5 (0.6)	0.5 (0.5)	−.15	0.3 (0.4)	0.3 (0.4)	.40**
Competitive Striving	0.1 (0.4)	0.1 (0.3)	−.07	0.1 (0.3)	0.0 (0.0)	−.06
Stimulation–Pleasure	0.3 (0.6)	0.6 (0.8)	.07	0.2 (0.3)	0.3 (0.5)	.28
Approval Seeking	0.4 (0.6)	0.1 (0.3)	−.03[b]	0.4 (0.6)	0.4 (0.6)	.52**
Self-Improvement	0.9 (0.9)	0.5 (0.8)	−.43**	1.2 (0.9)	1.2 (0.8)	.79**
Social Impact						
Responsible–Generous	2.3 (0.7)	2.5 (0.8)	.28*	2.1 (0.7)	2.2 (0.6)	.32*
Modest–Dependent	2.0 (0.7)	2.2 (0.7)	.31*	2.0 (0.6)	2.3 (0.8)	.35*
Critical–Aggressive	1.9 (0.7)	1.9 (0.6)	.17	1.8 (0.6)	1.8 (0.6)	.56**
Guarded–Oppositional	1.9 (0.7)	2.0 (0.7)	.52**	1.9 (0.7)	2.1 (0.7)	.50**

Note. SCI = Social Competence Interview.
[a] For total sample ($N = 103$), $r = .19$, $p < .05$.   [b] Change in means is significant at $p < .02$.
* $p < .05$.   ** $p < .01$.

personal skills (EX, RE) appeared relatively stable across time and problem situations; the strivings coefficients indicated that participants tended to approach the same problem in similar ways over time (same focus group) but that new problems elicited new strivings (different focus).

Study 3

The revised scoring system's factor structure was replicated, and its internal consistency and construct validity evaluated, in a third analysis that merged SCI data from the PH3 study in Baltimore with SCI data from a study in Pittsburgh to generate a combined sample of 392 adolescents. Construct validity was examined by correlating (a) SCI Interpersonal Skill codes with interviewer ratings of the participant's social attractiveness/charisma; (b) SCI Goal-Oriented Striving scores with participants' self-reported coping goals; and (c) SCI "Critical–Aggressive" Impact scores with coronary-prone traits of hostile mistrust, subjective anger, and dysphoria/depression assessed by questionnaires.

Method

Sample. Interview and questionnaire data from Baltimore (PH3) and Pittsburgh were combined to create the sample used in Study 3. Participants in PH3 were 212 male and female students entering Grade 9 who took part in a study investigating the effects of emotional stress and the social environment on cardiovascular risk in urban youth. Selection procedures were identical to those used in Study 2 except that there was no blood pressure criterion for inclusion in the study; all students who completed an initial health screening were eligible to participate. The sample consisted of 71 Black female adolescents, 50 White female adolescents, 65 Black male adolescents, and 27 White male adolescents. Female adolescents outnumbered male adolescents in the PH3 sample because classes in the all-female high school were scheduled in a manner that made it easier for those students to participate in the assessment sessions.

Participants from the Pittsburgh sample were 180 high school (ages 15–17 years) and elementary school (ages 8–10 years) students who enrolled in a study of cardiovascular reactivity and heart disease risk. Students were recruited by sending letters to their parents inviting them to volunteer by telephoning the investigators. The sample contained 45 Black female adolescents, 49 White female adolescents, 39 Black male adolescents, and 47 White male adolescents. Further details about these participants are reported in an earlier article (Matthews, Gump, Block, & Allen, 1997).

Study design and procedure. In PH3, informed consent, health screening, and interview procedures were identical to those used in Studies 1 and 2. The SCI was administered as part of a stress task assessment battery that included a reaction-time task, mirror-image tracing, and cold pressor. The order of task presentation was counterbalanced across participants to control for sequence effects. In the Pittsburgh study, parents who responded to mailed announcements brought their child to a university laboratory where, after providing informed consent, the children performed reaction time, mirror-image tracing, and cold pressor tasks, in addition to the SCI.

SCI. Interviewer training and interview procedures for the 10-min interview were identical to those used in Study 2, except that participants in the Pittsburgh study were asked to talk about a problem that "involved other people." In both Baltimore and Pittsburgh, all interviewers were female; the decision not to use male interviewers was based on research on interpersonal communication indicating that people of both genders tend to self-disclose more readily to female than to male interviewers (Hall, 1984). It was thought that this might be particularly true in adolescents. Interviewers in PH3 included African American, European American, Chinese American, and East Indian graduate students. In the Pittsburgh sample, two European American females served as interviewers (see Matthews et al., 1997).

Coding procedure and interrater reliability. Coders were the same six university students who previously had been trained to criterion and had coded the SCI tapes in Study 2. Procedures for monitoring interrater agreement and ensuring accuracy were identical to those used in Study 2. Approximately half (52%) of the interviews were coded independently by at least two coders; the frequency with which coders' scores agreed within

one unit on the 5-unit rating scale was 89%. Interrater agreement also was estimated by computing correlations between the scale scores of all pairs of coders. Pearson coefficients of interrater agreement were above $r = .85$ for all scales except the Competitive Striving scale ($r = .81$) and the Reflective–Empathic scale ($r = .64$).

In addition to precautions described above, additional effort was made to guard against observer "drift." Approximately once a week, each of the six raters coded the same interview and agreement levels were examined. By the end of the study, 13 interviews had been coded by all six raters. Interrater agreement in this subset of interviews was assessed by means of Cronbach's alpha (with raters as "items"). Alpha coefficients for interrater reliability of the Interpersonal Skill and Striving scales were .90 or higher for all but two of the scales; coefficient alpha for the Reflective–Empathic skill was .81, and, as half of the raters coded no level of "competitive striving" in any of the 13 interviews, interrater agreement for the Competitive Striving scale was low (alpha = .37).

Coronary-prone personality. The validity of the SCI as a measure of "coronary-prone" personality factors was assessed by correlating the Critical-Aggressive Impact score with scores on self-report measures of anger, hostility, and depression. Chronic anger was assessed in PH3 with an Anger Arousal scale derived originally from the Multi-Dimensional Anger Inventory (MAI; Siegel, 1986). Factor analysis of MAI responses of the 795 PH1 participants disclosed an initial 10-item factor that was similar but not identical to the Anger Arousal scale of the MAI. This factor, which described the frequency and intensity of angry feelings, accounted for 54% of the MAI score variance and correlated more strongly with adolescent blood pressure. The present Anger Arousal scale has good internal reliability ($\alpha = .85$) and 4-month test–retest reliability of $r = .65$.

Trait dysphoria/depression was measured in PH3 by a Depression–Negative Affect scale that had been developed in PH1. This scale consisted of 10 items from the Child Depression Inventory (Kovacs, 1985) and 5 items from the Children's Trait Anxiety Inventory (Spielberger, Edwards, Montuori, & Lushene, 1986) that loaded on a common factor in a study of 795 adolescents screened in PH1 (Ewart & Kolodner, 1994). The resulting scale has acceptable internal validity (Cronbach's $\alpha = .89$) and was significantly correlated with ambulatory blood pressure in adolescent boys who took part in PH1 (Ewart & Kolodner, 1994). Acceptable levels of temporal stability ($rs > .70$) have been reported for the scales from which the present measure was derived.

Coronary-prone personality factors were assessed in the Pittsburgh sample with a different set of measures. Anger was measured with the Spielberger Trait Anger Scale (Spielberger, Jacobs, Russell, & Crane, 1983), an instrument that focuses on anger expression as well as experience. Hostility was assessed by means of the Cynicism, Hostile Affect, and Aggressive Responding subscales of the Cook–Medley Ho scale (Cook & Medley, 1954). Descriptions of the response formats and psychometric properties of these scales in the present Pittsburgh sample have been published previously (Matthews et al., 1997; Matthews, Woodall, Kenyon, & Jacob, 1996).

Results and Discussion

Factor analysis. A principal axis analysis of Interpersonal Skill items, using data from the combined sample, generated the same factor pattern seen in PH2. The scree plot suggested a two-factor solution, which was examined by repeated principal axis factoring followed by promax rotation with the number of factors set at four, three, two, and one. Results supported a two-factor solution, yielding the same initial factor of expressive and stylistic elements that had emerged in Study 2 (eigenvalue = 5.8), and a smaller second factor (eigenvalue = 3.6).

All Expressiveness scale items but two (EX 5, EX 12) loaded on the first factor only, and all of the RE scale items loaded on the second factor only, reproducing the pattern of loadings seen in the

earlier sample. On the basis of these results, we decided to delete EX 5 and EX 12 because of double loading. These deletions left the EX scale with 10 items and the RE scale with 5 items.

The same factoring approach was applied to the 36 items of the six Goal-Oriented Strivings scales. Again, principal-components analysis generated a scree plot that suggested a five-factor solution, which promax rotation identified as independent factors. As in Study 2, this interpretation was examined further by performing the rotations with the number of factors set at five, four, three, and two; again, results supported the superiority of the five-factor interpretation.

As before, the first factor (eigenvalue = 5.6) consisted largely of SD items and SI items, which again loaded in opposite directions, although this time the SI items did not also load on the AA factor. Once more, review of interview content suggested this pattern was caused by the fact that the more participants focused on describing another person's threatening behavior, the less they spoke of their personal self-change goals, whereas the more they focused on themselves, the less they talked about other people. As in Study 2, item SD 2 loaded on Factor 2 with the AA items, suggesting that it was more related to affiliative than to self-protective strivings.

The AA items loaded on a common factor (Factor 2; eigenvalue = 4.9) with the exception of item AA 5. As previously, all but one of the AS items (AS 5) loaded on the same factor (Factor 3; eigenvalue = 4.3), and a similar number of SP items loaded on Factor 4 (eigenvalue = 2.4). Three of the CS items loaded on Factor 5 (eigenvalue = 2.3). Six of the 36 Striving items failed to produce a loading ≥ .40 on any of the factors: Items AS 5, SP 5, CS 1, and CS 2 again failed to load as expected on any of the factors. In addition, items AA 5 and CS 5 failed to achieve significant factor loadings.

On the basis of the two factor-analytic studies, we decided to revise the six Goal-Oriented Striving scales. Four items were deleted because they had failed to load on any of the factors: Items AA 5, AS 5, SP 5, and CS 2 were dropped from the Striving scales. Two items that had consistently loaded on a factor with items from a different scale were added to the scale with which they loaded: Item SD 2 was moved to the Acceptance–Affiliation scale, and item SI 1 was moved to the Stimulation–Pleasure scale. Two items in the Competitive Striving scale (1 and 5) that failed to load at ≥.40 on Factor 5 were retained because they did achieve a loading of ≥.30 with lesser loadings on the other factors. Moreover, we wanted each of the scales to have at least four items. This consideration also persuaded us to retain item SP 4 on the Stimulation-Pleasure scale, despite the fact that it also had loaded on the Acceptance–Affiliation scale. These changes yielded six scales with five to six items each.

Concordance analysis. To assess the congruence between the factor structures obtained in the two samples (PH2 and combined Baltimore–Pittsburgh samples), the data were factor analyzed again without the cross-loadings. Principal axis factor analysis with promax rotation was performed separately on the Interpersonal Skill and the Goal-Oriented Strivings item sets, after which Tucker's congruency coefficient (Tucker, 1951) was computed to determine the degree to which the factors obtained in the PH2 sample were congruent with the factors obtained in the combined sample. A coefficient greater than or equal to .90 supports replication of the factor across samples (Cureton & D'Agostino, 1983).

Tucker coefficients of .99 for the Expressiveness factor and .91 for the Reflective–Empathic factor strongly supported the replicability of the factor structure for these two scales. Among the Strivings factors, the replicability of the Competitive Striving and Approval Seeking factors was indicated by Tucker's coefficients of .91 and .96, respectively, while coefficients of .87 for Acceptance–Affiliation, .89 for Stimulation–Pleasure, and −.88 for Self-Defense were judged to be close enough to the criterion to indicate a strong trend toward cross-sample congruence. The coefficient for Self-Defense is negative because items in this scale were negatively related to the Self-Improvement items that loaded on the same factor in the combined sample.

The revised Interpersonal Skill and Goal-Oriented Striving scales are provided in Appendix B. Each item is worded as it appeared on the coding form used by the trained raters. Reliability and validity data presented in the remainder of this article are based on these revised scales.

Intercorrelations among the SCI scales. The pattern of correlations among the SCI scales was examined in the PH3 sample; results are shown in Table 4. Included in the table are the four single-item Social Impact scales which, together with the factor-analytically based Skill and Striving scales, complete the 12 SCI dimensions. The pattern of intercorrelations among the 12 scales was consistent with the social competence model. The moderate correlation between the two Interpersonal Skill scales was compatible with the notion that these scales assess independent aspects of social competence. Among the Goal-Oriented Striving scales, most associations were weak or nonsignificant; the largest coefficients were the negative correlations between Self-Improvement and the Self-Defense/Acceptance–Affiliation scales, which was consistent with the results of the factor analyses. The Social Impact scales also showed the expected pattern of associations, with moderate positive correlations between the two "positive impact" scales (Responsible–Generous with Modest–Dependent) and between the two "negative impact" scales (Critical–Aggressive with Guarded–Oppositional), and moderate negative correlations between the former and the latter.

Correlations across the Skill, Striving, and Social Impact categories also were as expected. The social competence model holds that Interpersonal Skills and Goal-Oriented Strivings represent independent constructs, whereas Social Impact is affected both by Skills and Strivings and therefore should be related to both. This expectation was supported by the finding that statistical significance was achieved by 87% of correlations between the Skill scales and the Social Impact scales, whereas this was true of only 33% of the correlations between Skill scales and Striving scales. Moreover, each of the Striving scales correlated significantly with one or more of the Social Impact scales. Although the modest magnitude of many coefficients suggests caution in drawing conclusions, the observed pattern generally is consistent with the view that Skills and Strivings are different phenomena yet both affect social impact.

Internal consistency. The internal consistencies of the Skill and Strivings scales, assessed in the PH3 sample by Cronbach's alpha ($N = 212$), were as follows: Expressiveness, .94; Reflective–Empathic, .70; Self-Defense, .86; Acceptance–Affiliation, .86; Competitive Striving, .73; Stimulation–Pleasure, .74; Approval Seeking, .91; Self-Improvement, .92. All scales thus demonstrated acceptable to high levels of internal consistency.

Construct validity of Interpersonal Skill scales. Validity was assessed by examining patterns of correlations between the scales and the variables they were designed to measure, as well as correlations with variables to which they are presumably unrelated. The two Interpersonal Skill scales are designed to measure communication behaviors that contribute to an individual's interpersonal effectiveness, perceived attractiveness, influence, and charisma. The validity of the Expressiveness and Reflective–Empathic scales therefore was assessed by correlating their respective scores with measures of global "attractiveness" provided by (a) the trained raters who coded the SCI scales, and (b) the interviewer who administered the SCI procedure in the laboratory. Coders rated global attractiveness as part of the procedure used in coding the audiotapes of the 212 PH3 interviews. In addition, the SCI interviewers—who had not been trained as coders—provided an

Table 4

Intercorrelations Between Social Competence Interview (SCI) Codes Assessing Social Skills, Goals, and Impact (N = 217)

SCI codes	Interpersonal Skill		Goal Orientation						Social Impact			
	1	2	3	4	5	6	7	8	9	10	11	12
Interpersonal Skill												
1. Expressive	—	**.45**	**.23**	.08	**.23**	.08	.07	.08	**.35**	.00	**.16**	**−.35**
2. Reflective–Empathic		—	−.11	.10	.07	−.05	**.33**	**.29**	**.18**	**.15**	**−.27**	**−.26**
Goal Orientation												
3. Self-Defense			—	**.35**	**.16**	.10	−.10	**−.59**	−.06	**−.17**	**.56**	**.22**
4. Acceptance–Affiliation				—	.04	.11	−.09	**−.44**	.11	**.13**	.09	−.09
5. Competitive Striving					—	.03	**.34**	.07	−.02	−.02	.01	**−.13**
6. Stimulation–Pleasure						—	−.14	**−.29**	−.07	**−.15**	**.18**	.06
7. Approval Seeking							—	**.27**	.03	.08	**−.23**	**−.16**
8. Self-Improvement								—	.12	**.13**	**−.45**	**−.26**
Social Impact												
9. Responsible–Generous									—	**.46**	**−.21**	**−.39**
10. Modest–Dependent										—	**−.33**	**−.25**
11. Critical–Aggressive											—	**.35**
12. Guarded–Oppositional												—

Note. Boldface indicates statistical significance. $p < .05 = r \geq .13$; $p < .01 = r \geq .17$.

attractiveness rating immediately after administering the interview to the 102 participants who entered the study during the second year of recruitment. Both the coders and the interviewers rated the participant on the item, "Is interesting, likeable," using a 5-point scale. Participants' scores on the Expressiveness and the Reflective–Empathic scales then were correlated with the Social Attractiveness ("interesting, likeable") ratings assigned by (a) the coders and (b) the SCI interviewers.

Results are shown in Table 5, which also presents the correlations between the Social Attractiveness ratings and the coders' ratings on the six Striving scales and the four Impact scales. The pattern of correlations reveals a statistically significant and moderately strong association between social attractiveness ratings and the coder-assigned scores on the Expressiveness and Reflective–Empathic scales. Striving scale scores, on the other hand, are weakly or insignificantly associated with Social Attractiveness ratings, whereas Social Impact scores show a pattern of weak to moderate associations with Social Attractiveness. The observed pattern of associations is compatible with the view that Interpersonal Skills measure behaviors that contribute to social influence and charisma, whereas Strivings scales measure such phenomena far less or not at all. As expected, a friendly or nonthreatening Social Impact (Responsible–Generous, Modest–Dependent) is somewhat positively associated with Social Attractiveness, and an unfriendly or threatening Social Impact (Critical–Aggressive, Guarded–Oppositional) is somewhat negatively associated with Social Attractiveness.

Construct validity of Goal-Oriented Striving scales. The validity of the Striving scales was assessed by examining correlations between ratings of strivings provided by the trained coders and participants' own self-reports of their coping goals. Immediately

Table 5
Correlations Between SCI Behaviors (Interpersonal Skills, Goal Orientation, Social Impact) Rated by Trained Coders and Global Ratings of Social Attractiveness Provided by Coders and Interviewers

SCI social behavior rated by SCI coders	Social Attractiveness rated by	
	SCI coders[a]	SCI interviewers[b]
Interpersonal Skill		
Expressive	.69**	.46**
Reflective–Empathic	.37**	.30**
Goal Orientation		
Self-Defense	.07	.09
Acceptance–Affiliation	.12	.13
Competitive Striving	.21**	.21*
Stimulation–Pleasure	.09	−.04
Approval Seeking	.15*	−.04
Self-Improvement	.15*	.13
Social Impact		
Responsible–Generous	.42**	.26**
Modest–Dependent	.20**	.09
Critical–Aggressive	−.10	−.01
Guarded–Oppositional	−.44**	−.23*

Note. SCI = Social Competence Interview; Social Attractiveness = "Is interesting, likeable."
[a] The SCI coders rated 212 interviews.   [b] The SCI interviewers rated 102 interviews.
* $p < .05$.   ** $p < .01$.

after the interview, participants in PH3 were asked to rate their goals in the stressful situation using scales that were identical to those used by the coders except that (a) Striving items on the participant's rating form were worded in the first person, and (b) the participant's form did not include the Approval-Seeking scale items, which were developed after the study had begun.

The correlations between coder ratings and participant ratings are shown in Table 6. Although the participants were given no instructions concerning the definition of the Striving items, and hence were not trained to interpret them precisely as the coders were taught to do, the pattern of correlations suggest that SCI coder ratings generally are consistent with participants' "naive" reports concerning their coping goals in the stressful situation. The patterns of association between Self-Defense, Acceptance–Affiliation, and Self-Improvement Strivings mirror the patterns of association shown in Table 4. Moreover, coder and participant ratings of the same striving correlate more positively than do ratings of the other strivings. Results suggest that trained coders' ratings of participants' goals with respect to Self-Defense, Acceptance–Affiliation, and Self-Improvement strivings are consistent with the manner in which participants themselves frame the problem situation. This finding, together with evidence in Tables 4 and 5 that the Striving scales are minimally related to Interpersonal Skills or to Social Attractiveness ratings, provides preliminary support for the construct validity of the Striving measures.

Critical–aggressive impact as an index of coronary-prone personality. To test the validity of the SCI as a measure of coronary-prone personality, we correlated the SCI scale, Critical–Aggressive Impact, with the trait measures of anger, hostility, and depression. Recall that these constructs were measured differently in the Baltimore and Pittsburgh samples. The trait measure of Dysphoria/Depression was administered in PH3 but not in Pittsburgh. PH3 measured Anger Arousal (frequency, intensity, and duration of angry feelings), whereas the Pittsburgh study used the Spielberger Trait Anger scale, which focuses more on the mode in which anger is expressed (overt vs. covert expression). Finally, the Pittsburgh study included three Cook–Medley Ho scales to measure Cynical Hostility, Hostile Affect, and Aggressive Responding.

In the PH3 sample, Critical–Aggressive Impact scores on the SCI were modestly but significantly correlated with Anger Arousal, $r(212) = .20, p < .01$, and with Dysphoria/Depression, $r(212) = .20, p < .01$. In the Pittsburgh sample, Critical–Aggressive Impact scores were correlated with Cynical Hostility, $r(70) = .25, p < .05$, and with Hostile Affect, $r(70) = .27, p < .01$, but not with Hostile–Aggressive responding, $r = .18, ns,$ or Anger Expression, $r = .03, ns.$ The pattern of results suggests that Critical–Aggressive Impact as assessed by the SCI is moderately correlated with the subjective experience of anger, depression, and hostile mistrust, but is not associated with a self-reported tendency to express anger in open rather than covert ways.

General Discussion

By measuring personal strivings, skills, and styles that can influence exposure to chronic health-damaging stress, the SCI provides a method to test the hypothesis that health and illness risks are related to social–emotional competence. A behavioral coding system for the SCI has been tested and validated in four

Table 6

Correlations Between SCI Goal Orientation Ratings by Trained Coders and Participants'
Postinterview Ratings of Their Coping Goals in the SCI Problem Situation (N = 212)

Participant's self-reported goal	Trained coder's rating of SCI Goal Orientation				
	Self-Defense	Acceptance–Affiliation	Competitive Striving	Stimulation–Pleasure	Self-Improvement
Self-Defense	.46**	.13	.02	.04	−.37**
Acceptance–Affiliation	—	.39**	−.03	.13	−.28**
Competitive Striving		—	.12	.01	.01
Stimulation–Pleasure			—	.22**	−.22**
Self-Improvement				—	.45**

Note. Participants' self-reported goal rating forms did not include Approval Seeking. SCI = Social Competence Interview.
** *p* < .01.

samples of Black and White, male and female adolescents from low-income urban neighborhoods in two major U.S. cities. Similar results were obtained in samples of adolescents at risk for cardiovascular disease and in a broad sample not selected on health risk. The SCI coding system, supported by a detailed manual, facilitated acceptable to high levels of interrater agreement. The scales' basic factor structure, patterns of test–retest correlations, and construct validity data generally conformed to predictions from the social competence model.

Several limitations of present analyses should be mentioned. One limitation involved problems in coding two of the scales. The only instance in which levels of interrater agreement were lower than desired involved the Competitive Striving and Reflective–Empathic scales. Raters tended to code competitive striving behavior less often than the other Strivings (Table 3), which may have affected agreement. And reflective–empathic behavior, although more frequently coded, appeared more difficult to define than did Expressiveness. Further work is needed to clarify these important constructs.

Other limitations involve the designs of the various studies. The Project Heart and Pittsburgh studies were designed to investigate cardiovascular risk factors, not to evaluate the psychometric properties of the SCI. Use of these data sets for present purposes inevitably raises issues of confounding; analyses reported here use data from different schools, cities, and interviewers, include samples with different blood pressure entry criteria, and derive from studies conducted over a 12-year time span. One significant limitation, for example, involves assessment of temporal stability, which was possible only in PH2. Lack of test–retest data in PH3 may have limited our ability to assess the construct validity of the Critical–Aggressive Impact score as an index of coronary-prone personality, which is characterized by a persisting preoccupation with dominating and controlling others. The fact that modest but statistically significant correlations between Critical–Aggressive Impact and measures of coronary-prone traits were found in PH3, in cross-sectional analyses, encourages us to believe that stronger associations might have been found if the SCI had been administered repeatedly over time. Despite these limitations, however, each study yielded results that were largely consistent with predictions from the social competence model. Moreover, the predicted factor structure was reproduced in each analysis.

In general, the findings reported here suggest that, in addition to measuring the magnitude of physiological arousal potentially associated with a recurring real-life problem, the SCI may provide a brief, reliable, and valid assessment of important dimensions of social competence and coping, including the individual's orientation to a stressful problem, level of interpersonal skill, and social impact on others. Moreover, it appears that adolescents who have a highly Critical–Aggressive impact on those around them could be at risk for developing "coronary-prone" traits including heightened anger arousal, hostility, and susceptibility to dysphoria/depression, characteristics that may impair interpersonal relationships and increase vulnerability to cardiovascular and immune-related illness (Matthews & Haynes, 1986; Smith, 1992; Uchino, Cacioppo, & Kiecolt-Glaser, 1996). We expect that longitudinal studies with Project Heart and other samples, now in progress, will shed new light on relationships between social competence, coping, and health outcomes (Chen, Matthews, Salomon & Ewart, 2002; Compas et al., 2001; Ewart & Jorgensen, 2002; Wallander, 2000).

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Appendix A

The Social Competence Interview (SCI) Social Impact Scales

Instructions to Coders: Social Impact involves a general assessment of how the person "comes across" to others. Consider overall demeanor, including "body language," the reactions they seem to provoke from others, and the way *you yourself* react to them.

Assign a score of "1" if little or none of the impact or demeanor is detectable.

Assign a score of "2" or "3" if one or more of the following holds: (a) the demeanor in question is expressed moderately in remarks about other people or past situations (e.g., comments indicating trust, criticism, dependence, etc.); (b) the subject reports behaviors in past situations that moderately reflect the demeanor/impact in question; or (c) the demeanor/impact is expressed indirectly or implicitly in the interview itself (e.g., the subject seems uncomfortable or guarded but does not directly express hostility toward the interviewer or the interview task).

Assign a score of "4" or "5" if one or more of the following holds: (a) the demeanor is strongly apparent in remarks about other people or situations (e.g., sarcasm, character assassination, extreme admiration); (b) the subject reports behaviors in past situations that strongly indicate the demeanor/impact in question; or (c) the demeanor is expressed openly during the SCI in remarks directed at the interviewer herself or at the interview situation (e.g., rudeness, complaints about questions, oppositional behavior). Use the terms below when rating the degree of impact:

Responsible–Generous (Evokes trust, acceptance, tenderness from others)
    2–3 Cooperative, friendly, helpful, responsible
    4–5 Sympathetic, generous, soft-hearted
Modest–Dependent (Evokes advice, help, direction from others)
    2–3 Modest, respectful, admiring, trusting
    4–5 Dependent, clinging, overly respectful, passive
Critical–Aggressive (Evokes hostility, resistance from others)
    2–3 Critical, complaining, competitive
    4–5 Sarcastic, attacking, mean
Guarded–Oppositional (Evokes rejection, punishment from others)
    2–3 Guarded, cautious, withholding, restrained
    4–5 Distrustful, arrogant, oppositional, defiant

Appendix B

The Social Competence Interview (SCI) Interpersonal Skill and Goal-Oriented Strivings Scales
(Final Version)

Interpersonal Skills

Expressive

1. Is poised, at ease, self-assured
2. Speaks emphatically
3. Gives detailed responses
4. Speaks loudly
5. Gives short, monosyllabic responses (*reverse scored*)
6. Voice (inflection, tone, quality) easily expresses emotion
7. Speech is slow and halting (*reverse scored*)
8. Speaks rapidly
9. Speaks very softly (*reverse scored*)
10. Is open, easy to get to know

Reflective–Empathic

1. Indicates how his/her own actions may have contributed to the problem

2. Shows awareness of others' motives (indicates what they think or feel)
3. Indicates that others' feelings are understandable under the circumstances (shows "empathy")
4. Recognizes/admits own limitations
5. Considers consequences of own actions (e.g., at end of SCI)

Goal-Oriented Strivings

Self-Defense

1. Wanting someone to stop criticizing him/her
2. Wanting someone to stop making demands on him/her
3. Wanting to get even with someone, to get revenge
4. Wanting someone to stop doing or saying mean things
5. Striving to protect or defend oneself (e.g., trying to correct an unjust situation, stop hostile criticism/rumors/abuse, or get even with someone)

(Appendixes continue)

Acceptance–Affiliation

1. Wanting someone to like him/her
2. Wanting someone to show they understand, to sympathize
3. Wanting someone to stop ignoring him/her, or excluding him/her
4. Wanting to be closer to someone
5. Wanting to know how someone really feels about him/her
6. Striving for affiliation (e.g., to get someone to appreciate his/her feelings or needs, achieve intimacy, become closer to someone, obtain sympathetic understanding and support)

Competitive Striving

1. Wanting to show someone that she/he is better than they think
2. Wanting to perform better than someone else in school, sports, etc.
3. Wanting to out-do others who are competing with him/her
4. Wanting to be more admired, or more popular, than someone else she/he knows
5. Competitive striving to demonstrate his/her superiority over another person(s) in some area (e.g., to out-do someone else in sports or grades, convince a teacher, parent or peer that he/she is superior to others)

Stimulation–Pleasure

1. Wanting to be able to do an activity she/he enjoys
2. Wanting to be independent, to make own decisions
3. Wanting more exciting clothes, jewelry, or other possessions
4. Wanting to earn more money
5. Wanting to have a more interesting social life
6. Striving for pleasure or stimulation (e.g., to acquire objects that give pleasure like money or expensive clothes that enable one to go out and have fun, wanting to pursue a hobby, find excitement, not be bored)

Approval Seeking

1. Wanting to pursue an activity (e.g., course, club, sport) just to please someone else
2. Wanting to avoid disappointing a parent or other important figure
3. Wanting to accomplish a difficult goal or task just to satisfy a parent or other respected person
4. Wanting to meet the high expectations of a parent or other respected figure
5. Striving to attain a difficult standard or goal (e.g., earn higher grade, make varsity team) or engage in an activity such as a sport, club, or course of study, merely to avoid disappointing a parent or other respected figure

Self-Improvement

1. Wanting to achieve a self-standard that is important to him/her personally
2. Wanting to develop a good habit (study habits, diet, exercise, etc.)
3. Wanting to improve his/her skills in his/her favorite activity (sport, music, school subject, etc.)
4. Wanting to improve him/herself as a person (to be nicer, smarter, healthier, etc.)
5. Striving for self-mastery or for personal achievement (e.g., trying to attain a personally valued self-standard, make honor roll/team, master a skill) because the achievement was important to him/her personally—not just to please or impress someone else