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SOCIAL APPRAISAL AS CORRELATE, ANTECEDENT, AND CONSEQUENCE OF MENTAL AND PHYSICAL HEALTH OUTCOMES

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Social appraisal is associated with mental and physical health. The present study documented this association among undergraduates, and clarified the temporal relationships of social appraisal to mental/physical health measures. One hundred and forty three students completed indices of depression, self-esteem, anger, physical aggression, illness, and cigarette and alcohol use, twice, at sessions three weeks apart. A subset of these participants provided anthropometric indices, allowing computation of waist-to-hip ratio (WHR). All students were rated by their roommates as to the esteem in which roommates held them (a measure of social appraisal). Results indicated that social appraisal was associated with most measures of mental and physical health functioning, such that students with low appraisals reported more depression, anger, physical aggression, physical illness, cigarette and alcohol use, and lower self-esteem. Longitudinal analyses indicated that social appraisal was more an antecedent than a consequence of mental and physical health functioning.

Humans have a strong desire for social acceptance. Extensive evidence supports the idea that humans are motivated to achieve and maintain relatedness with others. In fact, the desire to feel included in a social network is so well documented that Baumeister and Leary (1995) concluded that wanting to be accepted and valued by others constitutes a basic human need. Baumeister and Leary discussed the far-ranging repercussions of the need to belong including, for example, the deleterious

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health consequences that can result from insufficient social belongingness. The present investigation further documents the relationship between social acceptance and health-related factors.

In their analysis, Baumeister and Leary (1995) asserted that the human need for belongingness is driven by evolution. Belonging to a group maximizes numerous survival and reproductive benefits that living on one's own does not. The current investigation argues that individuals who are accepted and cared for by others are the recipients of positive health outcomes.

Numerous researchers and theorists have recognized the link between social belongingness and health (Baumeister & Leary, 1995; Baumeister & Tice, 1990; Bowlby, 1969, 1973; Lynch, 1979; see Uchino, Cacioppo, & Kiecolt-Glaser, 1996, for a psychoneuroimmunological review). Researchers have not, however, agreed upon the form of the relationship. Evidence exists to support both the claim that social belongingness influences health and that health influences social belongingness. The issue of causality was addressed in the current investigation with the use of longitudinal analyses of social acceptance (i.e., roommates' appraisals) and health (i.e., various mental and physical health indices).

SOCIAL ACCEPTANCE FOSTERS PHYSICAL AND MENTAL HEALTH

According to Baumeister and Leary (1995), an adequate level of social support is said to act as a buffer against physical and mental health problems. People who belong to a supportive, caring network of relationships are people with sound minds and bodies. Conversely, an insufficient level of social support renders the individual vulnerable to a plethora of ill effects. Individuals who do not engage in friendly, positive interactions on a frequent basis are also more likely to suffer from emotional distress, mental anguish, and physical illness.

Baumeister and Leary (1995) also distinguished between the quantity and quality of contact between two individuals. They concluded that the need to belong is satisfied only when both aspects are present, such that (1) the individual has a relational bond with another that involves their frequent contact and (2) interactions within the relationship are positive and relatively nonconflicted. Indeed, empirical research supports the importance of both amount of contact and quality of interactions in healthy functioning. The classic work by Harlow, Harlow, and Suomi (1971) with monkeys and by Bowlby (1969, 1973) with human children illustrated the damaging effect on mental and emotional health (e.g., severe psychopathology) that results from insufficient attention by care-

givers. A study of 331 elderly men and women (Blazer, 1982) measured three dimensions of social support—roles (e.g., marital status, children), frequency of interaction (e.g., telephone calls, visits) and perceptions of social support (e.g., lonely when with people, contact with a confidant)—and related them to mortality risk. The parameter with the highest predictive value was individuals' subjective perceptions of social support, with roles and frequency of visits less predictive. In addition to the absence of social support, "social undermining" (e.g., negativity; active conflict) was found to be predictive of mental health change (Vinokur & van Ryn, 1993, p. 350).

The current investigation sampled one aspect of social acceptance, roommate appraisal, and relates it to mental and physical health measures. The study focused on the quality of the relationship between roommates—that is, the extent to which one roommate values and likes the other.

PHYSICAL AND MENTAL HEALTH INFLUENCES SOCIAL ACCEPTANCE

Coyne's (e.g., 1976) work on the nature of depression points to the behaviors of depressed individuals as an important source of their social exclusion. Coyne theorized that depressed people's use of excessive reassurance-seeking alienates others, which empirical work confirms (e.g., Joiner, Alfano, & Metalsky, 1992). Similarly, the conclusion that depressed individuals alienate others has been advanced by Swann (e.g., 1987). However, Swann views self-verification as the mechanism by which this occurs. This theory has also received empirical support (e.g., Giesler, Josephs, & Swann, 1996; Joiner, 1995; Joiner, Katz, & Lew, 1997).

From a different perspective, research by Singh (1993) demonstrated that low waist-to-hip ratios (WHRs) elicit positive social responses (i.e., ratings of attractiveness) from others, apparently because a low WHR is an indicator of reproductive health. Presumably, such positive appraisals also indicate social acceptance. Thus, this perspective—like Coyne's interactive theory and Swann's model of self-verification—suggests that health influences social inclusion.

We expected strong correlations between an index of social belongingness and indices of mental and physical health, predicting that those who were less liked by their roommates would have poorer health. In terms of the direction of causality between social belongingness and health, we felt the weight of the evidence falls on the side of social belongingness as an antecedent of health-related outcomes; however, we recognized that previous research provided support for both directions, and both were evaluated.

THE CURRENT STUDY

To operationalize social acceptance, we asked each target participant to bring his or her roommate to the experiment. Roommates were asked to indicate their esteem for the targets using a transformed version of the Rosenberg Self-Esteem Scale (cf. Swann, Wenzlaff, Krull, & Pelham, 1992). We assessed various forms of physical and mental well-being at two points, 3 weeks apart.

We assessed mental health by measuring self-esteem, depression, anger, and aggression. In addition to being general indicators of mental health, depression and anger have also been conceptualized as reactions to negative evaluations by others. In a review of the literature on aggression, Baumeister, Smart, and Boden (1996; see also Bushman & Baumeister, 1998) described a typical aggressor as one who has a favorable view of self but who encounters someone who communicates a negative (or less positive) appraisal of the individual. They note, however, that a similar encounter may foster depression in individuals who choose to accept a negative personal appraisal. Hence, a negative appraisal by one's roommate could engender either feelings of depression or feelings of anger and aggression, depending on how an individual reacts to it. Our prediction regarding self-esteem followed from Leary's (Leary, Tambor, Terdal, & Downs, 1995) sociometer theory of self-esteem. This theory posits that self-esteem acts as a gauge of interpersonal inclusion and exclusion. As feelings of interpersonal inclusion increase, so does self-esteem. Thus, we expected that individuals who were liked by their roommates would have higher self-esteem than those who were disliked by their roommates. Moreover, we expected that individuals who were disliked by their roommates at Time 1 would show a decrease in self-esteem over time.

We also assessed indices of physical health: waist-to-hip ratio, cigarette smoking and alcohol consumption, and general reports of illness. Following Singh's (1993) work on WHR and social appraisals, we hypothesized that individuals who were well-liked by their roommates would have healthy (i.e., lower) WHRs, whereas those who were disliked by their roommates would have unhealthy (i.e., higher) WHRs. We reasoned that substance use and social belongingness could be related in one of two ways: either that substance use is negatively related to social acceptance, such that the more one engages in cigarette or alcohol use, the less they are liked by others; or, that substance use and social belongingness are related in a curvilinear fashion, such that moderate substance use is associated with the highest levels of social acceptance. Lastly, we expected self-reports of illness (e.g., common ailments, chronic health problems) to be related to low levels of social

belongingness. Individuals who were disliked by their roommates were hypothesized to report poorer physical health.

METHOD

PARTICIPANTS AND PROCEDURE

Participants were 143 undergraduates (84 women and 59 men) taking an undergraduate psychology course at a large state university. Students received extra credit for their participation.

The study involved two questionnaire sessions. Session 2 occurred 3 weeks after Session 1. All participants brought a same-gender, nonrelative roommate to experimental sessions. For each pair, only one member was the target, with the other member providing social appraisal of him or her; the targets did not provide social appraisal ratings of their roommates.

The sample included roommate pairs who chose to room together, as well as those assigned to each other through the university housing agency. Such assignments are random, except that smokers and non-smokers are matched.

Participants were tested in groups of about 20 roommate pairs. Upon arrival at Session 1, target participants and their roommates were informed that they would be filling out questionnaires about their personal views, feelings, and attitudes. Target participants were also asked to volunteer self-measurements of waist and hip size. Participants were informed that they could decline to provide self-measurements and still participate in the questionnaire portion of the study for full credit. Participants who agreed to provide self-measurements did so individually, during the questionnaire session, in a private room. Instructions for measuring and tape measures were provided. The instructions stated that participants were *not* to disrobe, but were to take measurements over clothing.

Participants also were asked to return for a second session in 3 weeks, at which time they completed questionnaire packets and were debriefed and excused.

MATERIALS

Measure of Social Appraisal. Social appraisal was assessed by roommate ratings of target participants on a revised version of the Rosenberg Self-Esteem Inventory. This inventory, developed by Swann et al. (1992), includes the 10 items of Rosenberg's original scale, reworded such that roommates completed it with regard to the esteem in which they hold

the targets (e.g., "I see my roommate as a person of worth, at least on an equal basis with others"). Each item was rated on a 1 to 5 scale; full scale scores could thus range from 10 to 50. Higher scores reflected a more positive view of targets by their roommates.

Joiner, Metalsky, Swann, and colleagues (Joiner, 1995; Joiner & Metalsky, 1995; Joiner et al., 1992; Joiner, Alfano, & Metalsky, 1993; Swann et al., 1992) have provided reliability and construct validity data. In a separate study of undergraduates and their roommates, Joiner (1994) found that roommates' scores on this measure were significantly correlated with observer-raters' impressions of target students' likability ($r(38) = .39, p < .05$), lending further support to the measure's validity.

Beck Depression Inventory (BDI; Beck et al., 1979; Beck & Steer, 1987). Level of depressive symptoms was assessed by the BDI, a 21-item self-report inventory. Each item was rated on a 0 to 3 scale; inventory scores could thus range from 0 to 63. Although the BDI is not indicative of the full clinical syndrome of depression, it is a reliable and well-validated measure of depressive symptomatology (see Beck, Steer, & Garbin, 1988).

The Aggression Questionnaire (Buss & Perry, 1992). Anger and aggression were assessed by the Anger and Physical Aggression subscales of the Aggression Questionnaire. For both subscales, Buss and Perry provided reliability and validity data. Example items for the Anger and Physical Aggression subscales, respectively are: "I have trouble controlling my temper," and "Once in a while I can't control the urge to strike another person."

Serious of Illness Rating Scale (SIRS). In its original form (Wyler, Masuda, & Holmes, 1968, 1970), the SIRS included 126 medical conditions of varying degrees of severity. Versions of the SIRS have been used repeatedly in research on stress and illness (cf. Dowhrend & Dowhrend, 1974), and the scale shows good agreement with physician diagnosis (Kobasa, Maddi, & Courington, 1981). Similar to Siegel and Brown (1988), items of questionable seriousness (e.g., dandruff) and questionable relevance to young adults (e.g., menopause, heart attack) were eliminated for use in the current study, as were psychosomatic symptoms (e.g., anxiety reaction). The current version of the scale included 37 items, covering cold and flu symptoms (e.g., sore throat, sinus problems, headache), respiratory problems (e.g., bronchitis, asthma), relatively chronic conditions (e.g., diabetes, ulcer, anemia), infectious problems (e.g., ear infection, measles), and various other common symptoms (e.g., muscle strain, dizziness, heartburn). Items were rated on a 1 to 5 scale, with 1 indicating no problems with the symptom, and 5 corresponding to serious problems with the symptom. A composite scale was created by summing the 37 items.

Cigarette and Alcohol Use. Cigarette use was assessed by one question, which read as follows: "Please estimate the number of cigarettes you have smoked over the last week." Similarly, alcohol use was assessed by the following question: "Please estimate the number of alcoholic drinks you have had over the last week (one beer = one glass of wine = one shot of liquor)."

These questions comprise rough measures of cigarette and alcohol use, and thus should be viewed with caution. However, there is reason to suspect that these were reliable and valid measures. First, with regard to smoking, Kendler et al. (1993) used a similar 1-item assessment strategy in a twin study, and reported that one twin's report of her own smoking was highly correlated with the other twin's estimate of the first twin's smoking ($r = .92$, $N = 1415$). Similarly, Aneshensel and Huba (1983) used 1-item scales to assess both smoking and alcohol use and reported good reliability (i.e., high test-retest over 1 year). In the present study, smoking correlated in expected ways with health symptoms and with depression (see Table 1 and Kendler et al., 1993, for work on the relation of smoking and depression). Similarly, the alcohol question was related to health and depressive symptoms. Both questions evinced adequate levels of test-retest reliabilities (i.e., in the .50-.70 range).

Body Mass Index and Anthropometric Indices. The Body Mass Index (kg/m^2) was computed using participants' self-reported weight and height. As discussed below, there is reason to believe that such self-report measurements were valid (cf. Radke-Sharpe, Whitney-Saltiel, & Rodin, 1990). The Body Mass Index was used as a covariate in analyses involving WHR.

Participants were provided detailed instructions on taking waist and hip measurements (see Radke-Sharpe et al., 1990). Self-measurements are quite similar to measurements done by experts; Radke-Sharpe et al. found sizable correlations between self- and expert-measurements: for the waist ($r = .94$); hips ($r = .88$); WHR ($r = .87$).

Rosenberg Self-Esteem Questionnaire (SEQ; Rosenberg, 1965). The SEQ is a popular and well-validated 10-item scale that assesses global self-esteem. Coefficient alpha was .92 as reported by Rosenberg (1965). Similar to the social regard measure, items are rated on a 1 to 5 scale, and scale scores may range from 10 to 50. Higher scores corresponded to higher self-esteem.

RESULTS

Means, standard deviations, and (where appropriate) internal consistency coefficients for all measures, presented in Table 2, were within expected limits.

TABLE 1. Intercorrelations Among All Measures

	Social Regard 1	Social Regard 2	T1 BDI	T2 BDI	T1 Anger	T2 Anger	T1 Phys Ag	T2 Phys Ag	T1 III	T2 III	T1 Cig	T2 Cig	T1 Alc	T2 Alc	WHR	T1 SEQ	T2 SEQ
1. Social Regard 1	—																
2. Social Regard 2	.60*	—															
3. T1 BDI	-.35*	-.19*	—														
4. T2 BDI	-.34*	-.28*	.52*	—													
5. T1 Anger	-.23*	-.16	.32*	.16	—												
6. T2 Anger	-.24*	-.17	.24*	.29*	.60*	—											
7. T1 Phys Ag	-.46*	-.27*	.41*	.34*	.59*	.46*	—										
8. T2 Phys Ag	-.43*	-.31*	.30*	.32*	.46*	.61*	.64*	—									
9. T1 III	-.54*	-.39*	.31*	.42*	.19*	.24*	.33*	.31*	—								
10. T2 III	-.43*	-.39*	.29*	.50*	.03	.20*	.24*	.30*	.74*	—							
11. T1 Cig	-.43*	-.39*	.22*	.29*	.11	.11	.30*	.18*	.64*	.56*	—						
12. T2 Cig	-.21*	-.26*	.15	.23*	-.10	.08	.15	.14	.35*	.55*	.56*	—					
13. T1 Alc	-.45*	-.42*	.27*	.27*	.09	.15	.30*	.30*	.62*	.46*	.56*	.38*	—				
14. T2 Alc	-.26*	-.33*	.20*	.26*	.02	.16	.35*	.34*	.40*	.49*	.46*	.48*	.64*	—			
15. WHR	-.18	-.18	.09	.23*	.15	.12	.37*	.29*	.22*	.23*	.22*	.06	.18	.14	—		
16. T1 SEQ	.43*	.32*	-.56*	-.38*	-.19*	-.23*	-.41*	-.29*	-.45*	-.34*	-.41*	-.28*	-.29*	-.16	-.07	—	
17. T2 SEQ	.48*	.31*	-.36*	-.63*	-.12	-.29*	-.35*	-.34*	-.47*	-.54*	-.43*	-.41*	-.27*	-.22*	-.22*	.60*	—

Note. N = 143 (101 for correlations involving WHR). BDI = Beck Depression Inventory. III = Illness Phys Ag = Physical Aggression. Cig = Cigarette Use. Alc = Alcohol Use. WHR = Waist-to-Hip Ratio. SEQ = Rosenberg Self-Esteem Questionnaire.
*p < .05.

TABLE 2. Means, Standard Deviations, and Internal Consistency Coefficients for All Measures

	Social Regard ₁	Social Regard ₂	T1 BDI	T2 BDI	T1 Anger	T2 Anger	T1 Phys Ag	T2 Phys Ag	T1 Ill	T2 Ill	T1 Cig	T2 Cig	T1 Alc	T2 Alc	WHR	T1 SEQ	T2 SEQ
Mean	18.02	17.86	6.10	7.31	10.85	10.49	13.34	13.25	15.10	16.46	26.47	36.63	6.39	6.78	.79	19.42	18.70
SD	8.65	8.00	6.47	8.11	5.92	6.01	8.32	8.38	16.73	19.41	71.73	81.36	11.26	10.65	.11	7.22	7.76
Alpha	.90	.89	.90	.90	.77	.75	.81	.82	.95	.94	—	—	—	—	—	.90	.88

Note. N = 143 (101 for WHR). BDI = Beck Depression Inventory. Ill = Illness. Phys Ag = Physical Aggression. Cig = Cigarette Use. Alc = Alcohol Use. WHR = Waist-to-Hip Ratio. SEQ = Rosenberg Self-Esteem Questionnaire.

Table 1 presents intercorrelations among all measures. Generally consistent with prediction, the Social Appraisal variable was correlated with all the physical/mental health indices at Time 1,¹ such that positive appraisal was associated with better functioning. At Time 2, a similar pattern of results was obtained, except that correlation of Social Appraisal with Anger was nonsignificant. As would be expected, there were high intercorrelations between the health indices (e.g., depression and self-esteem were highly correlated, as were anger and physical aggression, and smoking and alcohol use).

For each dependent variable, then, the predicted significant effect was obtained, and in many cases (see Table 1), the magnitude of the effect was quite substantial. These results indicate that social appraisal, as indexed by roommates' views of participants, does, in fact, correlate with an array of mental and physical health indicators.²

To more fully understand the nature of these findings, we computed the correlation between social appraisal and one physical/mental health index, controlling for other physical/mental health indices. The choice of which variables to control per each correlation was guided by the empirical interrelations between the health indices. When the eight physical/mental health indices were factor-analyzed (using Principal Axis Factoring and oblique rotation), two reasonably clear factors emerged. The first factor was made up of the depression, self-esteem, anger, and physical aggression variables. The second factor consisted of the physical illness variable, as well as the smoking and alcohol use indices. WHR was not a clear marker of either of these factors; for this reason, as well as because WHR data were not available on the full sample, WHR was not examined further.

We examined the correlation between social appraisal and each health index, controlling for other indices within its same factor (e.g., correla-

1. Correlations involving WHR are partial correlations, controlling for the Body Mass Index. Also, it should be noted that several variables were positively skewed (e.g., the cigarette and alcohol use variables). Where appropriate, skewed variables were square-root transformed, and without exception, results were virtually identical to those using the untransformed variables. Finally, there was no evidence of a curvilinear relation between social appraisal and substance use.

2. Sex differences were not a prominent feature of these data. Gender was associated with some variables in the expected direction (e.g., women reported more depressive symptoms), but not to a significant degree. The one exception was WHR; women reported lower WHRs than men ($t [100] = 7.28, p < .05$), as would be expected.

To determine whether participants' sex interacted with social appraisal to predict the dependent variables, a regression analysis was performed, in which social appraisal, sex, and the interaction between them were used as predictors. The results of this analysis indicated that the Sex \times Social Appraisal interaction was not a significant predictor of any of the physical/mental health indices.

tion between social appraisal and self-esteem, controlling for depression, anger, and physical aggression; correlation between social appraisal and physical illness, controlling for cigarette and alcohol use). Interestingly, of the variables within the first factor (i.e., self-esteem, depression, anger, and physical aggression), only self-esteem ($pr = .24, t [138] = 2.91, p < .01$) and physical aggression ($pr = .22, t [138] = 2.68, p < .01$) retained significant relations to social appraisal when the other variables were controlled. By contrast, the effects for depression ($pr = .03, t [138] = 0.48, p = ns$) and for anger ($pr = -.04, t [138] = -0.59, p = ns$) were substantially reduced when the other variables were controlled.

Further analyses indicated that controlling self-esteem alone fully accounted for the depression effect ($pr = .08, t [140] = 0.98, p = ns$), whereas controlling for physical aggression and anger (singly or jointly) did not account for the depression effect. Similarly, controlling physical aggression alone fully accounted for the anger effect ($pr = -.01, t [140] = -0.20, p = ns$), whereas controlling for self-esteem and depression (singly or jointly) did not account for the anger effect. It appeared, then, that self-esteem and physical aggression possessed resilient and unique relations with social appraisal, whereas depression and anger were related to social appraisal mostly because they were also related to self-esteem and physical aggression, respectively.

Within the second factor, physical illness was significantly related to social appraisal when the smoking and alcohol use variables were controlled ($pr = .35, t [139] = 4.33, p < .01$). By contrast, the effects for smoking ($pr = .06, t [139] = 0.61, p = ns$) and for alcohol use ($pr = .08, t [139] = 0.79, p = ns$) were substantially reduced when the other variables were controlled. Further analyses indicated that controlling for physical illness alone accounted for the relation of smoking to social appraisal ($pr = .07, t [140] = 0.76, p = ns$), as well as for the relation of alcohol use to social appraisal ($pr = .09, t [140] = 1.01, p = ns$). Controlling for smoking alone did not account for the relation of alcohol use to social appraisal, and controlling for alcohol use alone did not account for the relation of smoking to social appraisal.³

To summarize, most of the physical/mental health indices possessed substantial zero-order correlations with social appraisal (see Table 1). The relations of social appraisal to self-esteem, physical aggression, and physical illness appeared to be particularly unique and resilient.

3. There were significant relations between social appraisal and each of self-esteem, physical aggression, and physical illness, controlling for the remaining two (e.g., significant relation between self-esteem and social appraisal controlling for physical aggression and physical illness).

REGRESSION ANALYSES ON TIME 1 TO TIME 2 CHANGES IN VARIABLES: ANTECEDENT VERSUS CONSEQUENT RELATIONSHIPS

The earlier analyses documented the cross-sectional relationship between social appraisal and mental and physical health indices. These left open the question of whether low social appraisal precedes or results from physical and mental health problems. To address this issue, a series of multiple regression analyses were conducted. In light of the partial correlation analyses reported earlier, we focused these analyses on the self-esteem, physical aggression, and physical illness variables.

First, a set of analyses was performed, as follows: In separate regression equations, each Time 2 physical/mental health outcome served as the dependent variable; the Time 1 assessment of that physical/mental health outcome was inserted first into the regression equation, thereby creating residual change scores in the outcome index from Time 1 to Time 2 (Cohen & Cohen, 1983); finally, social appraisal scores were entered into the regression equation. The predictive effect of social appraisal on changes in outcome variables was examined.

In fact, low social appraisal at Time 1 was a significant predictor of decreases in self-esteem ($pr = .37, t [140] = 4.46, p < .01$), as well as a significant predictor of increases in physical aggression ($pr = .19, t [140] = 2.27, p < .01$). The relation of low social appraisal at Time 1 to increased reports of physical illness represented a nonsignificant trend ($pr = .14, t [140] = 1.71, p < .10$).

A similar approach was used to determine if the Time 1 physical/mental health variables predicted changes in social appraisal from Time 1 to Time 2. Only physical illness represented a significant predictor of decreased social appraisal ($pr = .19, t [140] = 2.32, p < .01$). Neither self-esteem ($pr = .06, t [140] = 0.68, p = ns$) nor physical aggression ($pr = -.03, t [140] = -0.33, p = ns$) significantly predicted changes in social appraisal. Taken together, these regression analyses indicated that low social appraisal was an antecedent of mental and physical health problems, including low self-esteem, physical aggression, and (to a lesser degree) poor physical health; of these mental and physical indices, only physical illness predicted changes in social appraisal.

DISCUSSION

As researchers have noted for some time, social acceptance, mental states, and physical health are inseparably linked. The present study documented this association and, in addition, clarified the temporal relationship of social appraisal and mental and physical health measures.

Using eight indices of mental and physical health (i.e., depression, self-esteem, anger, physical aggression, general illness, cigarette and alcohol use, and waist-to-hip ratio), we investigated the relation of roommates' interpersonal appraisals to overall well-being.

The findings presented here conform to the "need to belong" theory as proposed by Baumeister and Leary (1995) who argued that an individual's physical and mental state hinges on maintaining sufficient levels of social acceptance and belongingness. Our results illustrate that being disliked by someone can be harmful to one's mental state and physical well-being.

Interestingly, partial correlation analyses indicated that, of the eight mental and physical health indices we examined, self-esteem, physical aggression, and physical illness displayed particularly resilient relations to social appraisal. The findings that self-esteem is uniquely related to social appraisal, and that social appraisal predicts changes in self-esteem, represent compelling support for Leary et al.'s (1995) sociometer theory of self-esteem, which argued that self-esteem and social appraisal are closely linked, in that the former acts as a gauge of the latter. Our study detected the operation of the sociometer in the real-world setting of roommate relationships.

In longitudinal analyses, we found that being disliked by one's roommate predicted increased desire to engage in physical aggression, deflated self-esteem, and a worsening of physical symptoms. In contrast, only health symptoms predicted change in social appraisals.

In examining the longitudinal analyses on physical aggression, our data indicated that social appraisals preceded change in physical aggression, rather than physical aggression preceding change in social appraisals. This finding converges with work by Baumeister and colleagues on threatened egotism (Baumeister et al., 1996). Baumeister et al. (1996) argued that when individuals are confronted with a personal appraisal that is less favorable than their own self-appraisal (i.e., when individuals experience an ego threat), they are faced with the choice of either accepting or rejecting the downward appraisal. Baumeister et al. (1996) proposed that if an individual chooses to accept a less positive view of self, he or she may be prone to symptoms of depression. Conversely, if an individual chooses to reject a less positive view of self, he or she may become angry and seek to engage in physical aggression, possibly to reassert a dominant view of self. Our data supported aspects of the threatened egotism hypothesis: Lower appraisals from one's roommate preceded increases in reports of physical aggression.

Our finding that social appraisals by one's roommate predicted changes in self-esteem also fits with life stress theories of vulnerability to depression (e.g., Brown & Harris, 1978), as well as the "need to belong" theory (Baumeister & Leary, 1995). In terms of self-esteem, our results are in agreement with Leary's sociometer model (e.g., Leary et al., 1995) which pro-

posed that self-esteem (i.e., how much one likes him or herself) is driven by perceptions of interpersonal acceptance (i.e., how much the individual thinks others like him or her). Indeed, we found that self-esteem decreased over time if an individual lived with someone who disliked him or her. Conversely, the hypothesis that self-esteem influenced changes in social appraisals did not receive support. In tests of Coyne's (1976) interpersonal theory of depression, Joiner, Metalsky, and colleagues (e.g., Joiner & Metalsky, 1995) obtained similar results, suggesting that depression-related indices, such as self-esteem, may not result in negative interpersonal appraisals unless the individual also engages in depressotypic interpersonal behaviors, such as excessive reassurance-seeking.

Another interesting relationship emerged between roommate appraisal and indicators of physical well-being. Longitudinal analyses revealed that the index of general physical symptoms was the only variable for which a bidirectional relationship was obtained with social appraisal; that is, physical illness predicted changes in social appraisal, and social appraisal tended to predict increased reports of physical illness. Our results are somewhat consistent with those of Singh (1993), who postulated that signs of physical health (e.g., WHR) determine, in part, social acceptance (in the present study, the correlations between social appraisal and WHR represented a nonsignificant trend; see Table 1). Further, decreased social acceptance appears to affect physical health.

Our study corroborates the notion of low social acceptance as a predisposing factor to health problems. Interventions to improve social appraisals should be considered. The finding that physical symptoms precede less positive appraisals by one's roommate suggests that regular health maintenance (e.g., exercise, balanced diet, general preventative medical care) may be important both for their physical effects and as a buffer against decreased social belongingness. Another explanation of these results is that symptoms of illness (as well as the use of cigarettes and alcohol) reflect a lack of overall self-regulation. In a study of marital breakup, Kelly and Conley (1987) found three predictors of marital dissolution: neuroticism of the husband and the wife, and low impulse control on the part of the husband. It appears that living with someone who is ill-tempered and unhappy (i.e., someone who has poor emotional control) and, in addition, someone who under-regulates impulse control (e.g., engages in excessive cigarette and alcohol use) may generate relationship disturbance. Hence, achieving and maintaining good health practices is likely to have positive effects for the body and the mind on multiple levels.

In closing, we note some limitations and future extensions of the present study. First, it would be very interesting to expand the present study to include longer time frames, assessment of physiological changes (e.g., cortisol, testosterone), and implications for other areas of functioning (e.g., academic performance, relationship satisfaction and commit-

ment). Similarly, future work would benefit from a more generalized measure of social appraisal, perhaps including multiple peer nominations from large groups of people who know each other well (e.g., college sororities/fraternities; community/recreational clubs; religious congregations). Despite these limitations, the present study builds on previous theories and research to show the intricacy of the relationship between social acceptance and physical and mental well-being.

REFERENCES

- Aneshensel, C. S., & Huba, G. J. (1983). Depression, alcohol use, and smoking over one year: A four-wave longitudinal causal model. *Journal of Abnormal Psychology, 92*, 134–150.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*, 497–529.
- Baumeister, R. F., Smart, L., & Boden, J. M. (1996). Relation of threatened egotism to violence and aggression: The dark side of high self-esteem. *Psychological Review, 103*, 5–33.
- Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression*. New York: Guilford.
- Beck, A. T., & Steer, R. A. (1987). *Manual for the revised Beck Depression Inventory*. San Antonio, TX: Psychological Corporation.
- Beck, A. T., Steer, R., & Garbin, M. (1988). Psychometric properties of the Beck Depression Inventory: 25 years of evaluation. *Clinical Psychology Review, 8*, 77–100.
- Blazer, D. (1982). Social support and mortality in an elderly community population. *American Journal of Epidemiology, 115*, 684–694.
- Bowlby, J. (1969). *Attachment and loss: Vol. 1. Attachment*. New York: Basic Books.
- Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation, anxiety and anger*. New York: Basic Books.
- Brown, G. W., & Harris, T. (1978). *Social origins of depression*. London: Free Press.
- Bushman, B. J., & Baumeister, R. F. (1998). Threatened egotism, narcissism, self-esteem, and direct and developed aggression: Does self-love or self-hate lead to violence? *Journal of Personality and Social Psychology, 75*, 219–229.
- Buss, A. H., & Perry, M. (1992). The aggression questionnaire. *Journal of Personality and Social Psychology, 63*, 452–459.
- Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences* (2nd. ed.). Hillsdale, NJ: Erlbaum.
- Coyne, J. C. (1976). Toward an interactional description of depression. *Psychiatry, 39*, 28–40.
- Dowhrend, B. S., & Dowhrend, B. P. (1974). *Stressful life events: Their nature and effects*. New York: Wiley.
- Giesler, R. B., Josephs, R. A., & Swann, W. B., Jr. (1996). Self-verification in clinical depression: The desire for negative evaluation. *Journal of Abnormal Psychology, 105*, 358–368.
- Harlow, H. F., Harlow, M. K., & Suomi, S. J. (1971). From thought to therapy: Lessons from a primate laboratory. *American Scientist, 59*, 538–549.
- Joiner, Jr., T. E. (1994). *Relation between judges' and roommates' ratings on a measure of target subjects' likability*. Unpublished data.
- Joiner, Jr., T. E. (1995). The price of soliciting and receiving negative feedback:

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Self-verification theory as a vulnerability to depression theory. *Journal of Abnormal Psychology*, 104, 364–372.

- Joiner, Jr., T. E., Alfano, M. S., & Metalsky, G. I. (1992). When depression breeds contempt: Reassurance-seeking, self-esteem, and rejection of depressed college students by their roommates. *Journal of Abnormal Psychology*, 101, 165–173.
- Joiner, Jr., T. E., Alfano, M. S., & Metalsky, G. I. (1993). Caught in the crossfire: Depression, self-consistency, self-enhancement, and the response of others. *Journal of Social and Clinical Psychology*, 12, 113–134.
- Joiner, Jr., T. E., Katz, J., & Lew, A. (1997). Self-verification and depression among youth psychiatric inpatients. *Journal of Abnormal Psychology*, 106, 608–618.
- Joiner, Jr., T. E., & Metalsky, G. I. (1995). A prospective test of an integrative interpersonal theory of depression: A naturalistic study of college roommates. *Journal of Personality and Social Psychology*, 69, 778–788.
- Kelly, E. L., & Conley, J. J. (1987). Personality and compatibility: A prospective analysis of marital stability and marital satisfaction. *Journal of Personality and Social Psychology*, 52, 27–40.
- Kendler, K. S., Neale, M. C., MacLean, C. J., Heath, A. C., Eaves, L. J., & Kessler, R. C. (1993). Smoking and major depression: A causal analysis. *Archives of General Psychiatry*, 50, 36–43.
- Kobasa, S. C., Maddi, S. R., & Courington, S. (1981). Personality and constitution as mediators in the stress-illness relationship. *Journal of Health and Social Behavior*, 22, 368–378.
- Leary, M. R., Tambor, E. S., Terdal, S. J., & Downs, D. L. (1995). Self-esteem as an interpersonal monitor: The sociometer hypothesis. *Journal of Personality and Social Psychology*, 68, 518–530.
- Lynch, J. J. (1979). *The broken heart: The medical consequences of loneliness*. New York: Basic Books.
- Radke-Sharpe, N., Whitney-Saltiel, D., & Rodin, J. (1990). Fat distribution as a risk factor for weight and eating concerns. *International Journal of Eating Disorders*, 9, 27–36.
- Rosenberg, S. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Siegel, J. M., & Brown, J. D. (1988). A prospective study of stressful circumstances, illness symptoms, and depressed mood among adolescents. *Developmental Psychology*, 24, 715–721.
- Singh, D. (1993). Adaptive significance of female physical attractiveness: Role of waist-to-hip ratio. *Journal of Personality and Social Psychology*, 65, 293–307.
- Swann, W. B., Jr. (1987). Identity negotiation: Where two roads meet. *Journal of Personality and Social Psychology*, 53, 1038–1051.
- Swann, W. B., Wenzlaff, R. M., Krull, D. S., & Pelham, B. W. (1992). Allure of negative feedback: Self-verification strivings among depressed persons. *Journal of Abnormal Psychology*, 101, 293–305.
- Uchino, B. N., Cacioppo, J. T., & Kiecolt-Glaser, J. K. (1996). The relationship between social support and physiological processes: A review with emphasis on underlying mechanisms and implications for health. *Psychological Bulletin*, 119, 488–531.
- Vinokur, A. D., & van Ryn, M. (1993). Social support and undermining in close relationships: Their independent effects on the mental health of unemployed persons. *Journal of Personality and Social Psychology*, 65, 350–359.
- Wyler, A. R., Masuda, M., & Holmes, T. H. (1968). Seriousness of illness rating scale. *Journal of Psychosomatic Research*, 11, 363–367.
- Wyler, A. R., Masuda, M., & Holmes, T. H. (1970). The Seriousness of Illness Rating Scale: Reproducibility. *Journal of Psychosomatic Research*, 14, 59–64.