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Individual Differences in Preference for Solitude

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Past research suggests that solitude can have either a positive or a negative impact on a person's well-being. How time away from others affects people may depend on the person's general preference for solitude. We present a scale to measure individual differences in preference for solitude. Experiments 1 and 2 report on the development of the Preference for Solitude Scale and provide evidence of its reliability. Experiments 3 and 4 provide discriminant and convergent validity data for the scale. Experiments 5 and 6 use self-report data to demonstrate that scale scores predict the extent to which people spend time by themselves and with others. Experiment 7 uses scale scores to predict the amount of social interaction in a laboratory setting. Experiment 8 demonstrates that scale scores can predict the amount of time people spend alone beyond that predicted by introversion-extraversion. Taken together, the data indicate that the Preference for Solitude Scale assesses individual differences in the extent to which people prefer to spend time alone.

Humans are social animals. People typically identify their relationships with others as the most important and enjoyable aspects of their lives (Argyle, 1987). Further, relationships and social interactions contribute substantially to our psychological well-being and happiness (cf. Pennebaker, 1989; Willis, 1990). Indeed, isolation from other people sometimes is used by parents, teachers, and prison officials as a form of punishment.

Although research in psychology has tended to focus on social interaction and behavior in the presence of others, some researchers have turned their attention to the other side of human experience, i.e., the experience of privacy. People's reactions to privacy vary considerably, from loneliness and depression to contentment and happiness. The key assumption of the present research is that people differ in the extent to which they prefer to spend time alone. That is, there are relatively stable individual differences in an individual's preference for solitude.

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DEFINITIONS OF PRIVACY AND SOLITUDE

People's reaction to solitude has been studied under a variety of labels. Most commonly, researchers have referred to time spent away from others as *privacy,* although this term has been used in many different ways by researchers and theorists from a large number of disciplines (cf. Altman, 1975; Margulis, 1977; Westin, 1967). In the narrowest definition, privacy refers to physical isolation from other people. Broader uses of the term sometimes include regulating and controlling information about oneself (Berscheid, 1977; Derlega & Chaikin, 1977). That is, although interacting with others, people are said to retain a sense of privacy by restricting the amount of personal information they disclose. Other researchers have described privacy in terms of limiting contact to certain select people or groups, such as choosing to spend "private" time with one's family or spouse (Altman, 1975). Some writers have identified control over stimulation as part of regulating one's sense of privacy (Klopfer & Rubenstein, 1977). Finally, researchers sometimes describe privacy in terms of control over personal space and territoriality (Altman, 1975). For example, workers in a large office can maintain a sense of privacy by exercising control over the use of the areas around their desks.

Although each of these views of privacy is related to the others, the many definitions complicate our ability to assess privacy and related constructs. The research reported here will focus on what some writers have labeled *solitude* (Altman, 1975; Westin, 1967). Solitude refers to the absence of social interaction. In most cases this will mean physical isolation from others. For example, people can seek out solitude by going to a place where they can be by themselves, such as a park or a private room. However, people also can maintain a sense of solitude in the presence of others by choosing not to interact with the people around them. For example, while in a crowded park or a doctor's waiting room people can retain a sense of being alone by keeping to themselves even though others might be within a physical distance that would allow for conversation.

We propose that an individual's preference for solitude results from a combination of several motives and expectations. Our primary goal is to present a theory of individual differences in preference for solitude by developing and evaluating a measure of that construct. A key assumption in our theory is that for many people a high preference for solitude is related to positive well-being. Although some people typically avoid social interactions because of social anxiety or a lack of social skills, others elect to spend time alone because they enjoy the experience and appreciate the benefits that come from solitude.

SOLITUDE AND WELL-BEING

Americans actually spend a great deal of time in solitude. Larson and his colleagues (Larson, 1990; Larson, Zuzanik, & Mannell, 1985) report

that the average amount of time we spend by ourselves ranges from 17% for elementary school children to 48% for retired adults. Sometimes people spend time alone by choice, but sometimes social isolation is the result of life circumstances.

Perhaps because of the widespread recognition of the benefits of social interaction, most of the research on solitude has examined the negative consequences that solitude has on one's psychological functioning and well-being. Consistent with conventional wisdom, researchers find that time spent alone typically is less pleasant than time spent with others (Larson, 1990). The most common complaints about time alone are loneliness and boredom. Loneliness has been identified as a widespread problem in our society (cf. Peplau & Perlman, 1982). People often experience passivity and increased depression when they feel lonely. Solitude may be particularly likely to bring on negative moods in adolescents (Larson & Csikszentmihalyi, 1980).

In some cases time spent alone may contribute to existing psychological problems. For example, Larson and Johnson (1985) found that bulimics experienced time alone at home as significantly more unpleasant than a group of normal controls. The bulimics experienced high levels of sadness, loneliness, irritability, and confusion in this situation. The researchers speculate that the bingeing and purging characteristic of bulimics may reflect the bulimic's efforts to cope with these negative feelings.

Although few would deny that solitude often causes suffering and may contribute to psychological problems, over the years several observers have suggested that isolation from others sometimes has beneficial effects (Bates, 1964; Larson, 1990; Maslow, 1970; Storr, 1988; Suedfeld, 1982). These theorists and researchers have identified several reasons why spending time alone can boost a person's sense of well-being. For example, time away from others can be spent on necessary self-reflection. People often need time to contemplate personal issues or work through personal problems and important decisions. Questions about religion, personal values, and goals may require time alone to sort out one's thoughts without interference from others. Consistent with this analysis, Larson (1990) found that adolescents who spent a moderate amount of time by themselves appeared better adjusted than those who spent a great deal or relatively little time alone. Larson argues that this time alone may allow adolescents to work through many of the identity and value issues that confront people at that age.

Solitude also may allow people to further develop themselves intellectually, spiritually, emotionally, and creatively. Storr (1988) identified several influential individuals whose creativity can be traced to the introspection brought about by extended time alone. The examples include Rudyard Kipling and Beatrix Potter. Storr also describes religious leaders, including Jesus and Buddha, whose insights were revealed to them during

extended periods of isolation. Some great thinkers have deliberately separated themselves from others to obtain this intellectual or spiritual insight. For example, Carl Jung (1961) describes a 7-year self-imposed isolation that allowed him to explore the depths of his own unconscious. Similarly, Suedfeld (1982) identified several important contributors to the arts and sciences who used extended periods of self-imposed solitude to stimulate creativity.

In a more immediate sense, spending time by oneself also may allow a periodic opportunity to organize one's thoughts, reflect on past actions and future plans, and prepare for future social encounters. This "self-restoration" process may even be necessary for maintaining a sense of ourselves separate from our social behaviors (Altman, 1975). Although time spent with others typically is pleasant, concern for what others think and the constant monitoring of others' reactions can become emotionally draining. Even a short period of time by oneself before returning to social interactions can serve as a kind of emotional renewal. Consistent with this description, Larson, Csikszentmihalyi, and Graef (1982) found that both adolescents and adults reported feeling more alert and more cheerful after spending time by themselves. Similarly, Webb (1978) reported a positive correlation between feelings that one has too little privacy and measures of stress. Finally, Suedfeld (1980, 1982) has demonstrated that occasional, self-imposed social isolation and sensory restriction can have a host of therapeutic effects. In almost all cases, volunteers who have gone through Suedfeld's extended isolation procedure find the experience pleasant and rewarding.

In short, there may be potential benefits to spending time by oneself. Although the negative effects of social isolation are significant and widespread, spending time by oneself need not necessarily lead to negative emotions or problems with adjustment.

INDIVIDUAL DIFFERENCES IN PREFERENCE FOR SOLITUDE

We propose that people differ along a continuum ranging from those with a very high preference for solitude to those very low in this preference. Except in extreme cases, people with a high preference for solitude probably do not spend most of their time alone. Interacting with others and enjoying social contact are common activities in the lives of nearly all members of our society. However, relative to others, people with a high preference for solitude more often choose to spend time by themselves rather than interacting with other people when both options are available.

How does preference for solitude level relate to an individual's well-being? Again, most of the relevant research indicates that a preference to spend time alone instead of with others often is associated with psy-

chological problems. For example, people who choose to spend a lot of time away from others have been described as suffering from high levels of shyness or social anxiety (Leary, 1983a). Consistent with this view, people identified as socially anxious interact less often with others and suffer from exaggerated fears of negative social evaluation relative to people low in social anxiety (DePaulo, Epstein, & LeMay, 1990; Schlenker & Leary, 1982). Thus, socially anxious people prefer time by themselves because they typically find social situations unpleasant (Cheek & Buss, 1981).

Other investigators have described people who typically spend a great deal of time by themselves as suffering from loneliness (Russell, Peplau, & Cutrona, 1980). People who score high on scales designed to measure trait loneliness chronically feel as if their social relationships are too few or not satisfying their needs. People who frequently suffer from loneliness often have poor social skills (Jones, Hobbs, & Hockenbury, 1982; Sloan & Solano, 1984) and negative views of themselves and others (Jones, Freemon, & Goswick, 1981; Frankel & Prentice-Dunn, 1990) that interfere with their ability and willingness to engage in social interaction.

Spending much time alone also has been identified as a characteristic of some psychological disorders. For example, social withdrawal is a common behavior among depressed individuals (Beck, 1967). Karen Horney (1945) specifically identified a high need for privacy as a symptom of neurosis. She described a strong desire to be by oneself as "detachment," an effort by the neurotic to remove himself or herself from the source of anxiety, social interaction.

In contrast to these observations, we believe a case can be made that sometimes a high preference for solitude may be associated with some positive characteristics. It is possible that some people prefer to spend time by themselves specifically because they are well adjusted. For example, Abraham Maslow (1970) identified a high need for privacy as one of the characteristics of the self-actualized people he studied. He reports that almost every psychologically healthy person he examined said that they "positively *like* solitude and privacy to a definitely greater degree than the average person" (p. 160). Maslow noted that these people also expressed a great deal of interpersonal warmth and had especially deep ties with their closest friends. Thus, he argued that a strong desire to spend time alone need not be seen as an escape from others or a dislike of interpersonal relations. Rather, some people recognize the benefits of time by themselves and seek out and enjoy solitude.

Thus, research to date suggests that a preference for solitude may reflect either of two general tendencies. On the one hand, some people prefer solitude because they want to avoid or escape from social interaction. These people can be identified with scales measuring such concepts as

social anxiety and shyness. On the other hand, some people often select solitude over social interaction because they have come to appreciate the benefits that come from spending time alone.

One way to think of the relation between solitude and well-being is to divide people into categories along two dimensions. One dimensions divides people into those who are attracted to social interaction and those who often want to avoid other people. Highly gregarious people would be placed at one end of this dimension and socially anxious people at the other. The second dimension divides people into those who enjoy the experience of spending time by themselves and those who do not. People who often seek out solitude and find time alone productive and refreshing can be placed at one end of this dimension, while those who do not see the benefits of solitude are placed at the other end. Although the relation between the two dimensions is an empirical question, it is possible for a person to fall into any of the four categories this scheme creates. We are particularly interested in people who are low in social anxiety and who also appreciate the benefits of solitude. As described by Maslow, these people may possess two characteristics associated with well-being, a love of people as well as a love of privacy.

MEASURING PREFERENCE FOR SOLITUDE

In this report I describe a series of studies designed to develop a scale to assess individual differences in the preference for solitude. The development of such a scale will further research on solitude in two important ways. First, although some researchers have related well-being to the *amount* of time spent alone, this may tell us relatively little about the link between well-being and the extent to which a person *prefers* to be alone. As Larson (1990) has observed, the amount of time people spend alone or with others often reflects the social roles and responsibilities they have acquired. People who spend more than the average amount of time by themselves may or may not have a preference for solitude. Those who prefer to spend time alone will likely have a different reaction to the experience than people who would rather be in a social setting.

A second contribution is an improvement on existing measures of individual differences in preference for solitude. Few measures are available for researchers interested in this construct, and none are adequate for assessing preference for solitude as we are defining the concept here. One problem with some of the available scales is that they apply to only a limited number of situations or populations. For example, one subscale of a larger "environmental personality" inventory assesses a "need for privacy," but only for children ages 9 to 16 (Bunting & Cousins, 1985). Another scale was developed specifically to assess "need for privacy," but only in social work settings (Hunter & Grinnell, 1978).

A second problem is that the few scales available for measuring a need for general privacy are based on definitions of privacy that include more than solitude (Hunter, Grinnell, & Blanchard, 1978; Marshall, 1974; Pedersen, 1979, 1982). For example, these scales include items for assessing the extent to which test-takers are willing to self-disclose, prefer to spend time with their families, and want to get to know their neighbors.[1]

EXPERIMENT 1

The initial step in the development of the scale was to write test items to assess individual differences in preference for solitude as we have defined it here. Test items were written with the following criteria in mind. First, each item asked about a preference for solitude when given a choice between spending time alone or with other people. For each item test takers were asked to choose between two options, one reflecting a preference for solitude and the other a preference for being with other people. This forced-choice format was adopted specifically because we were interested in how often people make the choice to spend time alone when they have the option of also spending that time with other people. We assume that most people enjoy both time alone and time with others. Thus, each test item was designed to force the test-taker into a decision about whether he or she would actually select solitude over the appeal of a social interaction.

Second, test items did not ask test takers about their motives or reasons for preferring to be alone or with others. Thus, items did not ask test takers if they were self-conscious, if they were socially anxious or shy, if they had a high need for self-reflection, if they had a high need for arousal, and so on. At this point we were interested only in measuring relatively stable behavior patterns and preferences without assessing the reasons.

Using the above criteria, 12 test items were written. These items are shown in Table 1.

[1] In two cases (Marshall, 1974; Pedersen, 1979) researchers have used factor analysis to identify a subset of items that at first glance may appear to measure something similar to the concept we are focusing on here. However, these items probably should not be used as a measure of preference for solitude for several reasons. For example, in neither case is the factor comprised of more than six items. Moreover, although items load on one factor, it is difficult to say that they are necessarily measuring a preference for solitude. For example, the four items that load on the isolation factor in Pedersen's (1979) scale all have to do with working in or living in the forest. Similarly, Marshall's (1974) solitude factor includes items about families spending time together away from friends. Finally, there are little to no data on the reliability and validity of these factor loadings when used as independent scales.

TABLE 1
THE PREFERENCE FOR SOLITUDE SCALE

Directions. For each of the following pairs of statements, select the one that best describes you. In some cases neither statement may describe you well or both may describe you somewhat. In those cases, please select the statement that best describes you or that describes you more often.

1. a. I enjoy being around people.
   b. I enjoy being by myself.
2. *a.* I try to structure my day so that I always have some time to myself.
   b. I try to structure my day so that I always am doing something with someone.
3. a. One feature I look for in a job is the opportunity to interact with interesting people.
   b. One feature I look for in a job is the opportunity to spend time by myself.
4. a. After spending a few hours surrounded by a lot of people, I usually find myself stimulated and energetic.
   b. After spending a few hours surrounded by a lot of people, I am usually eager to get away by myself.
5. *a.* Time spent alone is often productive for me.
   b. Time spent alone is often time wasted for me.
6. *a.* I often have a strong desire to get away by myself.
   b. I rarely have a strong desire to get away by myself.
7. a. I like to vacation in places where there are a lot of people around and a lot of activities going on.
   b. I like to vacation in places where there are few people around and a lot of serenity and quiet.
8. a. When I have to spend several hours alone, I find the time boring and unpleasant.
   b. When I have to spend several hours alone, I find the time productive and pleasant.
9. a. If I were to take a several-hour plane trip, I would like to sit next to someone who was pleasant to talk with.
   b. If I were to take a several-hour plane trip, I would like to spend the time quietly.
10. *a.* Time spent with other people is often boring and uninteresting.
    b. Time spent alone is often boring and uninteresting.
11. a. I have a strong need to be around other people.
    b. I do not have a strong need to be around other people.
12. *a.* There are many times when I just have to get away and be by myself.
    b. There are rarely times when I just have to get away and be by myself.

Note. Scale score is the number of times the test taker selects the italicized option.

Method

Subjects. Eighty-three male and female undergraduates participated in the experiment for class credit.

Procedure. Subjects were administered the twelve items shown in Table 1.

Results and Discussion

To determine if an item should be retained for the final version of the scale, we first looked at the standard deviation for each item. We decided that an item should have a standard deviation of .3 or higher (when scores

range from 0 to 1 for each item) to be included in the scale. Each of the test items met this criterion. Next, the internal consistency was calculated for the entire scale. We obtained an α value of .73 using the Kuder-Richardson 20 formula. We then calculated the internal consistency for the remaining 11-item scale when each of the items was deleted. In no case did removing an item increase the internal consistency of the scale substantially. Thus, all 12 items were retained to comprise the Preference for Solitude Scale. The mean scale score for all subjects was 5.34 with a standard deviation of 2.64.

EXPERIMENT 2

Experiment 1 confirmed that the 12 items comprise an internally consistent scale whose content reflects a preference for solitude. Experiment 2 was designed to replicate the findings of the first experiment and to provide additional psychometric data about the scale. In addition to internal consistency data, we were interested in obtaining means and standard deviations by gender and test–retest data.

Method

Subjects. One hundred and three undergraduate students, 43 males and 60 females, participated in the experiment in exchange for class credit. Forty-one of these subjects also participated in the second part of the experiment.

Procedure. All subjects were administered a test booklet containing several personality inventories, including the Preference for Solitude Scale. Forty-one of these subjects signed-up to participate in a second experiment between three and four weeks after completing the initial set of inventories. Although subjects were required to have participated in the first experiment to qualify for participation in the second experiment, there was no obvious connection between the Preference for Solitude Scale and the second experiment at the time subjects signed up to participate. Those attending the second session were administered the Preference for Solitude Scale.

Results and Discussion

We first examined the internal consistency of the scale using the entire sample of subjects. We obtained an internal consistency correlation of .70 using the Kuder-Richardson 20 formula. The means and standard deviations for the entire sample as well as for males and females separately are presented in Table 2. Although males scored higher on the scale than females in this sample, the difference was not statistically significant. We calculated the correlation between the first and second administration scores for the 41 subjects who completed the scale twice and obtained a test–retest correlation of $r = .72$.

Finally, we examined the factor structure of the scale. Although four factors with eigenvalues greater than 1 emerged from this analysis, all the items loaded positively on the first factor, with the exception of Item 5

TABLE 2
MEANS AND STANDARD DEVIATIONS FOR THE PREFERENCE FOR SOLITUDE SCALE

	Mean	Standard deviation
Males	5.37	2.45
Females	4.52	2.61
Total sample	4.87	2.57

which loaded near zero. Also, the first factor accounted for half of the systematic variance. Thus, the results from the factor analysis are consistent with our treatment of the scale as unidimensional.

The data from the first two experiments suggest that the Preference for Solitude Scale is internal, consistent, and stable.

EXPERIMENT 3

Experiment 3 was designed to evaluate discriminant validity for the Preference for Solitude Scale. We selected scales measuring the following five personality constructs: social anxiety, trait anxiety, loneliness, introversion, and social desirability. We expected Preference for Solitude Scale scores to correlate only moderately with scores from each of these measures.

People who suffer from social anxiety often spend time by themselves. Because our scale measures a preference for solitude regardless of the motive, people high in social anxiety probably also score high on our scale. However, preference for solitude and social anxiety are different constructs. People suffering from social anxiety exhibit many characteristics besides spending time alone. These include a fear of negative evaluation and an inability to think of something to say during conversations (Leary, 1983a). Although social anxiety is a widespread problem, people prefer solitude for many reasons other than a fear of social evaluation. Consequently, we predicted a modest correlation between preference for solitude and social anxiety. We also expected that preference for solitude would be only moderately correlated with a general measure of trait anxiety.

Similarly, although people high in trait loneliness often spend time by themselves, we expected low to moderate correlations between scores on scales measuring loneliness and scores on the Preference for Solitude Scale. Loneliness refers to feelings that one's social relationships are too few or less satisfying than the individual desires (Russell *et al.*, 1980). Lonely people may spend a large amount of time by themselves, but they

TABLE 3
CORRELATIONS WITH THE PREFERENCE FOR SOLITUDE SCALE

	Correlation with the preference for solitude scale
Social anxiety	.01 *ns*
Trait anxiety	.12 *ns*
Extraversion	−.36 **
Loneliness	.42 **
Social desirability	.19 *ns*

** $p < .01$.

probably do not prefer this. We also expected that introverted people would have a greater preference for solitude than extraverts. This is because introverts are more likely to prefer quiet, solitary activities to highly arousing, social activities. However, according to Eysenck (1990), introverts differ from extraverts in many ways besides level of socializing. Moreover, introverts probably seek isolation more as an escape from highly arousing social activities rather than to satisfy a desire to spend time by themselves (cf. Eysenck, 1990; Stelmack, 1990).

Finally, we predicted low correlations between scores on the Preference for Solitude Scale and measures of social desirability. That is, we needed to demonstrate that high or low scores on our scale do not merely reflect a response tendency in which test takers respond in a manner that makes them appear in the most socially acceptable light.

Method

Subjects. Forty-nine male and female undergraduates served as subjects in exchange for class credit.

Procedure. Subjects completed a questionnaire containing six personality tests presented in random order. The six tests were the Social Anxiety subscale from the Self-Consciousness Scale (Fenigstein, Scheier & Buss, 1975), the Spielberger Trait Anxiety Scale (Spielberger, Gorsuch, & Lushene, 1970), the Revised UCLA Loneliness Scale (Russell *et al.*, 1980), the extraversion–introversion scale from the Eysenck Personality Inventory (Eysenck & Eysenck, 1968), the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960), and the Preference for Solitude Scale.

Results and Discussion

The correlations between the Preference for Solitude Scale and the five other measures are presented in Table 3. As seen in the table, there is evidence of a relation between scores on the Preference for Solitude Scale

and scores from two of the measures. People with a high preference for solitude tend to be introverted and suffer from loneliness.

Preference for solitude scores were not related to social anxiety, trait anxiety or social desirability. The low correlation with social anxiety is a bit surprising in that we expected socially anxious people to frequently seek out settings where they are by themselves as a way of avoiding the discomfort they experience in social situations. One possible explanation for this low correlation is that socially anxious people do not really prefer to be by themselves, but rather have a strong desire to engage in pleasant social interactions. Indeed, some research indicates that it is conversation *initiation* that is particularly difficult for socially anxious people, and that these people may do fine in a conversation after it is started (Paulhus & Martin, 1987; Pilkonis, 1977).

The strength of the positive correlation between preference for solitude and loneliness also was surprising. At first glance the constructs seem incompatible. That is, we conceive of preference for solitude as a desire to be alone, whereas lonely people presumably do not like their lack of social interactions. However, further reflection suggests that it is possible for people to enjoy time alone and yet also feel that they do not have the kind of social relationships they desire. In fact, because people with a high preference for solitude often spend time by themselves they may be less successful at developing the kinds of social relationships that prevent loneliness. Clearly, the link between these two constructs requires additional investigation.

In sum, these data suggest that, as expected, people may seek out solitude for reasons other than anxiety, loneliness and introversion.

EXPERIMENT 4

Experiment 4 was designed to answer two additional questions about the relation between the Preference for Solitude Scale and other personality trait measures. First, recent research in personality has centered around the Big Five personality dimensions (cf. John, 1990). This work has identified five primary personality dimensions which typically are labeled neuroticism, extraversion, openness, agreeableness, and conscientiousness. Proponents of the Big Five argue that all measures of personality can be interpreted within this structure. Preference for solitude should be negatively related to extraversion and negatively related to neuroticism. It probably is not related to the other dimensions.

Second, although we demonstrated in Experiment 3 that the solitude scale does not correlate with the Marlowe-Crowne scale, some researchers have argued that the Marlowe-Crowne scale is not an appropriate measure of social desirability (Paulhus, 1991). Thus, we examined the correlation

TABLE 4
CORRELATIONS WITH SCORES ON THE PREFERENCE FOR SOLITUDE SCALE

Scale/Dimension	Correlation with PS scale
NEO—Neuroticism	.37**
NEO—Extraversion	−.56**
NEO—Openness	.20
NEO—Agreeableness	.07
NEO—Conscientiousness	.00
Edwards social desirability scale	−.21

** $p < .01$.

between the Preference for Solitude Scale and another measure of social desirability.

Method

Subjects. Fifty-six undergraduates served as subjects in exchange for class credit.

Procedure. Subjects were administered a package of personality tests. The package included the NEO Five-Factor Inventory, Form S (Costa & McCrae, 1992), a self-report inventory designed to assess the five factors in the Big Five model. The package also included the Edwards Social Desirability Scale (Edwards, 1957) and the Preference for Solitude Scale. Scales were administered in random order.

Results

The correlations between the Preference for Solitude Scale and the Big Five personality dimensions as measured by the NEO-FFI are presented in Table 4. As seen in the table, a high preference for solitude is related to the Neuroticism and Extraversion dimensions, but not to the other three Big Five factors. We also were interested in the correlation between the Preference for Solitude Scale and the Edwards Social Desirability Scale. As shown in the table, there is a negative correlation between the scales, but this relationship falls short of statistical significance.

One unexpected finding in this study concerns the relation between preference for solitude and neuroticism. The positive correlation between the two measures indicates that people with a high preference for solitude also are high in neuroticism. One explanation for this can be found in our initial description of preference for solitude. We maintain that some people prefer social isolation for reasons consistent with good adjustment and well-being, whereas others prefer to be alone because they are excessively anxious about social interactions. The positive correlation between preference for solitude and neuroticism may be fueled by the scores

from this latter group. Of course, this explanation is highly speculative at this point and requires much more investigation.

EXPERIMENT 5

It is important to demonstrate that people scoring high on the Preference for Solitude Scale (i.e., those indicating a preference for solitude) actually choose to spend time by themselves more often than those scoring low on the scale. Experiment 5 employed a simple self-report procedure to obtain data relevant to this question. We asked undergraduate students to estimate how many hours per week they spend by themselves and with others. Beyond this, we asked students to estimate how frequently they engaged in two common group activities (group games, organized group activities) and two common solo activities (watching television, reading). Finally, we asked students the extent to which boredom and loneliness are problems for them. These questions were included to test the hypothesis that high scores on the Preference for Solitude Scale do not come from people who are simply bored or lonely.

We also assessed the students' levels of social anxiety. Because scores from the social anxiety scale used in Experiment 3 failed to correlate with Preference for Solitude Scale scores, we used a different scale in this experiment. The Interaction Anxiousness Scale (Leary, 1983b) was designed specifically to assess anxiety that comes from anticipated social interactions. If Interaction Anxiousness Scale scores correlate moderately with Preference for Solitude Scale scores, as anticipated, it would be possible to use the former scores as covariates in partial correlation analyses to determine the relation between preference for solitude and the other measures when the effects of social anxiety are removed.

Method

Subjects. Sixty-four male and female undergraduates served as subjects in exchange for class credit.

Procedure. Each subject completed a package containing the Preference for Solitude Scale, the Interaction Anxiousness Scale and a questionnaire containing several items asking subjects to report on the frequency of relevant behaviors. The questionnaire asked subjects how many hours a week they typically spend in each of the following activities: interacting with friends, spending quiet time alone, engaging in group sports or exercising with a group, participating in other organized group activities, watching television, and doing pleasure reading. In addition, subjects were asked to indicate on seven-point scales (1 = Not at All; 7 = A Great Deal) the extent to which they typically experience boredom and loneliness. The presentation of the two scales and the questionnaire was counterbalanced throughout the sample.

Results and Discussion

The correlation between scores on the Preference for Solitude Scale and scores on the Interaction Anxiousness Scale was $r = .40$, $p < .01$.

TABLE 5
CORRELATIONS BETWEEN PREFERENCE FOR SOLITUDE SCALE SCORE AND FREQUENCY OF SELF-REPORTED ACTIVITIES

	Correlation	Partial correlation
Hours per week		
Interacting with friends	−.29*	−.12
Quiet time alone	.49**	.35**
Group sports/exercise	−.21*	−.21*
Organized group activities	−.05	−.15
Watching television	−.10	−.17
Pleasure reading	.49**	.45**
How frequently experience		
Boredom	−.36**	−.40**
Loneliness	−.18	−.25*

* $p < .05$, ** $p < .01$.

The correlations between the preference for solitude scores and scores from each questionnaire item are found in Table 5. Because preference for solitude and social anxiety scores were correlated, we also calculated correlations among these variables with social anxiety partialled out.

The data presented in Table 5 indicate that those scoring high on the Preference for Solitude Scale tend to spend more time by themselves than those scoring low on the scale. This relation holds even when the effects of social anxiety are removed. In terms of specific activities, the brief number of items we looked at revealed only that those scoring low on the scale tend to spend more time in group sports and those scoring high spend more time reading. Finally, not only do those with a high preference for solitude report that they are not often bored or lonely, they appear to have fewer problems with these experiences than those who score low on the scale.

EXPERIMENT 6

The results from Experiment 5 indicate that people scoring high on the Preference for Solitude Scale report that they engage in solitary activities more often than those scoring low on the scale. Although consistent with expectations, we should not rely too heavily on this type of self-report data to establish the validity of the scale. It is possible that subjects reported what they *believe* they do or *prefer* to do rather than their actual behavior. Thus, in Experiment 6 we employed a more direct method to assess how subjects spend their time. In this experiment subjects were asked to keep records of how they spend each hour of each day for one week.

Method

Subjects. Forty male and female undergraduates served as subjects in exchange for class credit.

Procedure. All subjects attended an initial meeting in which they completed a battery of tests that included the Preference for Solitude Scale. Next subjects obtained instructions for participation in the week-long investigation. Subjects were given a booklet containing an instruction sheet and seven diary pages. Each diary page divided the day into 24 one-hour blocks. Each hour block contained a space to list the activity the subject had engaged in during that time. Next to each block were two additional spaces. The first of these asked subjects to indicate the number of people with whom they had engaged in the activity. The second space asked subjects to indicate whether the activity had been generally pleasant, neutral, or generally unpleasant.

The instruction sheet gave extensive directions for completing the diary pages. Examples were provided to help subjects determine if they should classify the activity as one they did alone or with someone else. In general, subjects were instructed to count the people around them when determining the number of people they were "with" if the activity included more than incidental interaction. For example, sitting with people you know at lunch would be identified as an activity done with others, but studying alone in the library would be identified as an alone activity even if an acquaintance passing by occasionally exchanged a few words. Subjects were told they could draw lines to indicate parts of hours, but to not identify an activity that took less than 10 min. A sample diary sheet was used to help students understand how to complete the diary.

Subjects were instructed to complete the diary the same time each day for 7 consecutive days. Although subjects were told they need not describe any activity that they would rather the experimenter not find out about, all subjects filled in all 24 one-hour blocks on each of the 7 diary pages.

Results and Discussion

We first identified the "free choice" waking hours in each subject's week. That is, we excluded the time subjects spent in class or at work. This is because we were interested in how subjects spent their time when they could reasonably choose between solitary and social activities. In almost all cases subjects probably did not have this choice while in class or at work. We calculated the total number of hours each subject spent alone and the total number of hours spent with at least one other person during these free-choice times. We also looked at the percentage of time subjects said the activity was pleasant or unpleasant.

As shown in Table 6, nearly all subjects spent the vast majority of their free time in the company of other people. Nonetheless, scores on the Preference for Solitude Scale were correlated with the amount of free time spent alone, $r = -.37$, $p < .05$. As expected, people scoring high on the scale spent less time with others and more time by themselves than those scoring low.

Subjects also reported that the majority of their activities were pleasant. However, high preference for solitude subjects identified a higher percentage of their time alone as pleasant, $r = .34$, $p < .05$. The percentage of time spent with others rated positively by the subjects did not differ

TABLE 6
FREE TIME SPENT BY HIGH AND LOW PREFERENCE FOR SOLITUDE STUDENTS

	Preference for solitude	
	High	Low
Percentage of time spent alone	19.80	11.00
Percentage of time spent with others	80.10	89.00
Percentage of time alone rated as pleasant	74.50	55.80
Percentage of time with others rated as pleasant	87.30	92.90

as a function of preference for solitude scores. Finally, subjects rated so few of their activities as negative that these percentages were not analyzed.

The results of this study provide additional validation for the Preference for Solitude Scale. Subjects with scores indicating a high preference for solitude spent more time by themselves and enjoyed this time more than did subjects who scored low on the scale. However, two features of the data need further elaboration. First, it is not the case, at least with this population in this setting, that high preference for solitude people *typically* prefer to spend time by themselves or that they find time spent with other people unpleasant. On the contrary, the students in our sample spent most of their time with other people and enjoyed almost all of these activities. Rather, the data indicate that *relative to others* people with a high preference for solitude are more likely to seek out and enjoy time by themselves occasionally.

Second, the high preference for solitude subjects in our study reported that time spent with others was more often pleasant than time spent alone. Most likely this pattern simply reflects the nature of the tasks students typically do alone (such as studying). However, our concern is not necessarily how high preference for solitude people feel about the time they spend with others. Rather, it is how these people feel about time alone relative to those with a low preference for solitude.

EXPERIMENT 7

The data reported in Experiment 5 and Experiment 6 suggest that people scoring high on the Preference for Solitude Scale tend to structure their free time so that they spend a greater percentage of this time in solitude than do people scoring low on the scale. In Experiment 7 we looked at the choice to interact or spend time alone in a more controlled laboratory investigation. We arranged our laboratory to resemble a waiting room situation. We reasoned that people who enter a waiting room where others are present face the choice of interacting with the other people in

the room or of spending the time with their own thoughts and activities. We expected that people with a preference for solitude would be less likely than those low in this preference to spend the time interacting with others. If our descriptions of high and low preference for solitude people are correct, highs should enjoy the opportunity for some quiet time to themselves, while lows should view a waiting room as an opportunity to interact.

Finally, the correlation reported in Experiment 5 indicates that although preference for solitude is not synonymous with social anxiety, there is some overlap of the two constructs. Thus, we again assessed social anxiety so that we could partial out the variance associated with this construct. We wanted to demonstrate that the predicted differences between high and low preference for solitude people in the waiting-room situation could not be attributed simply to differences in social anxiety.

Method

Subjects. Thirty-two male and female undergraduates served as subjects in exchange for class credit. Each had taken the Preference for Solitude Scale and the Interaction Anxiousness Scale approximately 2 to 4 weeks earlier as part of a larger test battery. No specific connection between the scales and the experiment was made at the time of recruitment.

Procedure. Subjects arrived at the experimental room one at a time. They were greeted by an experimenter who explained that he or she needed a few minutes to set up the study. The experimenter asked the subject to wait in a nearby room that was used by other experimenters at the university. The subject was led to the room where another student was seated. This other student was the same gender as the subject and in reality was a confederate working with the experimenter. The experimenter introduced the confederate as a student waiting to participate in a study being run at the same time by another experimenter. The experimenter motioned to the only empty chair without clutter on it and all subjects sat in that chair. The experimenter then quickly left the waiting room.

The waiting room was approximately 4 by 5 meters, with two doors along one wall and a window along the opposite wall. The confederate sat facing the door entered by the subject. The subject's chair was two and a half meters from the confederate, and was pointed at a 45 degree angle from him or her. A small table containing several magazines was arranged between the chairs. The table stuck out only a few inches from the chairs, thus creating no obstruction between the subject and the confederate.

Three different confederates, one male and two females, were used. Each of the confederates, as well as the experimenter, was blind to the subjects' preference for solitude and social anxiety scores. Each confederate had been trained to provide very little in the way of verbal or nonverbal invitations for conversation with the subject. The confederate acknowledged the subject's entrance by looking up from his or her magazine for a second. After making very quick eye contact and giving a half smile, the confederate returned to his or her magazine. The confederate thumbed through the magazine, showing no particular interest in it or the subject. The confederate responded to each statement made by a subject with as few words as possible, and with minimal eye contact. In short, any interaction between the two had to be conducted at the initiation of the subject.

Instead of returning to the experimental room, the experimenter stood just outside the waiting room door, out of the subject's sight. Both the experimenter and the confederate kept track of the number of times the subject tried to initiate a conversation and the total

number of statements (complete sentences) each subject made. Only verbal efforts were counted. Although nonverbal gestures, efforts at eye contact and other signals (such as clearing one's throat) often are used to initiate social contact, these were not counted here because of the difficulty of establishing reliable assessment procedures. The experimenter reentered the room after 2 min.

Results and Discussion

Two scores were derived from the data recorded by the two judges (the experimenter and the confederate). The judges showed reasonable agreement about the number of attempts subjects made to initiate conversations ($r = .67$) and the number of statements they counted for each subject ($r = .44$). Thus, we averaged the two judges' scores to generate an overall initiation attempts score and an overall statements score for each subject.

The number of initiation attempts by the subject was significantly correlated with the preference for solitude score, $r = -.29$, $p < .02$. As predicted, the lower the preference for solitude, the more subjects tried to initiate a conversation in the waiting room. The average number of attempts was 1.56. To get a better idea of how these were related to the subjects' preference for solitude, subjects were divided into thirds, based on their Preference for Solitude Scale scores. As expected, subjects in the lower third made more attempts to interact ($M = 2.17$) than subjects in the middle third ($M = .155$) and the upper third ($M = .78$).

Preference for Solitude Scale scores were significantly correlated with scores from the Interaction Anxiousness Scale, $r = .31$, $p < .02$. Thus, to remove the effect of social anxiety from the relation described above, we used the social anxiety score as a covariate in partial correlations between the preference for solitude score and the number of initiations measure. We found a stronger relation between preference for solitude and the number of conversations attempted by the subject in this analysis, $r = -.39$, $p < .003$.

Next we examined the relation between preference for solitude scores and the mean number of statements subjects made. Unfortunately, we did not replicate the finding with this measure, $r = .05$; partial $r = .16$. The failure to find significant differences on this measure may have to do with the difficulty we had assessing the number of statements the subjects made, as indicated by the lower inter-judge agreement rates. In addition, we can argue that attempts to initiate a conversation probably is a better indicator of the subject's desire to interact with the confederate than the number of sentences he or she uttered.

EXPERIMENT 8

A final experiment was conducted to demonstrate further the distinction between the construct measured by the Preference for Solitude Scale and

the well-research construct of introversion–extraversion, as described by Eysenck (1990). Data reported in Experiment 3 indicate that scales measuring the two constructs are moderately correlated. The purpose of Experiment 8 was to demonstrate that the Preference for Solitude Scale can predict behavior beyond that accounted for by Eysenck's measure of introversion–extraversion.

Method

Subjects. Sixty-eight undergraduates participated in the experiment in exchange for class credit. Four subjects, three males and one female, were dropped from the analysis of the behavior measure because they did not return their diaries at the end of the week, leaving 64 subjects in the final sample.

Procedure. Subjects were administered a package of personality measures arranged in random order. This package included two scales of interest here, the extraversion–introversion scale from the Eysenck Personality Inventory (Eysenck & Eysenck, 1968) and the Preference for Solitude Scale. Upon completion of the scales, subjects were given a 7-day diary booklet similar to the one used in Experiment 6. As in the earlier experiment, subjects were instructed to record at the end of each day their activities for the entire day and whether they were alone or with other people during these activities. The instructions and materials were identical to those used in Experiment 6 with the exception that, to simplify the task, subjects were not asked to rate the pleasantness of each activity.

Results

As in Experiment 6, we identified each subjects' free-choice waking hours and calculated the percentage of this time subjects spent alone and with at least one other person. As in the earlier experiment, we found that our subjects spent the majority of their time with others (M = 74.1%). This percentage score was significantly correlated with the subjects' preference for solitude scores ($r = -.31$, $p < .05$), indicating that subjects scoring high on the solitude scale spent less of their time with others. However, the percentage of time subjects spent with others was only weakly related to the extraversion scores ($r = .14$). A partial correlation between the percentage with others score and the preference for solitude score (with extraversion partialed out) also produced a significant correlation, $r = -.29$, $p < .05$).

Thus, the data from this final experiment complements findings from the earlier studies. People who score high on the Preference for Solitude Scale tend to spend more of their free time by themselves than do those scoring high on the scale. The data also indicate that the relation between preference for solitude scores and the amount of time people choose to spend by themselves cannot be accounted for in terms of the relation between preference for solitude and introversion–extraversion. Although the two constructs obviously overlap, the Preference for Solitude Scale can account for some of the variance in behavior beyond that extraversion.

GENERAL DISCUSSION

The eight experiments reported here provide evidence for the reliability and validity of the Preference for Solitude Scale. The scale was developed to measure individual differences in the extent to which people prefer solitude over social interaction. The scale exhibits internal consistency and test–retest reliability. The scale also identifies those who are more likely than others to spend time by themselves when this option is available.

The development of a reliable and valid measure of a person's preference for solitude should benefit the increasing number of researchers investigating the causes and consequences of spending time by oneself. To date this research has been limited because researchers have not always distinguished between the amount of solitude a person experiences and the extent to which the person prefers to spend time alone. Another problem facing researchers has been the absence of a scale to assess individual differences in the preference for solitude independent of other facets of a sense of privacy.

There probably are many reasons why people prefer to spend time by themselves rather than with others. Perhaps the most common reason for preferring solitude is anxiety about negative evaluation from others. However, the findings from several of the studies reported here suggest that we can identify people who prefer to spend a significant amount of their time alone for reasons other than social anxiety. These high preference for solitude people do not dislike social interaction. Rather, they probably spend the majority of their time in the presence of others and find this time pleasant. These people also are not necessarily withdrawn or introverted.

So what *are* these high preference for solitude people like? Although solid answers await future findings from research with the scale, we can speculate a little on this question from what we now know. Once we eliminate those who seek out solitude because they are anxious about social interactions and those who simply are introverted and quiet, we can identify people who have learned to appreciate the benefits that time by oneself can bring. Researchers have found that time alone can allow for valuable self-reflection, creative insights, and a restoration period between social encounters. If this is the case, rather than indicating poor personal adjustment and underdeveloped social skills, a high preference for solitude might reflect good personal adjustment and a sense of well-being.

Speculating further, it is likely that the relation between solitude and well-being is bidirectional. That is, not only does solitude have the potential to contribute to happiness and adjustment but also well-adjusted

people have learned to appreciate and value the time they spend alone. The research presented here is intended as a starting point for exploring some of these possibilities.

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