

Day-to-Day Relationships Between Self-Awareness, Daily Events, and Anxiety

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ABSTRACT Every day for 3 weeks, 41 participants provided measures of their state private and public self-consciousness (self-awareness, SA), and anxiety, and they described the events that occurred each day. Multilevel random coefficient modeling analyses found that daily private and public SA were positively related to the importance and frequency of daily negative social events and to daily anxiety. Public SA was also positively related to the importance and frequency of daily positive social events. Neither public nor private SA was related to the importance and frequency of daily achievement events. The strength of the relationship between public SA and positive social events was stronger for people who were less anxious, less depressed, and for those with greater self-esteem. Analyses of lagged relationships suggested that increased private SA led to increased negativity of social events, whereas increased public SA led to increased positivity of social events, and increased anxiety led to increased private SA.

The extent to which people attend to their own thoughts and feelings figures prominently in a variety of theories and empirical studies. As is the case with various other individual differences, such attention, usually labeled as self-focused attention or self-consciousness, has

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been studied as both a trait and a state. Studies of trait self-consciousness have examined relationships between naturally occurring differences in trait self-consciousness and a wide variety of behaviors and individual differences. In contrast, studies of state self-consciousness (usually referred to as self-awareness) have tended to be experiments in which self-awareness has served as either a dependent or independent variable, and little is known about naturally occurring, within-person variability in self-awareness. The present study was intended to complement existing research by examining naturally occurring, day-to-day changes in self-awareness.

For various reasons, it is important to understand naturally occurring variations in self-awareness. For example, changes in self-directed attention figure prominently in work on self-regulation (e.g., Carver & Scheier, 1982, 1998), and self-directed attention has been discussed as a component of various psychological disorders (Ingram, 1990). Understanding how self-awareness covaries with daily events may also help explain the role of self-awareness in coping with stress (e.g., Mullens & Suls, 1982). Finally, a growing body of research has found that the naturally occurring state variability in other self-constructs such as self-esteem (Butler, Hokanson, & Flynn, 1994; Kernis, 1993) and self-concept clarity (Nezlek & Plesko, 2001) is meaningful. Such research suggests that the naturally occurring state variability in other self-constructs such as self-awareness may also be psychologically meaningful.

The design of this study was similar to the design of numerous previous studies on daily events and psychological states. Each day, participants provided measures of their self-awareness and anxiety, and they described the events that occurred. In addition, trait-level measures were collected as potential moderators of day-level relationships. These data allowed the daily covariation between self-awareness and other constructs to be examined (e.g., Does daily self-awareness covary with daily events?), and they also allowed individual differences in these relationships to be examined (e.g., Is the day-level covariation between self-awareness and events stronger for some people than for others?).

The ability to examine within-person covariation is an important strength of studies that collect data across multiple occasions. Most research on self-focus has examined between-person covariation such as relationships between trait measures of self-consciousness and anxiety, and it cannot be assumed that state level (within-person) relationships between constructs will parallel trait level relationships

(e.g., Tennen, Affleck, Armeli, & Carney, 2000). First, within- and between-person covariation are mathematically independent. Relationships at one level of analysis involve different sources of variance than relationships at the other, and theoretically, any type of relationship at one level can co-exist with any type of relationship at another. Second, it cannot be assumed that within- and between-person covariation reflect the same psychological processes. Relationships between traits may parallel relationships between the same constructs measured as states, but they may not. To highlight the distinction between these two levels of analyses, trait self-focus will be referred to as self-consciousness (SC), and state self-focus will be referred to as self-awareness (SA).

The first hypothesis guiding the present study was that daily self-awareness would positively covary with daily anxiety. Compared to days when people were less self-aware, people would be more anxious on days when they were more self-aware. This hypothesis was an extension of the considerable research showing that trait anxiety and trait self-consciousness are positively related (Ingram, 1990; Mor & Winquist, *in press*). Although it cannot be assumed that trait level (between-person) relationships between self-focus and anxiety will hold at the state level (within-person), such trait level relationships are a good starting point. Moreover, some research on within-person covariation suggests that self-focus and anxiety covary at the within-person level. For example, in a daily diary study, Lavalley and Campbell (1995) found a positive within-person correlation between daily negative affect and daily self-focus, although it should be noted that the average correlation was weak (.09).

The second hypothesis was that daily self-awareness would covary with daily negative events. Compared to days during which people's daily experiences were more negative, people would be more self-aware than they would be on days during which their experiences were less negative. Such a relationship is implicit in much of the scholarship on self-focus and self-consciousness. For example, in their theory of reactive depression, Pyszczynski and Greenberg (1987) posited that "... it follows that the initial response to disruptions, failures, and frustrations is an increase in one's level of self-focus" (p. 125). Pyszczynski and Greenberg (1987) also presented and discussed research supporting this premise. Moreover, in a study of daily personal goals, Lavalley and Campbell (1995) found that more important daily negative events were associated with increased self-focus. Finally, because daily anxiety and daily negative events have

been found to covary with each other (e.g., Bolger, DeLongis, Kessler, & Schilling, 1989), the covariance between anxiety and negative events was taken into account when relationships between self-awareness and these two measures were examined.

These hypotheses both concern negative aspects of daily experience, and in so doing, they beg questions about the positive aspects. Most accounts of variations in self-focus suggest that positive events (such as achieving a goal) lead to diminished self-focus, a decline that may be due in part to the fact that positive affect tends to accompany positive events (e.g., David, Green, Martin, & Suls, 1997; Gable, Reis, & Elliot, 2000; Nezlek, 1999). Aspinwall (1998) has argued, however, that positive moods may facilitate self-regulation, suggesting that the positive affect (or diminished negative affect) accompanying positive events may be associated with increased self-focus. Moreover, positive events may lead to increased self-focus for reasons other than changes in affect. For example, some types of success may be accompanied by increased concern for losing what has been gained, or an active social life may make people more conscious of the opinions of others (i.e., the opinions of relational partners, friends). Given this, relationships between self-awareness and positive events were examined with the understanding that such relationships might be positive or negative.

Daily events can be conceptualized along various dimensions, and for present purposes, events were differentiated on the basis of whether they were social or achievement related. Such a distinction has a long history in psychology ranging from Freud's "Arbeit und Liebe" (Work and Love) to Bales's socioemotionality versus instrumentality (Bales, 1950) to more recent work on communion versus agency. The universality of such a distinction across time and theoretical perspectives suggests that social and achievement domains represent important, perhaps fundamental, dimensions of people's day-to-day lives.

Distinguishing social and achievement domains was particularly important for examining daily public self-awareness. Public SA is defined in terms of people's concerns for the thoughts and feelings of others, and although achievement situations may be relevant to public SA, by their nature, social situations should be more relevant. Accordingly, it was expected that the covariation between public SA and social events would be stronger than the covariation between public SA and achievement events. No hypotheses about the relative strength of the covariation between private SA and social and achievement events were made.

Research on daily events suggests that within-person relationships between self-awareness and events should be stronger for people who are more depressed, more anxious, and who experience lower self-esteem. Empirically, depression has been found to moderate relationships between daily events and daily measures of self-esteem and depressogenic adjustment, with more-depressed people being more reactive to daily events than less-depressed people (e.g., Butler et al., 1994; Nezlek, 1999; Nezlek & Gable, 2001). Self-esteem, a construct that although conceptually distinct from depression, is known to covary negatively with depression (e.g., Tennen & Herzberger, 1987), has also been found to moderate reactivity to daily events (Nezlek, 1999), with people with lower self-esteem being more reactive than those with higher esteem.

Theoretically, the potential moderating roles of self-esteem and depression are consistent with Rogers's (1961) model of mental health and his construct of unconditional positive regard. Rogers believed that those lower in self-esteem (and by implication, more likely to be depressed) are more reactive to external feedback (such as daily events) because their sense of self is more contingent on such feedback. Although Rogers does not discuss self-focused attention per se, the notion that people with lower self-esteem will react more strongly (in a broad sense) to external events than those with high esteem is consistent with his model. According to Rogers, people with lower esteem will think more about themselves in response to external events than those with higher esteem, increases that in the present context should result in a stronger within-person covariation between daily events and daily self-awareness.

The third possible moderator was anxiety. In studies of reactivity to daily events, greater neuroticism (N) and greater trait negative affect (NA) has been found to be associated with increased reactivity to negative daily events (e.g., Bolger & Schilling, 1991; Marco & Suls, 1993; Suls, Green, & Hillis, 1998). Given that anxiety is an important component of both N and NA and that trait anxiety and trait self-focus tend to covary positively, it seemed reasonable to assume that greater anxiety would be associated with stronger covariation between daily events and self-awareness. People who are more anxious might have lower thresholds for increasing their self-focused attention, and therefore their self-focus might change more readily than the self-focus of people who are less anxious and have higher thresholds.

Nevertheless, research on trait self-focus, using between-person levels of analysis, is not consistent regarding individual differences in reactivity to events. For example, and consistent with research on within-person

covariation, Pyszczynski and Greenberg (1987) posit that depression is both due to and maintained by excessive self-focus in reaction to negative events, and they discuss research supporting this proposition. In contrast, research on stressful life events suggests that increased private self-consciousness is associated with diminished reactions to stressful events (e.g., Mullens & Suls, 1982). Such inconsistency, which has been discussed (in other contexts) as the “self-absorption paradox” (e.g., Trapnell & Campbell, 1999), made it difficult to form a strong hypothesis about how (or if) self-consciousness would moderate the covariation between self-awareness and daily events.

METHOD

Participants

Participants were 41 students attending the College of William & Mary. They were volunteers from a sample of 123 who had participated in a similar study the previous semester. (See Gable & Nezlek, 1998, for details of the original recruiting procedure.) Given this self-selection, it was important to know if participants in the present study differed from those who did not agree to participate again. Reports of daily states and events collected in the Gable and Nezlek study were analyzed to see if these two groups differed; they did not. There were no significant differences between the two groups on any measure. (Details of these analyses are available from the author.)

Measures

Daily private self-awareness (PRV) was measured using two items of the Self-Consciousness Scale (SCS; Feningstein, Scheier, & Buss, 1975), reworded for daily administration (How much did you reflect about yourself today? How attentive were you to your inner feelings today?), and daily PRV was operationalized as the mean response to these two items. Daily public self-awareness (PUB) was measured using variants of two items (How concerned were you about what other people thought of you today? How worried were you about making a good impression today?), and daily PUB was operationalized as the mean response to these two items. Items from the SCS were selected based on factor loadings reported by Feningstein et al. (1975) and Britt (1992) and on appropriateness for daily administration. Daily anxiety was assessed using three items from the Profile of Mood States (Lorr & McNair, 1971) that were used by Bolger (1990) to assess daily anxiety. Participants rated how “on edge,” “uneasy,” and “nervous” they felt each day, and daily anxiety was operationalized as the mean response for

these three items. Responses to the daily self-awareness and anxiety measures were made using 9-point scales.

Daily events were measured using a subset of items from the Daily Events Survey (DES; Butler, Hokanson, & Flynn, 1994). In the present study, 22 of the 40 events from the DES were measured, 12 positive and 10 negative, with equal numbers of social and achievement events. These events included: "Went out to eat with a friend/date" (social positive), "Tried to do homework and couldn't understand it" (achievement negative), "Did well on a school or work task (e.g., test, assignment, job duty)" (achievement positive), "Had plans fall through to spend time with someone special" (social negative). In addition to the items from the DES, four items, each representing a combination of positive-negative and social-achievement, were created to measure other events that may have occurred. For example, other positive social events were measured using the item "Had other type of pleasant event (not listed above) with friends, family, or date".

A total of 26 events was measured, 7 positive social, 7 positive achievement, 6 negative social, and 6 negative achievement. Each day, participants rated each event using the following scale: 0 = *did not occur*, 1 = *occurred and not important*, 2 = *occurred and somewhat important*, 3 = *occurred and pretty important*, 4 = *occurred and extremely important*. For each day, ratings of events were averaged to create event composite scores. One score represented all positive events, one represented all negative events, and a composite score was created for each of the four subcategories: positive social, negative social, positive achievement, and negative achievement.¹

In addition to these daily measures, participants completed trait versions of the SCS, the Rosenberg Self-esteem Scale (RSE; Rosenberg, 1965), the Beck

1. Positive and negative frequency scores, based on the number of events occurring each day, were also created. Analyses using composite mean scores were presented because there was less heterogeneity of variance for composite scores than for frequency scores, and because composite scores incorporate differences in the importance of events, whereas frequency scores assume all events are equally important. Moreover, the use of such composite scores is consistent with how life events are measured with the Life Experiences Survey (Sarason, Johnson, & Siegel, 1978), a widely used instrument. Nevertheless, the results of analyses using frequency scores were similar to the results presented in this article (something also mentioned by Butler et al., 1994). In terms of statistical significance, the only effect that varied across the analyses was the lagged effect from public SA to positive social events. It was $p < .05$ using composite scores and $p = .09$ using counts. Also, the present study used only a subset of the DES items because it was felt that some of the items on the DES occurred too infrequently to qualify as a daily event. It appears that no frequent items were eliminated because the mean number of positive and negative events recorded per day in this study (5.21 and 2.39, respectively) are similar to the numbers reported by Butler et al. (1994) using the full-scale version.

Depression Inventory (BDI; Beck, 1967), and the trait subscale of the State-Trait Anxiety Inventory (Spielberger, Gorsuch, & Lushene, 1970).

Procedure

At the beginning of the study, participants came to a laboratory and received instructions and a computer disk containing the data collection programs. They were told that they would be using a computer to answer a series of questions every day for 3 weeks and to complete questionnaires on the 1st and last days of the study. Data collection programs were written using the Micro-Analytic Experimental Laboratory software package (Schneider, 1988), and participants were able to run these programs and provide data using any IBM-compatible personal computer.

Standard instructions for the measures (with modifications for daily administration) were included in three programs. One program was run on the 1st day of the study, and it collected the BDI and the RSE. A second program was run every day and it collected state measures and reports of daily events. The third program was run on the last day of the study and administered the SCS, the trait measure of anxiety, and the study evaluation questions. For the SCS, responses were made using a 1–5 scale; for the BDI and STAI scales, a 0–4 scale was used; and for the RSE, a 1–9 scale was used.

Members of the research team maintained regular contact with participants via electronic mail. Participants were told to contact the experimenter should any problems arise such as disk failure, computer viruses, and so forth. When problems of this type occurred, participants were given replacement disks within 24 hours and continued the study. At the end of the study, participants answered questions about their participation. Their responses suggested that participating in the study had not changed their daily routine. Approximately half of the participants (55%) reported spending 5 minutes or less per day running the program, and all reported spending 10 minutes or less per day. Participants also reported that the study did not interfere with their daily lives, a mean of 1.2 on a 1 to 5 scale where 1 = *not at all* and 5 = *very much*. The 41 participants provided a total of 833 days of data ($M = 20.3$ days, $SD = 2.1$), all provided at least 10 daily measures, and 95% provided at least 18.

RESULTS

The present data comprised what is referred to as a multilevel data structure in that observations at one level of analysis (days) were nested within another level of analysis (people). Accordingly, the data were analyzed with a series of multilevel random coefficient models using the

program HLM (Bryk, Raudenbush, & Congdon, 1998; Version 4.04). Multilevel random coefficient modeling (MRCM) was used instead of ordinary-least-squares methods because MRCM provides better parameter estimates than OLS methods. Using MRCM to analyze daily events data is discussed in Nezlek (2001).

Within the general terminology of multilevel modeling, the primary analyses were two-level models. Measures for days were nested within people, and for each person, coefficients were estimated representing the within-person (or day-to-day) relationships between self-awareness, daily events, and anxiety, such as the extent to which daily self-awareness covaried with daily anxiety. In multilevel terminology, such coefficients are referred to as slopes to distinguish them from intercepts. In addition, analyses were done to determine if these within-person relationships varied as a function of trait level individual differences. For example, did the within-person relationship between self-awareness and anxiety vary as a function of people's trait self-consciousness?

The first set of analyses examined the reliability and validity of the day-level measures of self-awareness and anxiety. The first models in these analyses were "totally unconditional" in that daily measures were not modeled as a function of other-day or person-level variables. These analyses provided parameter estimates that were valuable in and of themselves and that served as the bases for interpreting the results of other analyses. The basic level 1 (day-level or within-person) model was:

$$y_{ij} = \beta_{0j} + r_{ij}.$$

In this model, y_{ij} is a daily measure of self-awareness (PRV and PUB) for person j on day i , β_{0j} is a random coefficient representing the mean of y for person j (across the i days for which each person provided data), r_{ij} represents the error associated with each measure, and the variance of r_{ij} constitutes the day level residual (or error) variance.

In multilevel modeling, the coefficients from one level of analysis are passed on to the next. For present purposes, this meant that individual differences in within-person phenomena were analyzed at level 2. The basic level 2 (or person-level) model was:

$$\beta_{0j} = \gamma_{00} + u_{0j}.$$

In this model, γ_{00} represents the grand mean of the person level means (β_{0j} s) from the day level model, u_{0j} represents the error of β_{0j} , and the variance of u_{0j} constitutes the level 2 residual (error) variance.

The reliability of coefficients, defined as the ratio of the true to total variance of an effect, is calculated automatically by HLM, and as shown in Table 1, both the PRV and PUB and the ANX measures were highly reliable. See Bryk and Raudenbush (1992, pp. 39–40) for a discussion of how HLM estimates reliability. The validity of these daily measures was determined by examining relationships between the trait and daily measures of the same construct. For example, daily means of private self-awareness (β_{0j}) were modeled as a function of trait private self-consciousness:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{TRAIT-SC}) + u_{0j}.$$

The maximum-likelihood procedures used by HLM provide separate estimates of fixed parameters (significance tests of coefficients such as the TRAIT-SC coefficient) and random parameters (the error variances associated with individual effects). The fixed effect parts of these analyses found that the coefficient between PRV (daily private self-awareness) and trait private self-consciousness was significant ($\gamma_{01} = .09$, $t = 3.12$, $p < .01$) as were the coefficients between PUB (daily public self-awareness) and trait public self-consciousness ($\gamma_{01} = .14$, $t = 5.12$, $p < .01$), and between ANX (daily anxiety) and trait anxiety ($\gamma_{01} = .11$, $t = 5.89$, $p < .01$). For every 1.0 increase in trait private SC raw scores, mean PRV increased .09, for every 1.0 increase in trait public SC, mean PUB increased .14, and for every 1.0 increase in trait anxiety, mean ANX increased .11.

Validity coefficients for the daily measures were estimated by determining the random variance in a mean daily measure accounted for by the corresponding trait level measure. For PRV the residual variance of β_{0j} from the first analysis in which trait private SC was not included at the person level was 1.23, and the residual person-level variance from the second analysis in which trait private SC was included was .96, a reduction of 22%. For PUB, the corresponding figures were 1.48, .88, and 41%, and for ANX, the corresponding figures were 2.65, 1.40, and 47%. These reductions correspond to person-level correlations of .47 between mean PRV and trait private SC, .64 between mean PUB and trait public SC, and .69 between mean

Table 1
Summary Statistics of Daily Measures

	Mean	Between-person variance	Within-person variance	Reliability	Validity
Private self-awareness	4.19	1.23	1.07	.96	.47
Public self-awareness	3.29	1.48	1.24	.96	.64
Anxiety	3.56	2.65	1.91	.97	.69
Positive social events	1.37	.46	.43	.96	
Negative social events	.38	.13	.18	.94	
Positive achievement events	.81	.20	.36	.92	
Negative achievement events	.59	.25	.20	.96	

ANX and trait anxiety (the square roots of the percent of shared variance). The results of these analyses and descriptive statistics for all daily measures are summarized in Table 1.

Self-Awareness and Anxiety

The first hypothesis of the study was that daily self-awareness and daily anxiety would covary. These relationships were examined with the following day-level (or within-person) model separately for PRV and PUB:

$$y_{ij} = \beta_{0j} + \beta_{1j}(\text{ANXIETY}) + r_{ij}.$$

In this model, y_{ij} is a daily measure of self-awareness (PRV or PUB) for person j on day i , β_{0j} is a random coefficient representing the intercept of y for person j (mean for either PRV or PUB), β_{1j} is a slope representing the within-person relationship between anxiety and SA for person j , and r_{ij} represents error. To eliminate the influence on parameter estimates of individual differences in anxiety, anxiety

scores were group-mean centered. Thus, an individual's coefficients described relationships between deviations from his or her mean anxiety score and deviations from his or her mean SA.

To determine if anxiety covaried with SA (Was the anxiety slope significantly different from 0 across the individuals in the study?), the following person-level model was examined:

$$\beta_{0j} = \gamma_{00} + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + u_{1j}$$

The significance of γ_{10} indicated if, on average, the relationship between SA and anxiety was different from zero. Such models are referred to as "slopes as outcomes" models because slopes from a level 1 model are treated as outcomes (dependent measures) at level 2. In confirmation of the first hypothesis, these analyses found that both private and public self-awareness were higher on days when anxiety was higher. These results are summarized in Table 2.

Self-Awareness and Daily Events

The second hypothesis of the study was that daily SA would covary with daily negative events, and such relationships were examined using the following day level model:

$$y_{ij} = \beta_{0j} + \beta_{1j}(\text{POS-EVENT}) + \beta_{2j}(\text{NEG-EVENT}) + r_{ij}.$$

This model is similar to the model used to examine relationships between SA and anxiety except that the slopes now represent within-person relationships between SA and events. As in the previous analyses, event scores were group-mean centered, and the resulting within-person coefficients were analyzed at the person level with the same procedures used to analyze daily anxiety and SA.

In confirmation of the second hypothesis, these analyses found that private self-awareness was higher on days when negative event scores were higher. In contrast, private self-awareness did not vary as a function of positive event scores. The mean PRV-negative event slope was significantly different from 0 ($\gamma_{20} = .52$, $t = 4.9$, $p < .001$), whereas the mean PRV-positive event slope was not ($\gamma_{10} = .06$, $t < 1$).

Table 2
 Within-Person Relationships Between Self-Awareness and Anxiety and
 Between Self-Awareness and Daily Events

	Private			Public		
	<i>Coeff.</i>	<i>t</i>	<i>p</i>	<i>Coeff.</i>	<i>t</i>	<i>p</i>
Anxiety	.15	4.5	.000	.14	3.8	.001
<i>Social events</i>						
Positive	.07	<1		.39	4.7	.000
Negative	.52	4.3	.000	.70	4.8	.000
<i>Achievement events</i>						
Positive	-.03	<1		.03	<1	
Negative	.05	<1		.08	<1	

Note. Mean unstandardized coefficients are in the column labeled *Coeff.*

The results of the analyses of public self-awareness found that public self-awareness covaried with both positive and negative event scores. Similar to the analyses of PRV, PUB was higher on days when negative event scores were higher. The mean PUB-negative event slope was positive and significantly different from 0 ($\gamma_{20} = .70, t = 4.9, p < .001$), and the mean PUB-positive event slope was also positive and significantly different from 0 ($\gamma_{10} = .49, t = 4.1, p < .001$).

Social Versus Achievement Events

Participants provided separate descriptions of social and achievement events. Analyses that distinguished these types of events were structurally similar to the previous analyses, but they included four terms in the level 1 model, one for each combination of positive-negative and social-achievement. The results of these analyses are summarized in Table 2.

These analyses found that daily SA covaried with social events but not with achievement events. As hypothesized, public self-awareness was higher on days when negative social event scores were higher and on days when positive social event scores were higher, but public SA did not covary with achievement event scores. Moreover, the mean slopes between public SA and positive social and achievement events were significantly different ($\chi^2[1] = 7.6, p < .005$), as were the mean

slopes between public SA and negative social and achievement events ($\chi^2[1] = 13.9, p < .001$). As expected, private self-awareness was higher on days when negative social event scores were higher, although private SA was unrelated to negative achievement event scores and to either positive social or achievement event scores. Moreover, the mean slopes between private SA and negative social and achievement events were significantly different ($\chi^2[1] = 8.7, p < .005$).

Given the covariation among daily SA, daily events, and daily anxiety, it was important to know how these relationships changed when daily SA was modeled as a joint function of events and anxiety. To do this, a series of day-level models were analyzed in which daily SA was modeled as a function of events and anxiety. For PUB, both positive and negative social events were included, and for PRV only negative social events were included. The event coefficients in these analyses remained significant ($ps < .01$) suggesting that anxiety did not mediate relationships between SA and events. These results are summarized in Table 3.

Lagged Relationships Between Self-Awareness and Anxiety and Events

Although the present study was not explicitly designed to study causal relationships, examining lagged relationships between constructs can provide some insight into causal relationships (e.g., West & Hepworth,

Table 3
Within-Person Relationships Among Self-Awareness,
Social Events, and Anxiety

	<i>Coeff.</i>	<i>t</i>	<i>p</i>
<i>Private self-awareness</i>			
Social negative events	.36	3.0	.005
Anxiety	.13	3.1	.001
<i>Public self-awareness</i>			
Social positive events	.40	4.6	.000
Social negative events	.62	4.2	.000
Anxiety	.11	3.6	.001

Note. Mean unstandardized coefficients are in the column labeled *Coeff.*

1991). Accordingly, a series of analyses were conducted in which self-awareness on day i was modeled as a function of self-awareness on day $i-1$ and either anxiety or social events on day $i-1$.² Parallel analyses were conducted in which anxiety or social events on day i was modeled as a function of self-awareness on day $i-1$ and anxiety or events on day $i-1$. For example, to determine whether changes in anxiety lead to or were followed by changes in private self-awareness, the following two models analyzed:

$$\text{PRV}(\text{day } i)_{ij} = \beta_{0j} + \beta_{1j}(\text{PRV day } i-1) + \beta_{2j}(\text{ANX day } i-1) + r_{ij}.$$

$$\text{ANX}(\text{day } i)_{ij} = \beta_{0j} + \beta_{1j}(\text{PRV day } i-1) + \beta_{2j}(\text{ANX day } i-1) + r_{ij}.$$

The critical coefficients in these models are the lagged coefficients $\beta_{2j}(\text{ANX day } i-1)$ in the first equation and $\beta_{1j}(\text{PRV day } i-1)$ in the second.³ A causal sequence from anxiety to private self-awareness is suggested if the $\beta_{2j}(\text{ANX day } i-1)$ coefficient in the first model is significant, whereas a sequence from private self-awareness to anxiety is suggested by a significant $\beta_{1j}(\text{PRV day } i-1)$ coefficient in the second equation.

The results of these analyses are summarized in Table 4. These analyses found that anxiety on one day (day $i-1$) predicted private SA on the next day (day i), above and beyond the relationship between private SA on day i and day $i-1$. In contrast, private SA on one day was not significantly related to anxiety on the next day. This pattern suggests that anxiety leads to increases in private self-awareness but not the reverse. For public SA and anxiety the pattern was not as clear, although a causal sequence from public SA to anxiety was suggested by the fact that the coefficient from anxiety on day $i-1$ to public SA on day i , $\beta_{2j}(\text{ANX day } i-1)$, approached conventional levels of significance ($p = .08$).

2. These analyses required that data were provided on consecutive days. Of the 833 days recorded, only 792 could have data for a previous day because there were 41 participants and for each of them, the 1st day could not logically have a previous day. Of these 792 days, there were 787 that had data for previous days.

3. The lagged coefficient between a measure on day n and the same measure on day $n-1$ was significant in all analyses ($p < .05$) except for negative social events for which the coefficient approached conventional levels of significance ($p = .08$). These coefficients were not the focus of this study, and so they are not presented or discussed.

Table 4
Lagged Relationships Between Self-Awareness and Anxiety
and Daily Social Events

Previous day	Present day	<i>Coeff.</i>	<i>t</i>	<i>p</i>
Private SA	Anxiety	.03	<1	<i>ns</i>
Anxiety	Private SA	.06	2.1	.05
Public SA	Anxiety	.08	1.8	.08
Anxiety	Public SA	.00	<1	<i>ns</i>
Private SA	Positive events	-.01	<1	<i>ns</i>
Positive events	Private SA	.00	<1	<i>ns</i>
Private SA	Negative events	.03	2.2	.05
Negative events	Private SA	.13	1.2	<i>ns</i>
Public SA	Positive events	.04	2.0	.05
Positive events	Public SA	-.03	<1	<i>ns</i>
Public SA	Negative events	.01	<1	<i>ns</i>
Negative events	Public SA	.03	<1	<i>ns</i>

Note. Mean unstandardized coefficients are in the column labeled *Coeff.*

Lagged coefficients between events and self-awareness suggested that public SA was causally related to positive social events, whereas private SA was related to negative social events. Increases in private self-awareness predisposed people to experience social events that were more negative (a significant PRV-event lag and a nonsignificant event-PRV lag), and increases in public self-awareness predisposed people to experience social events that were more positive (a significant PUB-event lag and a nonsignificant event-PUB lag). Neither of the lagged coefficients between public SA and negative social events was significant.

Person Level Moderators of Within-Person Relationships

An important focus of research on the day-to-day covariation between psychological states and daily events is the extent to which within-

person relationships vary as a function of person (or trait) level differences. To determine if the within-person relationships described above varied as a function of individual differences in traits, slopes from day-level models were analyzed at the person level using a model similar to the person-level models described above. For example, to determine if within-person relationships between events and PUB varied as a function of person-level traits, the following person-level model was analyzed:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{TRAIT}) + u_{0j}.$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}(\text{TRAIT}) + u_{1j}.$$

$$\beta_{2j} = \gamma_{20} + \gamma_{21}(\text{TRAIT}) + u_{2j}.$$

In these models, whether a specific trait moderated the PUB-event relationship was tested by the significance of the γ_{11} and γ_{21} coefficients (for positive and negative events respectively), and a parallel series of analyses was done for anxiety. These analyses examined slopes between daily SA and all day-level measures, including the lagged analyses. Individual differences in slopes that were not significantly different from 0 (on average) were analyzed also, because there may be meaningful variability in a slope even when the mean slope is not significantly different from 0. The potential moderating effects of the following individual differences were examined: the three subscales of the SCS (public, private, and social anxiety), self-esteem, depressive symptoms (as measured by the BDI), and trait anxiety. Descriptive statistics for each of these measures including Cronbach's alpha are presented in Table 5.

Table 5
Summary Statistics of Trait Measures

	Mean	<i>SD</i>	Alpha
Private self-consciousness	24.7	6.2	.73
Public self-consciousness	16.9	5.8	.84
Social anxiety	18.1	5.2	.83
Self-esteem	72.5	14.0	.94
Anxiety	38.8	10.7	.94

The results of these analyses were fairly straightforward. The only within-person relationship that was moderated by a trait was the relationship between positive social events and public self-consciousness. The strength of the relationship between public SA and positive social events was negatively related to trait anxiety scores and to scores on the BDI and was positively related to trait self-esteem. When anxiety was included at level 2, the γ_{11} coefficient was negative and significantly different from 0 ($\gamma_{11} = -.02$, $t = 2.1$, $p < .05$), as it was for the BDI ($\gamma_{11} = -.03$, $t = 2.3$, $p < .05$), and when RSE was included the coefficient was positive ($\gamma_{11} = .01$, $t = 2.0$, $p < .05$). In terms of how people's public self-awareness varied as a function of positive social events, more anxious people and people reporting more depressive symptoms and those with lower self-esteem were less reactive compared to their less-anxious and less-depressed counterparts and those with higher esteem. A similar set of analyses examining individual differences in the strength of lagged coefficients found no significant moderators of these relationships.

Trait anxiety and BDI scores were correlated (.68), as were anxiety and self-esteem (−.82), and BDI and self-esteem scores (−.64), suggesting that these moderating relationships of the slopes between positive social events and public SA may have not been independent. Such a lack of independence was confirmed by the fact that when any of the two of these three variables were included as moderators, neither remained significant. This suggests that whatever construct the shared variance of these three trait measures reflected was responsible for each of the individual moderating relationships.

Artifacts and Threats to Validity

In studies involving day-to-day measurement, it is important to know if within-person effects include artifacts such as fatigue or if person-level effects include artifacts such as relationships between parameters and the number of days a participant contributed data. Analyses that included day of study at level 1 found no relationship between day of study and SA. Furthermore, analyses that included the number of days a participant contributed data found no significant relationships between this variable and the within-person coefficients discussed in this article.

In addition to concerns about artifacts such as fatigue, studies of self-focus in which repeated measures are collected at many points over time

also raise questions about participants' reactivity. That is, do reports of self-focus change and do relationships between self-focus and other measures change over time? Although such changes are plausible, it does not appear they occurred in this study. First, as noted above, daily PUB and PRV did not change over time. Second, the results of analyses that took into account the autocorrelations for PRV and PUB (.21 and .22 respectively) were very similar to the results presented in this article. Coefficients that were significant remained significant and were approximately the same size. Furthermore, a series of three-level models, which compared coefficients based on the first half of participants' data with coefficients based on the second half of their data (days nested within halves, halves nested within people), found no significant differences between the first and second halves for any of the coefficients discussed in this article.⁴ It also does not appear that scores on the SCS were influenced by the fact that the SCS was completed after participants maintained the daily record. The distributions of scores for private self-consciousness and public self-consciousness were very similar to the distributions reported by Feningstein et al. (1975).

Alternative Conceptualizations of Private SA

There has been considerable debate regarding the unidimensionality of private self-consciousness. Recently, Trapnell and Campbell (1999) suggested (as have others) that private self-consciousness is best conceptualized as two factors: internal state awareness (ISA) and self-reflection (SR). Each of these factors was represented by one of the items used to measure daily private SA. Separate analyses of each item produced results that were similar to each other and to the analyses of the combined measure presented in this article. It is possible that these two items were not sufficiently sensitive to distinguish the ISA and SR factors and that the combined measure represented a common (perhaps higher order) construct. It is also possible that changing the wording of the items to a state focus reduced the distinction between them. Finally, distinguishing ISA and SR at the trait level did not reveal any new relationships. Substituting ISA and SR trait measures for the full scale private SC trait measure produced results that were not meaningfully different from those presented in this article.

4. Details of these analyses are available from the author.

DISCUSSION

The results confirmed the primary hypotheses of the study. Daily self-awareness covaried with daily anxiety and with daily negative events. Moreover, this covariation was relatively independent. Events did not mediate the relationship between self-awareness and anxiety, and anxiety did not mediate the relationship between self-awareness and events. Somewhat unexpectedly, self-awareness covaried only with social events and not achievement events, and relationships between public self-awareness and positive social events were stronger for people who were less anxious and depressed and had higher self-esteem than for those who were more depressed and anxious and had lower esteem. Analyses of lagged relationships suggested that increased private self-awareness led people to have more negative social experiences, whereas increased public self-awareness led people to have more positive social experiences. Finally, increased anxiety seemed to be a precursor of increased private self-awareness.

One other general pattern emerged from the analyses. Follow-up tests found that the covariation between self-awareness and negative social events was stronger than the covariation between self-awareness and positive social events for both private SA ($p < .01$) and public SA ($p < .10$). Such results are consistent with the conclusion reached by Taylor (1991) that “diverse literatures in psychology provide evidence that, other things being equal, negative events appear to elicit more physiological, affective, cognitive, and behavioral activity, and prompt more cognitive analysis than neutral or positive events” (p. 67).

The changes in state self-awareness found in the present study provide mixed support for existing descriptions of the roles of self-focus in everyday life. For example, they support some aspects of Pyszczynski and Greenberg's (1987) reactive theory of depression. Pyszczynski and Greenberg posited that negative affect leads to excessive self-focus, and consistent with this, the lagged analyses suggested that increased anxiety leads to increased private SA. It is important to note however, that the results suggest that anxiety and self-awareness are related, and although some (Feldman, 1993) have argued that it is difficult to distinguish anxiety and depression, anxiety and depression are not the same constructs. In fact, neither daily public nor private SA covaried ($ps > .7$) with a daily measure of depressogenic well-being, a composite of three items based on Beck's (1967) triad: negative views of self, life in general, and the

future (Gable & Nezlek, 1998). The lack of covariation between daily depressogenic well-being and SA suggested that the SA-anxiety was specific to anxiety, not some sort of general negative affectivity.

Moreover, Pyszczynski and Greenberg (1987) also posited that excessive self-focus leads to performance deficits, and to the extent that an increasingly negative social life represents a performance deficit, the present results supported this supposition. The lagged analyses suggested however, that increased private SA leads to more negative social experiences, the reverse causal sequence from that discussed by Pyszczynski and Greenberg. Pyszczynski and Greenberg also posited that increased self-focus in response to negative events leads to decreased self-esteem. Daily self-esteem was measured in this study (using the items on the Rosenberg Self-Esteem scale reworded for daily administration), and self-esteem did not covary with private or public SA ($ps > .15$).⁵ The lack of relationships between SA and self-esteem is not consistent with their model.

The present findings that daily SA covaried with daily anxiety and events is consistent with the results of Lavalley and Campbell (1995), but inconsistent with the results of Wood, Saltzberg, Neale, Stone, and Rachimel (1990), who found no day-level relationships between daily self-focus and daily negative mood or between daily self-focus and daily coping. There are important methodological differences between the present study and Wood et al. that may help explain these differences. Wood et al. measured self-awareness by content, analyzing participants' descriptions of the "most bothersome event or issue of the day." Although responses to this question reflected some part of people's daily self-focus (the self-focus concerning that event), a description of a single event may not have been an accurate measure of people's self-focus across all the events that occurred each day, which was the probable focus of their daily mood measure. The disparity between the levels of measurement of self-focus (a single event) and mood (the day) may have made it difficult to find relationships between the two measures.

5. In a replication of the findings of Nezlek and Gable (2001), daily self-esteem covaried negatively with negative daily events (both social and achievement) and positively with positive events (both social and achievement); all $ps < .05$. Self-esteem was not the focus of this paper, so these relationships were not presented nor discussed.

The simple covariation between private SA and anxiety and between private SA and negative social events is consistent with the general principles of self-regulation theory. In most self-regulation theories, failure is presumed to elicit self-focus, which is accompanied (or followed) by negative affect. Although the covariation found in the static, within-day analyses supports such suppositions, the causal sequences suggested by the lagged analyses do not. They suggested that anxiety leads to changes in self-focus, which in turn leads to negative events. Given the large body of experimental research supporting many of the basic tenets of self-regulation theory and the tentativeness of the causal relationships found in the present study, it is premature to suggest that these aspects of self-regulation theory are inaccurate. Moreover, the types of relationships described in most self-regulatory theories (e.g., Carver & Scheier, 1998) are much more complex than those tested here. Clearly, more research on naturally occurring variations in self-awareness is needed to evaluate how well theoretical accounts of self-focus, based primarily on laboratory research, explain naturally occurring variations in self-focus.

Previous research has tended to focus on private, rather than public, self-attention. Nevertheless, in the present study, relationships between public SA and daily events (and anxiety) were as strong and as reliable as relationships between private SA and these measures. Similar to the results describing private SA, public SA covaried positively with anxiety and with negative events, findings consistent with previous research and theory. Unexpectedly however, public SA covaried *positively* with and may have led to increases in positive social experiences, although positive social event scores and anxiety did not covary.

The positive relationship between public SA and positive events may reflect the fact that increases in public SA represent increased sensitivity to others' feelings. Existing research on trait self-attention suggests that higher trait public self-consciousness is associated with an increased desire to get along with people, to "fit in" social groups, and so forth (Buss, 1980; Carver & Scheier, 1998), and the present results expand this research by suggesting that increased state sensitivities are associated with a more rewarding social life. The fact that public SA covaried with both positive and negative social events may also reflect the fact that people are more publicly self-conscious when they are more socially active. The lagged relationship

from public SA to positive social events suggests otherwise, but such a possibility needs to be considered.

Contrary to expectation, the within-day covariation between public SA and positive social events was stronger for people who were less anxious and depressed and who had higher self-esteem than it was for those who were more anxious and depressed and had lower self-esteem. (Previous research has tended to find that increased anxiety and depression and decreased self-esteem are associated with greater reactivity to daily events.) This occurred despite the fact that mean daily public SA was positively related to person-level measures of anxiety and depression (BDI scores) and negatively related to trait self-esteem (all $ps < .05$), suggesting that anxiety and depression are positively related to chronic public SA and self-esteem is negatively related.

The present results suggest two complementary explanations for this relationship. First, it may be that less anxious and depressed people and those higher in self-esteem know how to use the information elicited by or accompanying public SA to facilitate more positive social connections. When they think about what other people think, this additional concern has adaptive consequences (i.e., more rewarding social events). Alternatively, it is possible that more anxious and depressed people, and those lower in self-esteem, do not know when to be self-conscious and when not to be. They may think about others' evaluations of them when they should not and not think of others' evaluations when they should. Finally, although predicted values for public SA did not suggest floor or ceiling effects, chronic levels of public SA for more depressed and anxious people and those lower in self-esteem may have been sufficiently high so that they could not be more publicly self-conscious when more positive events were occurring.

One of the striking results of this study was that self-awareness and achievement events did not covary, whereas SA and social events did. For public SA, such a difference is relatively easy to understand. The construct is operationalized in terms of people's concerns for what others think and has an inherently social focus. It is possible, however, that public SA might covary with achievement events that had a public performance component (e.g., a speech). Unfortunately, such a distinction could not be made with the events schedule that was used.

The lack of relationships between private SA and achievement events is striking, however, because self-focused attention and other constructs

have been found to covary in achievement settings. It is possible that in these (predominantly) laboratory studies, private SA and achievement events have covaried because achievement concerns were (necessarily) salient in these laboratory settings. In contrast, in the real world, where social and achievement concerns exist simultaneously, achievement concerns may not be particularly salient compared to social concerns. It is important to note that this does not mean that private SA does not covary with achievement concerns; rather, these results suggest that such covariation exists only when achievement concerns are salient. For example, private SA might change dramatically in response to unusually important achievement events.

Aside from what the present study may have to tell us about self-focused attention *per se*, this study is one of the first concerning daily events to suggest that an internal state (self-awareness) influences external events. Although a belief that internal states lead to external behaviors is a fundamental tenet of contemporary psychology, studies of daily events have tended to emphasize causal relationships from events to internal states. This may be because studies of daily events have been dominated by the study of daily affect, and it appears that daily events influence affect rather than vice-versa. For example, in a study structurally similar to the present study, Gable et al. (2000) examined one-day lagged relationships between events and affect and found evidence for a casual link from events to affect, but not from affect to events. Similarly, in another daily diary study, Bolger and Zuckerman (1995) found that daily conflicts on one day led to increased feelings of anger and depression on the next (although Bolger and Zuckerman did not report results of analyses examining an affect-event causal link).

In combination with such research, the present results suggest that causal relationships between internal states and external events may vary across different types of internal states. For more cognitively focused constructs such as self-awareness, causality may tend to go from internal state to external event, whereas for affectively focused states, causality may tend to go from external event to internal state. How people think about their lives may influence how their lives unfold, whereas people's feelings may consist more of reactions to the events of which their lives consist. Clearly, resolving such issues will take considerably more research.

There are two important caveats that must be kept in mind regarding the present results. First, it is possible that different measures of day-

level constructs might have produced different results. For example, measuring different aspects of daily experience might have produced different results. The present conceptualization and measurement of events was based on well-established research and theory; nevertheless, a different conceptual basis might have provided a different insight into relationships between daily experience and self-focus. In addition, it is possible that the day-level covariation between anxiety and self-awareness may have reflected some unintended overlap in how these two conceptually distinct constructs were measured rather than covariation between the constructs themselves. The second caveat concerns the use of the day as the unit of analysis. Just as it cannot be assumed that between- and within-person covariation between constructs are the same, it cannot be assumed that between- and within-day covariation between constructs are the same. A study that assessed the same constructs multiple times within a day (e.g., self-awareness and anxiety) might find different relationships than those found in this study.

Although assessing the import of the present results requires replication and further investigation, self-focused attention is an important construct, and these preliminary findings should be useful to researchers interested in self-processes, daily events, and a variety of other phenomena.

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