
Day-to-Day Relationships Among Self-Concept Clarity, Self-Esteem, Daily Events, and Mood

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Twice a week for up to 10 weeks, 103 participants provided measures of their daily self-concept clarity (SCC), mood (negative affect [NA] and positive affect [PA]), and self-esteem (SE), and they described the events that occurred each day. Multilevel random coefficient modeling analyses found that daily SCC covaried with daily positive and negative events, with daily NA, and with daily SE. None of these relationships was moderated by trait levels of SE, SCC, PA, NA, or measures of depressogenic self-concept, anxiety, or depressive symptoms. Analyses that simultaneously included SE, mood, and events suggested that relationships between daily SCC and daily events were mediated by daily NA and daily SE. Such mediation suggests that daily events lead to changes in mood and SE, which in turn lead to changes in SCC. Additional analyses found that temporal variability of SE, PA, NA, and SCC was negatively correlated with trait SCC.

Much of the recent research and theory about the self has focused on either of two topics. One is the recognition that the self is best understood as consisting of two related but nonetheless distinct components, generally referred to as evaluative and knowledge components. Complementing this is the recognition that these components are not necessarily stable across time and situations and that individual differences in such instability are psychologically meaningful. The present study was intended to expand our understanding of the self by examining day-to-day changes in self-concept clarity (SCC), a measure of the structure of the knowledge component of the self. SCC refers to the extent to which self-beliefs are clearly and confidently defined, internally consistent, and stable (Campbell, 1990; Campbell et al., 1996). Differences in SCC reflect differences in the confidence and consistency of self-beliefs, independent of content or accuracy.

Understanding daily changes in SCC may help increase our understanding of the dynamic aspects of self-

concept. Although many aspects of the self and self-concept may be relatively stable across time and situations, aspects of the self and self-concept also may change in response to external conditions such as daily events and in response to internal states such as moods. For example, previous research has found that self-esteem (SE) (an evaluative component of self-concept) varies as a function of daily events (Butler, Hokanson, & Flynn, 1994; Nezlek & Gable, 1999), and self-concept confusion (the opposite of SCC) has been shown to vary as a function of negative events (Lavalley & Campbell, 1995). These findings suggest that SCC also may be sensitive to daily events.

The present study examined day-level relationships between SCC and daily mood, events, and SE. 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 SCC, their SE, mood (positive affect [PA] and negative affect [NA]), and the positive and negative events that occurred each day. No previous study on the state variability of the structural components of self-concept has collected data describing both PA and NA, both positive and negative events, and state SE. In addition, various trait measures of psychological adjustment and self-concept were collected as potential moderators of day-level relationships.

These data allowed hypotheses about daily covariation to be tested (e.g., Does daily SCC covary with daily NA?), and they also allowed individual differences in these relationships to be examined (e.g., Is the day-level covariation between SCC and NA stronger for some people than for others?). Moreover, relationships between

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SCC and other measures could be examined while controlling for relationships between SCC and these other measures and for relationships between these other constructs themselves. For example, do day-level relationships between mood and SCC remain after controlling for daily changes in SE? The present study is also the first to use multilevel random coefficient modeling to examine day-to-day changes in the structural components of self-concept. Previous studies have used various ordinary least squares (OLS) techniques such as within-subject correlations or analyses of covariance, techniques that tend to provide less-accurate parameter estimates than those used in the present study.

The first hypothesis guiding the study was that daily SCC would covary with daily negative events and with daily NA, a replication of some of the results of Lavallee and Campbell (1995). People's SCC was expected to be lower on days when more negative events occurred than on days when fewer negative events occurred and lower on days when NA was greater. This hypothesis was based on the assumption that negative events such as failure or the disconfirmation of expectations will challenge people's self-concepts, leading to decreases in SCC, and on the assumption that increases in NA should be accompanied by decreases in SCC. SCC and NA should be related because the two constructs share features such as doubt, confusion, and anxiety, and trait NA and SCC have been found to be negatively correlated (Campbell et al., 1996).

Formulating hypotheses about the covariation between daily SCC and positive events and PA was not as straightforward. Although some research has found that daily positive events and measures of constructs conceptually related to SCC covary (Langston, 1994; Nezlek & Gable, 1999), it is not clear if self-confirming events (such as success or goal attainment) should strengthen structural components of self-concept or serve primarily to maintain or support existing levels. Inconsistencies in existing research also made it difficult to form hypotheses about day-level relationships between SCC and PA. Trait SCC and PA have been found to be positively correlated (Campbell et al., 1996), and Baumgardner (1990, Study 4) found that increases in self-concept certainty lead to increased PA. In contrast, in an event-level study, Lavallee and Campbell (1995) found that self-concept confusion and PA did not covary. Accordingly, relationships between SCC and PA and between SCC and positive events were examined on an exploratory basis.

The third hypothesis was that daily SCC would covary positively with daily SE. Given the generally strong correlation between trait measures of these two constructs (Campbell, 1990; Campbell et al., 1996; Smith, Wethington, & Zhan, 1996), such a relationship is not particularly interesting. What is more interesting, however, is the mediational role that SE may play in day-level relation-

ships between SCC and other day-level measures. For example, assuming that SCC and negative events covary, will these relationships hold when day-level differences in SE are controlled? Aside from a general expectation that weaker relationships between SCC and other constructs may not remain after controlling for SE, whereas stronger ones will, present research and theory do not provide a basis for firm predictions regarding such mediational roles. Therefore, we had no clear expectations regarding the results of these mediational analyses.

The fourth and final hypothesis about day-level covariation was that the strength of the day-level relationships between SCC and events and SCC and mood would vary negatively with measures of trait adjustment, including trait SCC. SCC-event and SCC-mood relationships were expected to be stronger for people who were more poorly adjusted than for those who were better adjusted. This hypothesis represents an extension of research on daily mood and daily events, much of which suggests that the strength of day-level relationships between NA and negative events is directly related to trait neuroticism (e.g., Bolger & Schilling, 1991). It also represents an extension of research on daily events and daily SE that has found that the strength of day-level relationships between events and SE is inversely related to depressogenic trait adjustment (Butler et al., 1994; Nezlek & Gable, 1999).

The preceding hypotheses concerned day-level covariation; however, considerable previous research has concerned how state instability per se relates to various trait measures. This research began with a focus on the correlates of the instability of state SE (Kernis, 1993) and has recently been extended to include the instability of psychological states in general (Gable & Nezlek, 1998). Moreover, state instability is an implicit part of the trait conceptualization of SCC. Consistent with this conceptualization, Campbell, Chew, and Scratchley (1991) found that day-to-day frequency of mood change across 2 weeks was negatively related to self-concept complexity, a construct related in some senses to SCC. It should be noted, however, that the relationship between self-complexity and mood change was mediated by trait SE.

Accordingly, the present study also investigated relationships between trait SCC and the state instability of mood, SE, and SCC. The general hypothesis guiding these analyses was that state variability and trait SCC would be negatively related. Although this hypothesis and the previous hypotheses about day-to-day covariation all concern state variability, the hypotheses do not necessarily concern the identical constructs. For example, people low in SCC may exhibit greater day-to-day variability in SE, but this does not logically necessitate that the covariation between SE and daily events is moderated by trait SCC.

METHOD

Participants

Participants were 112 introductory psychology students attending the College of William & Mary who received credit in partial fulfillment of class requirements.

Measures

SCC was measured at both the trait and state levels. Trait SCC was measured using the 12-item Self-Concept Clarity Scale (Campbell et al., 1996). Participants responded to each item using a 1 to 5 scale with endpoints of 1 (*strongly disagree*) and 5 (*strongly agree*). Daily (state) SCC was measured using Items 1, 4, 8, and 9 from the original trait SCC scale. Items were selected based on factor loadings reported by Campbell et al. (1996) and appropriateness for daily administration. Specific instructions for the daily SCC measure were as follows: "For each of the following statements, please indicate the extent to which the statement applied to you TODAY. Use the scale provided." These and all other daily responses were collected twice a week and were made using a 1 to 7 scale.

Trait and state SE was measured with the Rosenberg Self-Esteem Scale (RSE) (Rosenberg, 1965). The trait measure used a 5-point scale with endpoints of 1 (*strongly disagree*) and 5 (*strongly agree*), and participants completed a trait version of the scale at the beginning and end of the study. Daily SE was measured using Items 3, 6, 7, and 10 on the trait scale reworded to refer to how participants felt about themselves that day.

PA and NA were measured at both the trait and the state levels with the Positive and Negative Affect Schedule (PANAS) (Watson, Clark, & Tellegen, 1988). Instructions for the trait measure were as follows: "This scale consists of a number of words that describe different feelings and emotions. Indicate the extent to which you generally feel this way, that is, how you feel on average." Participants responded on a 5-point scale with endpoints of 1 (*very slightly or not at all*) to 5 (*extremely*). Daily (state) PA and NA were measured with the same 20 adjectives. Instructions for the state measure were modified to the following: "Indicate to what extent YOU HAVE FELT THIS WAY TODAY."

Daily events were measured using 22 of the 40 items from the Daily Events Survey (DES) (Butler et al., 1994). Twelve positive and 10 negative events were measured, with equal numbers of social and achievement events. These events included the following: "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), and "had plans fall through to spend time with someone special" (social

negative). In addition to 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 were 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*, and 4 = *occurred and extremely important*. For each day, ratings of the 14 positive events were averaged to create a positive event composite score, and ratings of the 12 negative events were averaged to create a negative event composite score.¹

In addition to trait SCC, RSE, and PANAS measures, participants completed the Beck Depression Inventory (BDI) (Beck, 1967), the Beck Self-Concept Scale (BSC) (Beck, Steer, Epstein, & Brown, 1990), the Center for Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977), and the trait anxiety subscale of the State-Trait Personality Inventory (Spielberger et al., 1979).

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 twice a week for 10 weeks and to complete questionnaires on the first and last days of the study. Data collection programs were written using the Micro-Analytic Experimental Laboratory software package (MEL) (Schneider, 1988), and participants were able to run these programs and provide data using any IBM-compatible personal computer.

Instructions for trait and state measures were included in three programs that participants ran on the days described on a written list. One program was run on the first day of the study, and it collected trait measures of the SCC, BDI, and RSE. A second program was run twice a week, and it collected state SCC, RSE, mood measures, and reports of daily events. Participants were told to run the program twice a week (on Wednesdays and Sundays or the day after if they forgot) at night just before going to sleep. The third program was run on the last day of the study and administered another trait RSE, the trait PANAS, the CES-D, the trait anxiety measure, and the study evaluation questions. Participants completed the BSC during a mass-testing session 3 weeks before the study began.

Members of the research team maintained regular contact with participants via electronic mail. Five weeks

into the study, participants turned in their first disk and picked up a new one. Participants were told to contact the experimenter should any problems arise such as disk failure, computer viruses, and so forth. When such problems occurred, participants were given replacement disks within 48 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 meaningfully. Most participants (92%) reported spending 15 min or less per day running the program; they reported that the study was not disruptive to their daily life ($M = 3.2$ using a 1 to 5 scale where 1 = *very disruptive* and 5 = *not at all disruptive*).

The data collection programs recorded the date and time participants recorded their responses. This allowed us to determine when participants had entered their data and if they had entered multiple days of data simultaneously. All the data provided by 3 participants were eliminated because they had entered most of their data at one sitting. Twelve days of data provided by another 4 participants (3 days each) also were eliminated because the data were not entered on separate days.

To be included in the analyses, participants had to provide at least 6 days of data. The above-mentioned problems, combined with mechanical problems such as computer viruses or disk failures and the theft of data from one of the authors' cars, left 103 participants who provided at least six daily measures, and the data describing these 103 are the focus of the analyses of this article. These participants provided a total of 1,330 days of data (an average of 12.9 days per participant, $SD = 2.8$), and 81% of participants provided at least 10 daily measures.

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 (MRCM) using the HLM program (Version 4.03a) (Bryk, Raudenbush, & Congdon, 1998). MRCM was chosen over OLS methods such as using within-person correlations to measure within-person relationships because MRCM provides better parameter estimates than OLS methods (Bryk & Raudenbush, 1992). The present analytic strategy is described in Nezlek (in press).

Models and analyses are described using the nomenclature standard to multilevel modeling, and within this terminology, the primary analyses were two-level models. Measures for days were nested within people, and for each person, coefficients were estimated representing the day-to-day relationships between SCC, daily events,

SE, and mood. For example, did daily SCC covary with the negative events that occurred each day? In addition, analyses were done to determine if these day-level coefficients varied as a function of trait-level individual differences. For example, did the day-level relationship between events and daily SCC vary as a function of trait SCC?

The first set of analyses examined the reliability and validity of the day-level measure of SCC. In these and all analyses, daily SCC was operationalized as the mean response across the four SCC questions asked each day. The first model is referred to as "totally unconditional" because daily SCC was not modeled as a function of other day- or person-level variables. The basic Level 1 (day-level) model was as follows:

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

In this model, β_{0j} is a random coefficient representing the mean of y (daily SCC) for person j (across the i days for which each person provided data), r_{ij} represents the error associated with each measure of SCC, and the variance of r_{ij} constitutes the day-level residual (or error) variance. The basic Level 2 (person-level) model was as follows:

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

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} , the deviation from the grand mean; and the variance of u_{0j} constitutes the Level 2 residual variance.

This analysis estimated the mean daily SCC (γ_{00}) to be 4.69. The between-day variance of daily SCC (the variance of r_{ij}) was .56, and the between-person variance (the variance of u_{0j}) was 2.46. Reliabilities of coefficients also are routinely provided by HLM, and the estimated reliability of mean daily SCC was .98. The way that HLM estimates reliability is discussed in Bryk and Raudenbush (1992, pp. 43-44).

The validity of the daily measure of SCC was determined by examining the relationships between an individual's trait measure of SCC and that person's mean daily SCC. This was done with a model in which mean daily SCC (β_{0j}) was modeled as a function of trait SCC:

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

The maximum-likelihood procedures used by HLM provide separate estimates of fixed parameters (significance tests of coefficients) and random parameters (error variances). The fixed-effect part of this analysis found that the daily SCC and trait SCC were related. The

γ_{01} (SCC) coefficient of .13 was significantly different from 0 ($p < .001$). For every 1.0 increase in trait SCC, mean daily SCC increased .13.

The strength of this relationship was examined by comparing random parameter estimates, and strength was operationalized as the between-person variance in mean daily SCC accounted for by trait SCC. The residual variance of β_{0j} from the first analysis in which trait SCC was not included at the person level was 2.46, and the residual person-level variance from the second analysis in which trait SCC was included was 1.14, a reduction of 54%. This corresponds to a person-level correlation of .73 (the square root of .54) between mean daily and trait SCC, an acceptable level of agreement. This procedure is discussed in Bryk and Raudenbush (1992, p. 65).

SCC and Daily Events

An important focus of the study was the relationship between daily events and day-to-day levels of SCC, and such relationships were examined using the following day-level model:

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

In this model, β_{0j} is a random coefficient representing the intercept of y (daily SCC) for person j (across the i days for which each person provided data), $\beta_{1j}(\text{POS-EVENT})$ is a random coefficient (referred to as a slope to distinguish it from an intercept) representing the day-level relationship between mean importance of positive events and SCC for person j , $\beta_{2j}(\text{NEG-EVENT})$ represents the relationship between SCC and negative events, and r_{ij} represents error. To eliminate the influence on parameter estimates of individual differences in ratings of events, event scores were group-mean centered. Thus, an individual's coefficients for daily events described relationships between deviations from his or her mean event scores and deviations from his or her mean SCC.

To examine if event-SCC relationships were significantly different from 0 across the individuals in the study, the following person-level model was examined:

$$\begin{aligned} \beta_{0j} &= \gamma_{00} + u_{0j} \\ \beta_{1j} &= \gamma_{10} + u_{1j} \\ \beta_{2j} &= \gamma_{20} + u_{2j} \end{aligned}$$

In this model, the significance of γ_{10} indicated if, on average, the relationship between SCC and positive events was not 0 and the significance of γ_{20} indicated if, on average, the relationship between SCC and negative events was not 0. Such a model is referred to as a "slopes as outcomes" model because coefficients (slopes) from a Level 1 model are analyzed at Level 2. The Level 1 slopes represent within-person relationships between SCC and

events. This analysis had a different focus than previous analyses that analyzed within-person means of SCC.

In this analysis, the γ_{10} and γ_{20} coefficients were significant. Across all participants, SCC scores tended to be higher on days when positive event scores were higher and lower on days when negative event scores were higher. Moreover, a planned contrast of the magnitude (absolute value) of these two coefficients found that the SCC-negative event coefficient was significantly greater than the SCC-positive event coefficient, $\chi^2(1) = 5.5, p < .05$.

SCC and Daily Mood

Another important focus of the study was the relationship between day-to-day levels of SCC and mood. Daily positive mood was operationalized as the mean rating for the 10 positive mood items, and daily negative mood was operationalized as the mean rating for the 10 negative mood items. Relationships between daily mood and SCC were examined using the following day-level model:

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

This model is structurally identical to the model used to examine relationships between daily SCC and daily events with the obvious difference that $\beta_{1j}(\text{POS-MOOD})$ is now a random coefficient representing the day-level relationship between SCC and positive mood and $\beta_{2j}(\text{NEG-MOOD})$ represents the relationship between SCC and negative mood. Similar to the previous analyses, mood scores were group-mean centered. These day-level coefficients were analyzed at the person level using the same procedures and models used to analyze relationships between daily events and SCC.

These analyses (summarized in Table 1) found that only the γ_{20} coefficient was significant, indicating that SCC was related to NA but not to PA. Across all participants, SCC scores tended to be lower on days when NA was higher and higher on days when NA was lower. Examination of the random parameter estimates indicated that NA accounted for 20% of the day-level variance of SCC, corresponding to a day-level correlation of $-.45$.

SCC and Daily SE

The third focus of the study was the relationship between day-to-day levels of SCC and SE. Daily SE was operationalized as the mean rating for the four SE items. Relationships between daily SE and SCC were examined using the following day-level model:

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

This model is structurally the same as the models used to examine relationships between daily SCC and other

TABLE 1: Day-Level Relationships Between Self-Concept Clarity and Daily Events, Clarity and Mood, and Clarity and Self-Esteem

Analysis	Coefficient	t Ratio	p Level
Events only			
Positive events	0.09	2.0	.05
Negative events	-0.33	4.1	.01
Mood only			
Daily positive affect	0.03	< 1	<i>ns</i>
Daily negative affect	-0.23	5.4	.01
Self-esteem only			
Daily self-esteem	0.30	5.0	.01

NOTE: All predictors were group-mean centered; therefore, the intercept for this and all other analyses was the sample mean of 4.69.

measures except that β_j (SE) is now a random coefficient representing the day-level relationship between SCC and SE. Daily SE scores were group-mean centered, and day-level coefficients were analyzed at the person level using the same procedures and models used in the previous analyses.

These analyses found that the γ_{10} coefficient was significant, indicating that daily SCC was significantly and positively related to daily SE. These results are presented in Table 1. Examination of the random parameter estimates indicated that SE accounted for 23% of the day-level variance of SCC, corresponding to a day-level correlation of .48.

Possible Mediating Relationships Among SCC, Daily Events, Daily Mood, and Daily SE

Given the covariation between SCC, daily events, daily NA, and daily SE, we were interested in examining how these different relationships changed when daily SCC was modeled as a joint function of these constructs. To do this, a series of day-level models was analyzed in which daily SCC was modeled as a function of different combinations of events, moods, and SE. Given the fact that SE and SCC are conceptually related and correlated at the trait level, the first set of models consisted of the previous event and mood analyses repeated with the addition of daily SE; the results of these analyses are summarized in Table 2.²

When daily SE was included in the analyses of daily events, the relationship between positive events and daily SCC (.03) was not significant, whereas it was significant in the original analysis, suggesting that SE mediated the relationship between positive events and SCC. Daily SE also may have partially mediated relationships between negative events and SCC. The coefficient for negative events in this additional analysis, although significant, was considerably smaller than the coefficient in the original analysis (-0.15 vs. -0.33). Concluding that SE mediated relationships between SCC and negative

TABLE 2: Day-Level Relationships Between Self-Concept Clarity and Daily Events and Between Clarity and Mood, Controlling for Daily Self-Esteem

Analysis	Coefficient	t Ratio	p Level
Events			
Daily self-esteem	0.26	4.4	.01
Positive events	0.03	< 1	<i>ns</i>
Negative events	-0.15	2.4	.02
Mood			
Daily self-esteem	0.20	3.4	.01
Daily positive affect	0.01	< 1	<i>ns</i>
Daily negative affect	-0.16	4.3	.01

events instead of negative events mediating relationships between SE and SCC also was suggested by the fact that the significant coefficient for SE in this combined analysis (.26) was similar in magnitude to the coefficient from the analysis in which it was the sole predictor of SCC (.30).

When daily SE was included in the analyses of daily mood, the relationship between PA and daily SCC remained nonsignificant, and the coefficients between NA and SCC and between SE and SCC remained significant, although both were smaller than they were in the original analyses. Such a pattern of results does not provide clear support for concluding that either NA or SE was a mediating variable.

Given the covariation between SCC and mood and between SCC and events, we were interested in examining how SCC-event relationships changed when SCC was modeled simultaneously as a function of daily events and daily NA and PA. The results of this analysis are presented in Table 3.

In this analysis, the coefficient for positive events (.02) was not significant, whereas it was in the original analysis (.09), and although the SCC-negative event coefficient remained significant in this analysis, it was much smaller (-0.16) than it was when SCC was modeled as a function of only events (-0.33). In contrast to these changes, the coefficient for NA (-0.21) was significant and was approximately the same size as it was when SCC was modeled as a function of mood only (-0.23). This pattern of results suggests that NA mediated the (relatively weak) relationship between SCC and positive events and partially mediated the (relatively strong) relationship between SCC and negative events.

The similar ways in which SE and NA mediated the relationship between SCC and negative events calls into question the independence of this mediation. To answer this question, an analysis was done that included events, mood, and SE. The coefficients produced by this analysis suggested that these mediational roles were relatively independent. In this analysis, the coefficient for negative

TABLE 3: Day-Level Relationships Between Self-Concept Clarity and Daily Mood and Events, With and Without Controlling for Daily Self-Esteem

<i>Analysis</i>	<i>Coefficient</i>	<i>t Ratio</i>	<i>p Level</i>
Without self-esteem			
Positive events	0.02	< 1	<i>ns</i>
Negative events	-0.16	2.2	.03
Daily positive affect	0.01	< 1	<i>ns</i>
Daily negative affect	-0.21	4.8	.01
With self-esteem			
Daily self-esteem	0.18	3.3	.01
Positive events	0.01	< 1	<i>ns</i>
Negative events	-0.08	1.3	.20
Daily positive affect	-0.01	< 1	<i>ns</i>
Daily negative affect	-0.14	3.7	.01

events was not significant and was smaller (-.08) than in all other analyses. In contrast, the coefficients for NA (-.14) and SE (.18) were very similar to the coefficients (-.16 and .20, respectively) from an analysis that included only mood and SE. It appears that NA and SE each mediated part of the relationship between negative daily events and daily SCC.

Person-Level Traits as Moderators of Day-Level Relationships

An important focus of research on the day-to-day covariation between psychological states and daily events is the extent to which day-level relationships vary as a function of person-level (or trait) differences. To determine if the day-level relationships described above varied as a function of person-level trait variables, coefficients 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 day-level relationships between events and SCC varied as a function of person-level traits, the following person-level model was analyzed:

$$\begin{aligned} \beta_{0j} &= \gamma_{00} + \gamma_{01}(\text{TRAIT}) + u_{0j} \\ \beta_{1j} &= \gamma_{10} + \gamma_{11}(\text{TRAIT}) + u_{1j} \\ \beta_{2j} &= \gamma_{20} + \gamma_{21}(\text{TRAIT}) + u_{2j} \end{aligned}$$

In these models, whether a specific trait moderated the SCC-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 positive and negative moods. These analyses examined coefficients between daily SCC and all day-level measures because there may be meaningful variability in a coefficient even when the mean coefficient is not significantly different from 0. The potential moderating effects of the following person-level (traits) were examined: SCC, SE, PA and NA, depressive symptoms, anxiety, and depressogenic self-concept. None of these

variables moderated day-level relationships between SCC and daily events, mood, or SE.

Finally, in studies involving day-to-day measurement, it is important to know if day-level effects include artifacts such as fatigue and 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 reliable relationship between day of study and SCC. Furthermore, analyses using person-level models that included the number of days a participant contributed data found no significant relationships between this variable and the day-level coefficients discussed in this article.

Relationships Between Trait SCC and State Variability

Relationships between trait SCC and the state variability of mood, SE, and SCC were examined in a series of regression analyses. In these analyses, state variability (operationalized as within-participant standard deviation) was the dependent variable, and trait SCC and trait SE were the independent variables. Trait SE was included in these analyses because of the documented negative relationship between trait SE and the state variability of SE (Kernis, 1993) and other constructs (Gable & Nezlek, 1998) and because of the relationship between trait SE and trait SCC. Each of the four measures of state variability was modeled as a function of trait SCC alone, trait SE alone, and both trait SCC and SE. The coefficients from these analyses are presented in Table 4.

As expected, trait SCC was negatively correlated with all four measures of state variability. The correlations ranged from a low of -.15 (PA) to a high of -.36 (SCC). Correlations between trait SE and these measures of state variability spanned a similar range. Comparisons of coefficients from analyses in which different trait-level measures were included indicated that trait SE mediated the relationship between state variability of SE and trait SCC. The coefficient for trait SCC was significant (-.0097) when state variability of SE was modeled as a function of only trait SCC, whereas it was not when trait SE also was included (-.0011). Parallel analyses indicated that trait SCC mediated the relationship between state variability of SCC and trait SE (-.0089 vs. -.0023).³

DISCUSSION

The results supported four of the five primary hypotheses of the study. Daily SCC covaried with daily negative and positive events, daily NA, and daily SE. Contrary to expectation, these day-level relationships were not moderated by individual differences in trait SE and SCC or by trait anxiety, depressive symptoms, or a measure of depressogenic aspects of self-concept. Follow-up analyses suggested that daily mood and daily SE mediated relationships between daily SCC and daily events. Finally, as

TABLE 4: Relationships Between State Variability and Trait Self-Concept Clarity (SCC) and Self-Esteem (SE): Coefficients and Multiple Correlations

	<i>Trait SCC</i>	<i>Trait SE</i>	R
SE			
Trait SCC only	-.0097*		.27
Trait SE only		-.0167**	.41
Trait SCC and SE	-.0011	-.0159**	.41
Positive affect			
Trait SCC only	-.0053		.15
Trait SE only		-.0055	.14
Trait SCC and SE	-.0037	-.0029	.16
Negative affect			
Trait SCC only	-.0139**		.32
Trait SE only		-.0150**	.31
Trait SCC and SE	-.0092*	-.0086*	.35
SCC			
Trait SCC only	-.0149**		.36
Trait SE only		-.0089*	.19
Trait SCC and SE	-.0161**	-.0023	.36

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

expected, trait SCC was negatively correlated with state variability of SE, NA, and SCC.

It is important to note that the relationship between SCC and negative events was much stronger than the relationship between SCC and positive events. This relative importance of negative events is consistent with previous research on day-to-day changes in psychological states (Nezlek & Gable, 1999) and considerable research on various other processes (Taylor, 1991). Granting, for the moment, that events lead to changes in psychological states, it appears that increases in SCC resulting from positive events such as success and acceptance are much smaller than the decreases resulting from negative events such as failure and rejection.

The relationship between daily SCC and negative events is consistent with existing theory and research. For example, Campbell and Lavalley (1993) found that negative events that were more goal relevant lead to greater self-concept confusion. Lavalley and Campbell relied on various self-regulatory theories to explain their results, and the present results are consistent with the rationale they presented. Negative events may lead to self-focus and negativity and may initiate a process that undermines the stability of the self-schema. Lavalley and Campbell did not measure or discuss positive events.

As expected, daily SE and daily SCC covaried, and the results suggested that daily SE mediated the relationship between daily positive events and daily SCC. Positive events appear to increase SCC by increasing SE. SE also appeared to mediate partially the relationship between negative events and SCC. Part of the impact that negative events may have on SCC may be due to decreases in SE brought about by negative events. Such a causal sequence is consistent with the results of Campbell et al. (1991),

who found that trait SE mediated the negative relationship between daily mood variability and trait self-complexity. Daily SCC also covaried with the NA that people experienced each day. On days when SCC was lower, NA was higher. Moreover, similar to the mediating role played by SE, NA appeared to mediate partially the relationship between negative events and SCC. Part of the impact that negative events may have on SCC may be due to increases in NA brought about by negative events.

The present results suggest that daily events do not directly, in and of themselves, lead to changes in SCC but that events lead to changes in SE and NA, which in turn lead to changes in SCC. Such a causal sequence is consistent with the mechanisms described by Pyzczynski and Greenberg (1987) in their self-regulatory model of reactive depression.

PA had no relationship to SCC, and as noted by Langston (1994), PA and positive events do not figure as heavily as NA or negative events in many models describing reactions to daily or life events. This greater centrality of NA may represent an extension of Taylor's (1991) conclusion that negative events are more influential than positive events. Negative events tend to have a greater impact than positive events, and by extension, changes in NA may have a greater impact than changes in PA.

The foregoing explanations are consistent with Markus and Wurf's (1987) proposal that one of the purposes served by the dynamic components of self-concept is the maintenance of PA. The present results suggest, however, that the dynamic components of self-concept structure are more closely related to the management of NA rather than PA, at least in terms of how affect was operationalized in the present study. A growing body of research suggests, however, that affect is best described using two dimensions, valence and activation (Russell & Carroll, 1999), and within such a framework, the PANAS measures only pleasant and unpleasant activation and does not measure pleasant and unpleasant deactivation (e.g., Feldman Barrett & Russell, 1998). It is possible that other operationalizations of affect would have produced different results; therefore, statements about processes regulating affect need to be made and taken cautiously.

The preceding discussion has tacitly assumed that daily events change mood, SE, and SCC. Daily measures were collected at the end of each day, and so reports of psychological states followed the occurrence of daily events, and this temporal sequence is consistent with an assumption that events lead to changes in states. Although such an assumption is consistent with the S-R tradition that has dominated much of psychology (and with the assumption underlying many studies of daily and life events), the reverse causal sequence also is plausible. For example, Baumgardner (1990) discussed the possibility

that compared to people who were more certain, people who were more uncertain about their self-concepts would be less likely to choose situations or environments in which they would excel, and consequently, they would be less likely to receive positive feedback. In terms of the constructs examined in the present study, on days when people were low in SCC, they may have been less likely to do positive things and more likely to do negative things than on days when they had a clearer sense of who they were.

Addressing such causal questions could be addressed by comparing lagged relationships between one measure taken on day n and a second measure taken on the next recording day ($n+1$) to relationships between the first measure taken on day $n+1$ and the second measure taken on day n . Although appealing, such analyses were not possible because the average length of time between adjacent recording days ($M = 4.6$, $SD = 2.9$) was too long for lagged effects to appear (Marco & Suls, 1993). Measures were taken twice weekly (at the most frequent), and because the study extended over 10 weeks, some adjacent sets of measures were separated by holidays, vacations, and so forth. The causal precedence of the constructs investigated here remains to be determined. The present results suggest certain causal relationships, but final confirmation of such relationships awaits further research using more intensive data collection and perhaps different modeling techniques such as multi-level confirmatory factor analysis.⁴

Although other causal sequences could not be examined, other mediational models could. One of the more important conclusions based on the present study was that SE and NA mediated the relationship between SCC and negative events. Plausible arguments could be made for other mediational sequences, for example, SCC mediating relationships between negative events and SE. A series of such alternative mediational models was examined in which NA and SE were treated as dependent measures and combinations of other constructs were treated as independent variables. In none of these analyses did the inclusion of SCC cause the coefficients for other measures to become nonsignificant. SCC did not mediate the relationships between SE and mood or between SE and events or the relationships between mood and events and between mood and SE. A similar set of analyses on positive events also did not find that SCC mediated relationships between events and SE or PA.

The one hypothesis that was not confirmed was the moderation of day-level relationships by trait-level measures. Coefficients representing relationships between SCC and other daily measures did not vary as a function of a variety of trait-level measures. This finding is consistent with previous research that did not find that adjust-

ment moderated reactivity to daily events (e.g., Affleck, Tennen, Urrows, & Higgins, 1994; David, Green, Martin, & Suls, 1997), but it is inconsistent with other research demonstrating that trait neuroticism moderates day-level relationships between distress and negative events (e.g., Bolger & Schilling, 1991; Marco & Suls, 1993; Suls, Green, & Hillis, 1998). Aside from accepting the null, it is difficult to speculate why trait moderation did not occur. Perhaps traits not measured in the present study moderate day-level relationships between SCC and other constructs.

Null results also raise questions about statistical power, although estimating the power of multilevel designs can be quite complex and is not fully understood (Kreft & deLeeuw, 1998). The power to detect moderators of Level 1 relationships such as the day-level covariation between SCC and other measures (effects known also as cross-level interactions) depends on the number of observations at Levels 1 and 2, the size of the sought-after moderating effect, intraclass correlations, and the fixed and random variances of the Level 1 coefficients. For traditional OLS analyses, the present sample of 103 provided a power of approximately .87 for detecting a correlation of .30 between two variables. Kreft and deLeeuw (1998, p. 122) conclude that maximum-likelihood procedures are generally more powerful than comparable OLS techniques. Given this, the power of the OLS analysis may represent a lower bound of the power to detect moderating relationships of traits on day-level relationships. If so, the present design appears to have provided sufficient power to detect psychologically meaningful moderators of relationships between daily events and psychological states; however, a more precise estimate awaits further research.

As expected, trait SCC was negatively related to the instability of day-to-day SE, NA, and SCC itself. Moreover, relationships between trait SCC and the instability of state NA and state SCC remained after controlling for individual differences in trait SE. This finding corroborates and extends previous research and theory by suggesting that self-concepts that are less clear will change more readily than those that are more clear. Although the extent to which people's SCC fluctuated day to day was related to trait SCC and SE, these traits did not moderate day-level relationships between SCC and other states. Discussions of state instability frequently explain individual differences in state instability in terms of reactivity to events. These results suggest that such explanations need to be made cautiously in the absence of explicit empirical verification. Although such differential reactivity may have been found with a different schedule of events, the present events schedule has produced day-level relationships that have been moderated by trait-level variables (Nezlek & Gable, 1999). Unfortunately, to

date, no systematic comparison of the impact of using different schedules of events has been published.

As Markus and Wurf (1987) noted more than 10 years ago, the dynamic aspects of self-concept are a topic that has generated, and continues to generate, considerable interest. The present results suggest that understanding these dynamics aspects will require understanding how structural and evaluative components of self-concept affect and are affected by the events in people's lives and their affective states.

NOTES

1. Positive and negative frequency scores, the number of events occurring each day, also were created. Analyses using composite mean scores were presented because there was less heterogeneity of variance for composite scores than for frequency counts and because composite scores incorporate differences in the importance of events, whereas frequency counts assume all events are equally important. Moreover, such weighting is consistent with the scoring of the Life Experiences Survey (Sarason, Johnson, & Siegel, 1978), a widely used measure of life events, and it is consistent the procedures used by many researchers who study the relationships between life events and psychological adjustment (e.g., Hammen, Mayol, deMayo, & Marks, 1986; Hokanson, Rubert, Welker, Hollander, & Hedeon, 1989). Nevertheless, the results of analyses using frequency counts were similar to the results presented in this article. To determine if the twice-weekly recording schedule led to a different distribution of event scores than a daily schedule, the distributions of positive and negative scores obtained in the present study were compared to distributions from a previous study (Nezlek & Gable, 1999) that used the same set of events with a comparable sample but used a daily reporting schedule. In the present study, the mean positive event composite score was 1.12 ($SD = .72$), and it was .52 ($SD = .52$) for negative event composite scores. The corresponding figures from Nezlek and Gable (1999) were 1.15 (.73) and .49 (.52). This similarity suggests that the twice-weekly reporting schedule did not produce different distributions of event scores than a daily schedule.

2. As noted by Baron and Kenny (1986), mediation requires a significant relationship between a presumed mediator (self-esteem [SE] and affect) and an independent variable (events). A series of HLM analyses found such day-level relationships between positive and negative events and SE (both $ps < .01$) and between positive and negative events and positive affect (PA) and negative affect (NA) (all $ps < .01$). These relationships are not the focus of this article and are not presented or discussed.

3. For mediational relationships between trait self-concept clarity (SCC) and state variability to exist, trait SCC and trait SE need to be correlated, and they were ($r = .61$).

4. In a structurally similar study, Gable, Reis, and Elliot (2000) examined 1-day lagged relationships between events and affect and found evidence for a casual link from events to affect but not from affect to events.

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